

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

<b>C Number:</b>	C55743
<b>Lock Date:</b>	Not Entered.
<b>Cage Range:</b>	All
<b>Date Range:</b>	All
<b>Reasons For Removal:</b>	All
<b>Removal Date Range:</b>	All
<b>Treatment Groups:</b>	All
<b>Study Gender:</b>	Both
<b>PWG Approval Date</b>	01/06/1988

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

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First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 1	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Epididymis	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Parathyroid Gland
Preputial Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Zymbal's Gland		

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**MISSING**

Mammary Gland

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**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Minimal
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 3-4		
Liver		Basophilic Focus	
		Clear Cell Focus	
		Fatty Change	Focal, Mild
Pancreas	Acinus	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 4-8		
Prostate		Inflammation	Chronic Active, Mild
Spleen		Hematopoietic Cell Proliferation	Minimal
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 1-6		
Thyroid Gland	C Cell	Adenoma	

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 1	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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<b>NORMAL</b>			
Brain	Epididymis	Esophagus	Islets, Pancreatic
Pancreas	Parathyroid Gland	Prostate	Trachea
<b>MISSING</b>			
Zymbal's Gland			
<b>OBSERVATIONS</b>			
Kidney		Nephropathy	Moderate
Liver		Angiectasis	Mild
		Clear Cell Focus	
	Bile Duct	Hyperplasia	Mild
Lung		Congestion	Mild
[ Congestion TGLS = 2-4+5 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
[ Adenoma TGLS = 3-6 ]			
Thyroid Gland	Follicular Cel	Adenoma	
[ Adenoma TGLS = 1-5 ]			
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 1	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 622 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Eye	Intestine Large - Cecum	Intestine Large - Colon
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mandibular	Lymph Node - Mesenteric	Pancreas	Parathyroid Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland

OBSERVATIONS

Adrenal Gland	Medulla Cortex	Pheochromocytoma Malignant Vacuolization Cytoplasmic	Diffuse, Minimal
Note: NEST OF TUMOR CELLS IN A BLOOD VESSEL Note: PHEOCHROM MAL TGLs = 8-8			
Heart		Cardiomyopathy	Mild
Intestine Large	Rectum	Parasite	Minimal
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 9-4			
Liver		Basophilic Focus Congestion	Minimal
Note: CONGESTION TGLs = 10-3	Bile Duct	Hyperplasia	Minimal
Lung		Congestion	Minimal
Note: CONGESTION TGLs = 5-1+2			
Nose		Inflammation	Acute, Mild
Pituitary Gland	Pars Distalis Pars Intermed	Adenoma Hyperplasia	Mild
Note: ADENOMA TGLs = 11-8			
Skin		Acanthosis	Mild
	Subcut Tiss	Fibrosarcoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 1	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 622 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: FIBROSARC TGLs = 1-13 Note: HYPERKERATOSIS TGLs = 2-10		Hyperkeratosis	Moderate
Spleen		Hematopoietic Cell Proliferation	Minimal
Testes	Interstit Cell	Adenoma	
Note: ADENOMA TGLs = 4-6			
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 2	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Parathyroid Gland
Pituitary Gland	Preputial Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

**MISSING**

Thymus

**OBSERVATIONS**

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Kidney		Nephropathy	Moderate
Liver	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
Pancreas	Artery	Necrosis	Fibrinoid, Mild
[ Necrosis TGLS = 2-9 ]			
Spleen		Hematopoietic Cell Proliferation	Minimal
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal

Note: ADENOMA TGLs = 1-6

PRIMARY CAUSE OF DEATH -

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 2	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 641 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Eye	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Prostate	Salivary Glands
Seminal Vesicle	Spleen	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Parathyroid Gland	Thymus		
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Degeneration	Cystic, Minimal
Note: DEGEN	TGLs = 5-3		
Lung		Congestion	Mild
Pancreas	Acinus	Atrophy	Mild
Note: ATROPHY	TGLs = 4-9		
Pituitary Gland	Pars Distalis	Adenoma	
Note: ADENOMA	TGLs = 6-8		
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 2-10		
Skin	Subcut Tiss	Fibroma	
Note: FIBROMA	TGLs = 1-13		
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA	TGLs = 3-6		

PRIMARY CAUSE OF DEATH -

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 2

**TRT#:** 2

**DOSE:** 2.5%

**SEX:** Male

**DISP:** Moribund

**DAY ON TEST:** 641

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 2	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Dead	<b>DAY ON TEST:</b> 560 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Pituitary Gland	Preputial Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Spleen
Thyroid Gland	Trachea	Zymbal's Gland	

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**MISSING**

Islets, Pancreatic	Mammary Gland	Pancreas	Parathyroid Gland
Thymus			

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**AUTO PRECLUDES DIAG.**

Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Stomach - Forestomach	Stomach - Glandular
Urinary Bladder			

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**OBSERVATIONS**

Adrenal Gland	Medulla	Pheochromocytoma Malignant	
Note: THE ADRENAL PHEOCHROMOCYTOMA			
Note: INCREASED SIZE OF LEFT KIDNEY IS DUE TO			
Note: PROBABLY A BILATERAL TUMOR--??			
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Note: BLOOD AROUND KIDNEY			
Note: NEPHROPATHY TGLs = 1-4+4.2			
Liver		Necrosis	Mild
Lung		Edema	Mild
		Infiltration Cellular	Histiocyte, Minimal
Mesentery		Hemorrhage	Moderate
Testes	Interstit Cell	Adenoma	

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Prostate
Salivary Glands	Seminal Vesicle	Spleen	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Adrenal Gland Note: PHEOCHROM BGN TGLs = 11-8,12-8	Bilateral, Medulla	Pheochromocytoma Benign	
Epididymis		Mesothelioma Malignant	
Eye Note: CATARACT TGLs = 2-4.1	Lens Cornea	Mineralization Cataract Inflammation	Minimal Mild Acute, Minimal
Heart		Cardiomyopathy	Minimal
Kidney Note: NEPHROPATHY TGLs = 13-4+4.1	Transit Epithe Papilla	Hyperplasia Mineralization Nephropathy	Minimal Minimal Moderate
Liver		Angiectasis Degeneration Fatty Change Hepatocellular Carcinoma	Minimal Cystic, Minimal Focal, Minimal
Note: HEPATOCLR CARC TGLs = 20-3.1	Bile Duct	Hyperplasia	Minimal
Lung Note: CONGESTION TGLs = 10-1+2		Congestion	Minimal
Lymph Node	Lumbar Lumbar	Congestion Infiltration Cellular	Minimal Plasma Cell, Mild

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

	Mediastinal	Pigmentation	Mild
Note: #3, BUT IT IS NOT A LYMPH NODE.			
Note: THERE IS A LARGE PIECE OF MESOTHELIOMA IN SECTION			
Note: PIGMENT TGLs = 9-2+10			
Note: INFILTRAT CELL TGLs = 21-4			
Mammary Gland		Adenocarcinoma	
Mesentery		Mesothelioma Malignant	
Note: MESOTHELIO MAL TGLs = 5-13,16-13			
Nose			
Note: BLOOD IN NASAL TURBINATE			
Pancreas		Mesothelioma Malignant	
Note: MESOTHELIO MAL TGLs = 17-9			
Parathyroid Gland		Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Hyperplasia	Minimal
Preputial Gland		Inflammation	Chronic Active, Minimal
Skin		Squamous Cell Papilloma	
Note: PAPILLOMA SQUA TGLs = 1-10			
Stomach	Forestomach	Acanthosis	Mild
	Forestomach	Hyperkeratosis	Minimal
	Forestomach	Inflammation	Chronic Active, Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild
	Tunic	Mesothelioma Malignant	
Note: ADENOMA TGLs = 6-6,7-6			
PRIMARY CAUSE OF DEATH		-	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

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Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Brain	Epididymis	Harderian Gland	Islets, Pancreatic
Pancreas	Seminal Vesicle	Trachea	Zymbal's Gland

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**OBSERVATIONS**

Eye Note: CATARACT      TGLs = 1-7	Lens	Cataract	Mild
Kidney Note: NEPHROPATHY      TGLs = 6-2	Renal Tubule	Hyperplasia Nephropathy	Minimal Moderate
Liver [ Basophilic Focus TGLS = 7-1 ]	Bile Duct	Basophilic Focus Developmental Malformation Hyperplasia Mixed Cell Focus	Mild
Lung Note: CONGESTION      TGLs = 5-4+5		Congestion	Mild
Testes Note: ADENOMA      TGLs = 2-6,3-6	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Moderate

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Pancreas	Parathyroid Gland	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Thymus

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Minimal
Kidney		Hydronephrosis	Minimal
		Nephropathy	Moderate
Note: MESANGIAL THICKENING IN MANY GLOMERULI			
Note: HYDRONEPHROSIS TGLs = 8-4			
Note: NEPHROPATHY TGLs = 7-4			
Liver		Basophilic Focus	
Lung		Congestion	Mild
Note: CONGESTION TGLs = 11-1+2			
Lymph Node			
Note: MAST CELLS INCREASED IN THE PANCREATIC NODE			
Mammary Gland		Galactocele	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: ADENOMA TGLs = 10-8			
Preputial Gland		Inflammation	Chronic Active, Minimal
Note: INFLAMMATION TGLs = 1-10			
Prostate		Inflammation	Chronic Active, Mild
Spleen		Hematopoietic Cell Proliferation	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Testes	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Mild
Note: ADENOMA	TGLs = 3-6,4-6,5-6		
Note: ATROPHY	TGLs = 2-6		

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 4

TRT#: 1

SEX: Male

DAY ON TEST: 660

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Pituitary Gland	Preputial Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Adrenal Gland	Bilateral, Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN	TGLs = 4-8		
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Moderate
	Renal Tubule	Pigmentation	Minimal
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 2-1+2		
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-9		
Nose			
Note: BLOOD IN NASAL TURBINATE			
Spleen		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 3-3.1 ]			
Testes	Interstitial Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
	Interstitial Cell	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 4	<b>TRT#:</b> 1	<b>SEX:</b> Male	<b>DAY ON TEST:</b> 660
	<b>DOSE:</b> CONTROL	<b>DISP:</b> Moribund	<b>HISTO:</b>

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: ADENOMA	TGLs = 1-6		
Thyroid Gland	C Cell	Hyperplasia	Minimal
PRIMARY CAUSE OF DEATH	-		

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 4	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 622 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mandibular	Nose	Pancreas	Parathyroid Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Testes	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland	Thymus
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OBSERVATIONS

Adrenal Gland	Medulla Cortex Medulla	Hyperplasia Leukemia Mononuclear Leukemia Mononuclear	Mild
Note: HYPERPLASIA TGLs = 9-8			
Heart		Cardiomyopathy Leukemia Mononuclear	Mild
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 10-4			
Liver		Fatty Change Leukemia Mononuclear Thrombosis	Focal, Mild Mild
[ Fatty Change TGLS = 11-3 ]			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 5-1+2			
Lymph Node	Mediastinal Mesenteric Pancreatic	Leukemia Mononuclear Leukemia Mononuclear Leukemia Mononuclear	
Pituitary Gland	Pars Distalis Pars Distalis	Adenoma Angiectasis	Moderate
Note: ADENOMA TGLs = 12-8			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 4	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 622 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Preputial Gland Note: ADENOMA TGLs = 2-10	Adenoma
Spleen [ Leukemia Mononuclear TGLS = 7-3 ]	Leukemia Mononuclear

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 4	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mesenteric	Mammary Gland	Nose
Pancreas	Parathyroid Gland	Pituitary Gland	Prostate
Seminal Vesicle	Skin	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	

MISSING

Lymph Node - Mandibular	Salivary Glands	Zymbal's Gland
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OBSERVATIONS

Adrenal Gland Note: PHEOCHROM BGN TGLs = 4-8	Bilateral, Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney  Note: THICKENING OF MANY GLOMERULI Note: DISTENDED BOWMANS SPACE AND/OR MESANGIAL	Transit Epithe	Hyperplasia Nephropathy	Minimal Moderate
Liver	Bile Duct	Basophilic Focus Hyperplasia Mixed Cell Focus	Minimal
Mesentery Note: NECROSIS TGLs = 3-13	Fat	Necrosis	Mild
Preputial Gland Note: ADENOMA TGLs = 1-10		Adenoma	
Spleen		Hematopoietic Cell Proliferation	Minimal
Stomach	Forestomach	Acanthosis	Minimal
Testes  Note: ADENOMA TGLs = 2-6	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 4

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 735

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 5

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mesenteric
Mammary Gland	Pancreas	Parathyroid Gland	Pituitary Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

**MISSING**

Lymph Node - Mandibular

**OBSERVATIONS**

Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 2-4		
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Lymph Node	Mediastinal	Angiectasis	Mild
Nose		Inflammation	Acute, Mild
Preputial Gland		Necrosis	Minimal
Spleen		Hematopoietic Cell Proliferation	Minimal
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 1-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 5	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Islets, Pancreatic	Pancreas	Spleen
Thymus	Zymbal's Gland		

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**OBSERVATIONS**

Adrenal Gland Note: PHEOCHROM BGN TGLs = 5-5	Medulla	Pheochromocytoma Benign	
Kidney	Renal Tubule Transit Epithe	Hyperplasia Hyperplasia Nephropathy	Minimal Minimal Moderate
Liver		Basophilic Focus Mixed Cell Focus	
Spleen Note: CONGESTED			
Testes Note: ADENOMA TGLs = 1-4,2-4	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Moderate

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PRIMARY CAUSE OF DEATH

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Animal Note: POSSIBILITY OF HIBERNOMA IN SLIDE #5 TO BE CONSIDERED

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 5

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mesenteric	Mammary Gland	Nose
Pancreas	Parathyroid Gland	Pituitary Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder			

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 9-4			
Note: MESANGIAL THICKENING			
Liver		Basophilic Focus	
		Clear Cell Focus	
	Bile Duct	Hyperplasia	Minimal
		Leukemia Mononuclear	
Lung		Infiltration Cellular	Histiocyte, Minimal
Lymph Node	Mandibular	Degeneration	Cystic, Moderate
Note: PROTEINACEOUS MATERIAL IN MANDIBULAR NODE			
Note: DEGEN TGLs = 3-9			
Preputial Gland		Adenoma	
Note: ADENOMA TGLs = 2-10			
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Note: HEMA CELL PROL TGLs = 10-3			
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 5	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: ADENOMA      TGLs = 5-6,6-6  
Zymbal's Gland  
Note: CARCINOMA      TGLs = 1-13

Carcinoma

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PRIMARY CAUSE OF DEATH      -

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 6

TRT#: 1

SEX: Male

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Parathyroid Gland	Pituitary Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Spleen	Stomach - Forestomach	Stomach - Glandular
Trachea	Zymbal's Gland		

MISSING

Thymus

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 8-4			
Liver		Basophilic Focus	
		Hepatodiaphragmatic Nodule	
	Bile Duct	Hyperplasia	Mild
Note: ANOM HEPAT LOB TGLs = 9-3			
Lung		Alveolar/Bronchiolar Adenoma	
[ Alveolar/Bronchiolar Adenoma TGLS = 2-2 ]			
Lymph Node	Renal	Pigmentation	Mild
Note: PIGMENT TGLs = 10-10			
Mammary GI			
Note: HEMOGLOBIN CRYSTALS AND A FEW NEUTROPHILS			
Note: IN THE LUMEN OF AN ACINUS			
Pancreas	Artery	Necrosis	Fibrinoid, Moderate
Skin			
Note: TGL #: 2 PIECES OF SKELETAL MUSCLE			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 6	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 738 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: ADENOMA Thyroid Gland Urinary Bladder	TGLs = 3-6 C Cell Artery	Interstit Cell Hyperplasia Adenoma Necrosis	Minimal Fibrinoid, Minimal
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 6	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

<b>NORMAL</b>			
Brain	Islets, Pancreatic	Seminal Vesicle	Trachea
Zymbal's Gland			
<b>OBSERVATIONS</b>			
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Liver		Basophilic Focus	
		Eosinophilic Focus	
		Hepatodiaphragmatic Nodule	
	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Mild
		Leukemia Mononuclear	
		Mixed Cell Focus	
Note: ANOM HEPAT LOB TGLs = 7-1			
Note: SECONDARY TO MCL			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 2-4+5			
Lymph Node	Mediastinal	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 1-5			
Pancreas	Acinus	Adenoma	
Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 6-6			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA TGLs = 3,4-7			

PRIMARY CAUSE OF DEATH -

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 6

TRT#: 3

DOSE: 5.0%

SEX: Male

DISP: Moribund

DAY ON TEST: 680

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Mammary Gland	Nose
Pancreas	Parathyroid Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Lymph Node - Mesenteric

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Medulla	Pheochromocytoma Malignant	
Note: THIS NEOPLASM IS CALLED MALIGNANT AS IT HAS			
Note: GROWN OUT INTO THE CAPSULE AND AS THERE ARE A FEW			
Note: TUMOR CELLS IN THE BLOOD VESSELS			
Note: PHEOCHROM MAL TGLs = 8-8			
Heart		Cardiomyopathy	Mild
Note: STASIS OF BLOOD IN THE VENTRICLES			
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
	Renal Tubule	Pigmentation	Mild
Note: MESANGIAL THICKENING AND DISTENDED BOWMAN'S			
Note: SPACE IN SOME GLOMERULI			
Liver		Basophilic Focus	
		Focal Cellular Change	
Lung		Congestion	Mild
Lymph Node	Mediastinal	Depletion Lymphoid	Moderate
	Mediastinal	Pigmentation	Mild
Pancreas			
Note: PIGMENT TGLs = 6-7+9			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 6	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 680 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Pituitary Gland Preputial Gland	Pars Distalis	Hyperplasia Adenoma Necrosis	Mild  Moderate
Note: NECROSIS      TGLs = 1-10			
Spleen Testes	Bilateral, Interstit Cell Seminif Tub Tunic	Hematopoietic Cell Proliferation Adenoma Atrophy Mesothelioma Malignant	Minimal  Minimal
Note: MESOTHELIO MAL      TGLs = 4-6,8-3			
Thymus		Depletion Lymphoid	Mild
PRIMARY CAUSE OF DEATH	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 7	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Parathyroid Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Trachea	Urinary Bladder		

MISSING

Mammary Gland

OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Minimal
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Moderate
Note: BLOOD IN PELVIS			
Liver		Basophilic Focus	
		Degeneration	Cystic, Minimal
		Hepatodiaphragmatic Nodule	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: ANOM HEPAT LOB TGLs = 5-3,6-3			
Lung	Alveolar Epith	Hyperplasia	Mild
Pancreas	Artery	Necrosis	Fibrinoid, Minimal
Note: NECROSIS TGLs = 4-9			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
Note: ADENOMA TGLs = 2-6,3-6.1			
Thyroid Gland	C Cell	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 7	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>	
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Zymbal's Gland	Cyst
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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 7	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Pancreas	Prostate	Seminal Vesicle
Trachea	Zymbal's Gland		

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
	Medulla	Pheochromocytoma Benign	
Note: LEUKEMIA MONUC	TGLs = 7-10		
Heart		Leukemia Mononuclear	
		Thrombosis	
Note: THROMBUS	TGLs = 11-6		
Islets, Pancreatic		Adenoma	
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Note: LEUKEMIA MONUC	TGLs = 8-2		
Liver		Angiectasis	Mild
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: ANGIECTASIS	TGLs = 19-1		
[ Angiectasis TGLS = 18-1 ]			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 12-4+5,13-4+5		
Lymph Node	Renal	Infiltration Cellular	Histiocyte, Mild
	Iliac	Leukemia Mononuclear	
	Lumbar	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: INFILTRAT CELL	TGLs = 9-8		
Note: LEUKEMIA MONUC	TGLs = 10-5		
Note: LEUKEMIA MONUC	TGLs = 16-10		
Note: LEUKEMIA MONUC	TGLs = 20-2		

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 7	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: LEUKEMIA MONUC TGLs = 17-6 Mesentery	Fat	Leukemia Mononuclear Necrosis	Mild
Note: LEUKEMIA MONUC TGLs = 6-9 Note: NECROSIS TGLs = 5-9 Pituitary Gland	Pars Distalis Pars Distalis	Adenoma Angiectasis	Mild
Note: ADENOMA TGLs = 21-10 Spleen		Hematopoietic Cell Proliferation Leukemia Mononuclear	Mild
[ Hematopoietic Cell Proliferation TGLS = 2-7 ] Testes	Bilateral, Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Moderate Mild
Note: ADENOMA TGLs = 4-8 Note: ATROPHY TGLs = 3-8 Thymus		Leukemia Mononuclear	

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 7

TRT#: 3

SEX: Male

DAY ON TEST: 674

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Pancreas	Parathyroid Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Intestine Large	Rectum	Parasite	Mild
Kidney		Nephropathy	Moderate
Note: BLOOD IN RENAL PELVIS. THICKENING OF MESANGIUM			
Note: NEPHROPATHY TGLs = 7-4			
Liver		Degeneration	Cystic, Minimal
	Bile Duct	Hyperplasia	Mild
Lung		Alveolar/Bronchiolar Adenoma	
Note: ALV BRON ADEN TGLs = 3-12.1			
Nose		Chondroma	
		Hemorrhage	Minimal
		Metaplasia	Osseous, Mild
Note: OSSIFICATION OR FORMATION OF NEW OSTEOID TISSUE.			
Note: CHONDROMA TGLs = 8-12			
Note: CONTINUITY WITH THE TUMOR. MULTIPLE FOCI OF			
Note: METAPL TGLs = 9-12			
Note: CARTILAGE IS MATURE AND APPEARS TO BE IN			
Note: OCCUPYING ONE-HALF OF THE TURBINATE. THE			
Note: THIS APPEARS TO BE A CARTILAGINOUS TUMOR			
Pituitary Gland	Pars Distalis	Adenoma	
Preputial Gland		Necrosis	Moderate

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 7	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 674 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: MORE AN ABSCESS THAN NECROSIS

Note: NECROSIS TGLs = 2-10

Spleen		Pigmentation	Minimal
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
	Interstit Cell	Hyperplasia	Minimal

Note: ADENOMA TGLs = 5-6

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 8	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Coagulating Gland	Epididymis	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Pancreas
Parathyroid Gland	Preputial Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland

OBSERVATIONS

Heart		Cardiomyopathy	Minimal
Kidney		Nephropathy	Moderate
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Prostate	Epithelium	Hyperplasia	Minimal
Seminal Vesicle		Atrophy	Mild
Note: ATROPHY	TGLs = 3-6		
Spleen		Congestion	Mild
		Leukemia Mononuclear	
Note: CONGESTION	TGLs = 4-3		
Testes	Bilateral, Interstit Cell Seminif Tub	Adenoma	
		Atrophy	Mild
Note: ADENOMA	TGLs = 1-6,2-6		

PRIMARY CAUSE OF DEATH -

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 8	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Brain	Heart	Islets, Pancreatic
Pancreas	Zymbal's Gland		

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**OBSERVATIONS**

Adrenal Gland Note: PHEOCHROM MAL TGLs = 4-4	Medulla	Pheochromocytoma Malignant	
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Skin [ Hyperkeratosis TGLs = 1-7 ]		Acanthosis	Mild
		Hyperkeratosis	Moderate
Spleen		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-5			
Testes	Bilateral, Interstit Cell Tunic	Adenoma Mesothelioma Malignant	
Note: ADENOMA TGLs = 2-6			

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 8	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 725 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Ear	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Parathyroid Gland	Pituitary Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland

OBSERVATIONS

Brain		Astrocytoma Malignant	
Note: COULD THE ATAXIA BE A RESULT OF THE TUMOR			
Note: TUMOR CELLS IN THE VENTRICLE OR ? CELLS OF			
Note: CHOROID PLEXUS TRANSFORMED. SECTION CIRCLED			
Note: IN THE BRAIN STEM			
Heart		Cardiomyopathy	Minimal
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Liver	Bile Duct	Hyperplasia	Mild
Note: LOSS OF CYTOPLASMIC BASOPHILIA IN CENTRIOBULAR HEPATOCYTES			
Lung		Congestion	Mild
Pancreas	Artery	Necrosis	Fibrinoid, Moderate
Note: NECROSIS TGLs = 3-9			
Preputial Gland		Inflammation	Chronic Active, Minimal
Spleen		Pigmentation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
	Seminif Tub	Mineralization	Minimal
Note: ADENOMA TGLs = 1-6,2-6			
Thyroid Gland	C Cell	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 8

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 725

**DOSE:** 5.0%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 9	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Dead	<b>DAY ON TEST:</b> 589 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Preputial Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
		Necrosis	Mild
Note: NECROSIS	TGLs = 3-3+3.1,4-3+3.1		
Note: SUGGESTION OF TRANSFORMATION			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 5-8		
Spleen		Depletion Lymphoid	Mild
		Hematopoietic Cell Proliferation	Moderate
		Leukemia Mononuclear	
		Necrosis	Mild
Note: NECROSIS OR HEALED INFARCT			
Note: NECROSIS	TGLs = 1-3		
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 2-6		
Thyroid Gland	C Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 9

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 589

**DOSE:** CONTROL

**DISP:** Dead

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 9	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 640 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Mammary Gland	Nose
Pancreas	Parathyroid Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	

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**MISSING**

Thymus

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**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Note: NEPHROPATHY	TGLs = 9-4		
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: HYPERPLASIA	TGLs = 10-3		
Lung		Congestion	Mild
Lymph Node	Mesenteric	Angiectasis	Mild
	Mesenteric	Hemorrhage	Moderate
Note: HEMORRHAGE	TGLs = 7-9		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 12-8		
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10		
Spleen		Depletion Lymphoid	Mild
		Fibrosis	Mild
		Leukemia Mononuclear	
Note: DEPLET LYMPH	TGLs = 6-3		
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 9	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 640 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: ADENOMA Zymbal's Gland	TGLs = 2-6,3-6.1 Seminif Tub	Atrophy Hyperplasia	Moderate Moderate
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 9

TRT#: 3

SEX: Male

DAY ON TEST: 562

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Pancreas	Parathyroid Gland	Pituitary Gland	Preputial Gland
Salivary Glands	Seminal Vesicle	Thymus	Thyroid Gland
Trachea	Zymbal's Gland		

MISSING

Mammary Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Minimal
		Mineralization	Minimal
Kidney	Renal Tubule	Dilatation	Moderate
		Fibrosis	Minimal
		Hydronephrosis	Marked
	Cortex	Mineralization	Mild
		Nephropathy	Mild
Note: HYDRONEPHROSIS TGLs = 8-4+4.1,9-4+4.1			
Note: DILATATION TGLs = 6-4+4.1,7-4+4.1			
Liver		Basophilic Focus	
		Degeneration	Cystic, Minimal
Lung		Hemorrhage	Minimal
Prostate		Adenocarcinoma	
Note: AS SEMINAL VESICLES IN #6 & 6A APPEAR NORMAL			
Note: THIS NEOPLASM IS PROBABLY OF PROSTATIC ORIGIN			
Note: ADENOCARC TGLs = 5-6+6.1			
Skin	Tail	Keratoacanthoma	
Note: AND NON-INVASIVE SQUAMOUS CELL CARCINOMA			
Note: THERE ARE FEATURES OF KERATOACANTHOMA AND			

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 9	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 562 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: KERATOACANTHMA TGLs = 1-14			
Spleen		Hematopoietic Cell Proliferation	Minimal
		Pigmentation	Mild
Stomach	Forestomach	Hyperkeratosis	Minimal
	Glandular	Mineralization	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA TGLs = 11-6,12-6			
Tissue NOS		Necrosis	Mild
Note: THIS IS EITHER MESENTERY OR BODY WALL. IT IS			
Note: TUMOR IN THIS MASS			
Note: NECROSIS TGLs = 10-13			
Note: NOT POSSIBLE TO ASCERTAIN IF THERE IS A METASTATIC			
Urinary Bladder		Adenocarcinoma	Metastatic (Prostate)
		Fibrosis	Minimal
		Hemorrhage	Mild
		Inflammation	Chronic Active, Mild
Note: FIBROSIS TGLs = 3-9			
Note: ADENOCARC TGLs = 4-9			

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PRIMARY CAUSE OF DEATH	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 10

TRT#: 1

SEX: Male

DAY ON TEST: 641

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Kidney		Nephropathy	Moderate
Liver		Focal Cellular Change	
	Bile Duct	Hyperplasia	Minimal
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 9-3			
Note: MANY LEUCOCYTES IN SINUSOIDS			
Pituitary Gland	Pars Distalis	Hyperplasia	Minimal
Preputial Gland		Adenoma	
Note: ADENOMA TGLs = 1-10+13,4-10+13			
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Note: HEMA CELL PROL TGLs = 8-3			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Moderate
Note: ATROPHY TGLs = 5-6			
Note: ADENOMA TGLs = 6-6			
Note: ONE TESTIS IS ATROPHIED; THE OTHER HAS AN ADENOMA.			

PRIMARY CAUSE OF DEATH

-

Animal Note: ANIMAL KILLED BECAUSE OF PREPUTIAL GLAND MASS.

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 10

TRT#: 2

SEX: Male

DAY ON TEST: 736

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Islets, Pancreatic	Pancreas	Salivary Glands
Trachea	Zymbal's Gland		

OBSERVATIONS

Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 2-5+6		
Lymph Node	Lumbar	Leukemia Mononuclear	
	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 1-6,4-8,6-7,7-4		
Spleen		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 5-7 ]		
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	[ Atrophy TGLS = 3-4 ]		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 10

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Trachea	Urinary Bladder
Zymbal's Gland			

MISSING

Adrenal Gland - Cortex	Adrenal Gland - Medulla
------------------------	-------------------------

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Lung		Congestion	Minimal
		Infiltration Cellular	Histiocyte, Minimal
Lymph Node	Pancreatic	Cyst	
	Pancreatic	Depletion Lymphoid	Mild
Note: CYST	TGLs = 5-9		
Mesentery	Fat	Necrosis	Moderate
Note: NECROSIS	TGLs = 4-13		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
	Pars Intermed	Hyperplasia	Minimal
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10+13		
Prostate		Inflammation	Chronic Active, Mild
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 10

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 735

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: ADENOMA      TGLs = 2-6

Thyroid Gland

C Cell

Adenoma

C Cell

Hyperplasia

Minimal

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 11

TRT#: 1

SEX: Male

DAY ON TEST: 660

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Pancreas	Parathyroid Gland	Prostate
Salivary Glands	Seminal Vesicle	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder

MISSING

Mammary Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LARGE FOCUS OR EARLY TRANSFORMATION ?			
Lymph Node	Mediastinal	Angiectasis	Mild
	Mediastinal	Pigmentation	Minimal
Pituitary Gland	Pars Distalis	Cyst	
	Pars Intermed	Hyperplasia	Mild
		[ Hyperplasia TGLS = 5-8 ]	
Preputial Gland		Adenoma	
		[ Adenoma TGLS = 2-10 ]	
Skin	Subcut Tiss	Fibroma	
		Note: FIBROMA TGLs = 1-13	
Spleen		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 11	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 660 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: ADENOMA Note: ADENOMA Zymbal's Gland	TGLs = 4-6 TGLs = 3-6	Interstit Cell  Cyst Inflammation	Hyperplasia  Minimal  Granulomatous, Mild
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 11

TRT#: 2

SEX: Male

DAY ON TEST: 736

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Seminal Vesicle

Brain

Islets, Pancreatic

Pancreas

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Adrenal Gland  
Note: PHEOCHROM MAL TGLs = 4-6

Medulla

Pheochromocytoma Malignant

Kidney

Transit Epithe

Angiectasis

Mild

Hyperplasia

Mild

Nephropathy

Moderate

Note: NEPHROPATHY TGLs = 5-2  
Liver

Bile Duct

Hyperplasia

Mild

Mixed Cell Focus

Spleen

Fibrosis

Moderate

Hemorrhage

Minimal

Note: FIBROSIS TGLs = 6-5  
Testes

Bilateral, Interstit Cell  
Seminif Tub

Adenoma

Atrophy

Moderate

Note: ADENOMA TGLs = 1-4,2-4  
Urinary Bladder

Calculus Gross Observation

Calculus Micro Observation Only

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 11

TRT#: 3

SEX: Male

DAY ON TEST: 681

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Pancreas	Prostate	Salivary Glands
Seminal Vesicle	Stomach - Forestomach	Stomach - Glandular	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland	Parathyroid Gland
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OBSERVATIONS

Heart		Cardiomyopathy	Minimal
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
		Focal Cellular Change	
	Bile Duct	Hyperplasia	Mild
Lung		Alveolar/Bronchiolar Adenoma	
Pituitary Gland	Pars Distalis	Hyperplasia	Minimal
Preputial Gland		Carcinoma	
Note: CARCINOMA	TGLs = 1-10.1		
Skin	Subcut Tiss	Fibroma	
Note: FIBROMA	TGLs = 4-13+13.1		
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 2-6,3-6		
Thymus		Depletion Lymphoid	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 12

TRT#: 1

SEX: Male

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Pancreas	Parathyroid Gland	Preputial Gland
Prostate	Salivary Glands	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Skin	Thymus
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 7-4			
Note: BLOOD IN PELVIS			
Liver		Angiectasis	Mild
		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
		Fibroadenoma	
Mammary Gland			
Note: FIBROADENOMA TGLs = 1-13			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 11-8			
Seminal Vesicle		Atrophy	Minimal
Note: ATROPHY TGLs = 2-6			
Spleen		Hematopoietic Cell Proliferation	Minimal
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA TGLs = 3-6,4-6			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 12

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 738

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 12

TRT#: 2

SEX: Male

DAY ON TEST: 716

DOSE: 2.5%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Harderian Gland	Islets, Pancreatic	Zymbal's Gland
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OBSERVATIONS

Eye		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 1-8		
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
		Thrombosis	
Note: THROMBUS	TGLs = 6-6		
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
[ Leukemia Mononuclear TGLs = 12-2 ]			
Liver		Leukemia Mononuclear	
Note: MORE LIKE LYMPHOCYTIC LEUKEMIA			
[ Leukemia Mononuclear TGLs = 10-1 ]			
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-8,11-7,14-6		
Pancreas	Artery	Necrosis	Fibrinoid, Minimal
Note: NECROSIS	TGLs = 13-1		
Prostate		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLs = 8-4 ]			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLs = 9-5 ]			
Stomach	Forestomach	Acanthosis	Mild
	Glandular	Erosion	Mild
	Forestomach	Inflammation	Chronic, Mild
	Forestomach	Ulcer	Moderate
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 12	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 716 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
	Seminif Tub Interstit Cell	Atrophy Hyperplasia	Moderate Mild
[ Atrophy TGLS = 7-4 ] Thymus		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 5-6			

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 12

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mesenteric	Mammary Gland	Pancreas
Parathyroid Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Moderate
Note: THICKENING OF BOWMAN'S CAPSULE AND MESANGIUM			
Note: NEPHROPATHY TGLs = 7-4			
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
Lymph Node	Mandibular	Cyst	
	Pancreatic	Hematocyst	
Note: HEMATOCYST TGLs = 10-9			
Mesentery	Fat	Necrosis	Moderate
	Fat	Pigmentation	Mild
Note: PIGMENT TGLs = 6-13			
Nose		Inflammation	Acute, Mild
Pancreas			
Note: ARE LARGE AND NORMAL			
Note: WALLS OF THE PANCREATIC & MESENTERIC ARTERIES			
Pituitary Gland	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Hyperplasia	Minimal
Note: ANGIECTASIS TGLs = 13-8			
Preputial Gland		Adenoma	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 12

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: ADENOMA	TGLs = 1-10			
Spleen			Hematopoietic Cell Proliferation	Moderate
Note: HEMA CELL PROL	TGLs = 8-3			
Stomach		Glandular	Infiltration Cellular	Lymphocyte, Moderate
Testes		Bilateral, Interstit Cell	Adenoma	
		Seminif Tub	Atrophy	Mild
		Interstit Cell	Hyperplasia	Minimal
		Seminif Tub	Mineralization	Minimal
Note: ATROPHY	TGLs = 2-6			
Note: ADENOMA	TGLs = 3-6,4-6			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 13

TRT#: 1

SEX: Male

DAY ON TEST: 681

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Mesentery	Nose	Pancreas	Parathyroid Gland
Pituitary Gland	Preputial Gland	Salivary Glands	Seminal Vesicle
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Zymbal's Gland		

MISSING

Urinary Bladder

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Nephropathy	Mild
Liver	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Mild
		Leukemia Mononuclear	
Note: SECONDARY TO MCL [ Hyperplasia TGLS = 6-3 ]			
Lung		Leukemia Mononuclear	
Prostate		Inflammation	Chronic Active, Mild
Skin	Subcut Tiss	Fibroma	
		Necrosis	Mild
Note: FIBROMA TGLs = 4-13			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 13

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 681

**DOSE:** CONTROL

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: ADENOMA      TGLs = 1-6

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 13

TRT#: 2

DOSE: 2.5%

SEX: Male

DISP: Moribund

DAY ON TEST: 640

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Pituitary Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder			

MISSING

Parathyroid Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
	Cortex	Hypertrophy	Mild
Heart		Cardiomyopathy	Mild
Note: CARDIOMYOPATHY TGLs = 3-2			
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 7-3			
Preputial Gland		Adenoma	
Note: ADENOMA TGLs = 2-10			
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA TGLs = 5-6,6-6			
Zymbal's Gland		Carcinoma	
Note: CARCINOMA TGLs = 1-13			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 13

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Pituitary Gland	Preputial Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Spleen	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Zymbal's Gland		

MISSING

Intestine Small - Duodenum

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Moderate
Intestine Large	Colon	Parasite	Minimal
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Note: THICKENING OF BOWMAN'S CAPSULE AND MESANGIUM			
Note: NEPHROPATHY TGLs = 6-4			
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
		Hyperplasia	Focal, Mild
Note: HYPERPLASIA TGLs = 9-3			
Lung		Alveolar/Bronchiolar Adenoma	
Note: ALV BRON ADEN TGLs = 5-2			
Lymph Node	Mesenteric	Degeneration	Cystic, Mild
	Lumbar	Pigmentation	Mild
Note: PIGMENT TGLs = 7-3			
Nose			
Note: BLOOD IN TURBINATE			
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 13

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 735

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

Seminif Tub

Atrophy

Mild

Note: ATROPHY      TGLs = 3-6  
Note: ADENOMA      TGLs = 2-6

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 14

TRT#: 1

SEX: Male

DAY ON TEST: 660

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Pancreas
Parathyroid Gland	Prostate	Salivary Glands	Seminal Vesicle
Stomach - Glandular	Thyroid Gland	Trachea	Zymbal's Gland

MISSING

Preputial Gland	Urinary Bladder
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-8		
Heart		Leukemia Mononuclear	
Islets, Pancreatic		Adenoma	
Kidney		Nephropathy	Moderate
Liver	Bile Duct	Hyperplasia	Moderate
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-3		
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Mammary Gland		Galactocele	
Nose		Inflammation	Chronic Active, Mild
Pituitary Gland		Leukemia Mononuclear	
Skin	Subcut Tiss	Sarcoma	
Note: SARCOMA	TGLs = 1-13		
Note: MANY PLUMP NUCLEI. ?FIBROSARCOMA?			
Spleen		Fibrosis	Moderate
		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 14

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 660

**DOSE:** CONTROL

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: LEUKEMIA MONUC TGLs = 2-3

Stomach	Forestomach	Hyperkeratosis	Moderate
Testes	Interstit Cell	Hyperplasia	Minimal
Thymus		Leukemia Mononuclear	

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:12  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 14	TRT#: 2 DOSE: 2.5%	SEX: Male DISP: Moribund	DAY ON TEST: 695 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Brain	Islets, Pancreatic	Lymph Node - Mandibular	Zymbal's Gland
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OBSERVATIONS

Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Angiectasis	Minimal
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
		Thrombosis	Mild
Note: LEUKEMIA MONUC	TGLs = 4-1		
Pancreas		Leukemia Mononuclear	
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-6		
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation	TGLS = 2-5 ]		
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
[ Atrophy	TGLS = 3-4 ]		

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 14

TRT#: 3

SEX: Male

DAY ON TEST: 711

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Lymph Node - Mesenteric	Nose
Pancreas	Parathyroid Gland	Pituitary Gland	Salivary Glands
Seminal Vesicle	Skin	Thymus	Trachea
Urinary Bladder	Zymbal's Gland		

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
Note: 1991 CONVERSION DISCREPANCY. ORIGINAL DISGNOSIS SITE NOT SPECIFIED.			
Heart		Cardiomyopathy	Minimal
		Leukemia Mononuclear	
Intestine Large	Colon	Parasite	Minimal
Islets, Pancreatic		Carcinoma	
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Moderate
Liver		Angiectasis	Minimal
		Degeneration	Cystic, Minimal
		Fatty Change	Focal, Mild
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 9-3			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 4-1+2			
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
Mammary Gland		Galactocele	
	Acinus	Hyperplasia	Mild
Preputial Gland		Necrosis	Moderate
Note: NECROSIS TGLs = 1-10,2-10			

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 14	TRT#: 3 DOSE: 5.0%	SEX: Male DISP: Moribund	DAY ON TEST: 711 HISTO:
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Prostate		Leukemia Mononuclear Mineralization	Minimal
Spleen Note: LEUKEMIA MONUC TGLs = 8-3.1		Leukemia Mononuclear	
Stomach	Forestomach Forestomach Glandular Glandular	Hyperkeratosis Hyperplasia Hyperplasia Leukemia Mononuclear	Mild Basal Cell, Moderate Mild
Note: 1991 CONVERSION DISCREPANCY. ORIGINAL DIAGNOSIS SITE NOT SPECIFIED.			
Note: HYPERPLASIA TGLs = 10-7.1			
Note: ? LEUKEMIA OR SARCOMA OR FIBROSIS IN SUBMUCOSA			
Testes	Bilateral, Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Mild Mild
Note: ATROPHY TGLs = 5-6 Note: ADENOMA TGLs = 5-6,6-6			
Thyroid Gland	C Cell	Hyperplasia	Mild
PRIMARY CAUSE OF DEATH	-		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 15

TRT#: 1

SEX: Male

DAY ON TEST: 702

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Nose	Pituitary Gland	Preputial Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

MISSING

Mammary Gland	Thymus
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 7-8			
Heart	Artery	Cardiomyopathy	Mild
Note: MODERATE MINERALIZATION OF THE ARTERIAL WALLS			
Kidney	Cortex	Mineralization	Mild
Note: NEPHROPATHY TGLs = 8-4+4.1			
Liver		Angiectasis	Minimal
		Basophilic Focus	
Lung	Bile Duct	Hyperplasia	Mild
		Congestion	Mild
		Hemorrhage	Minimal
		Infiltration Cellular	Histiocyte, Minimal
[ Hemorrhage TGLS = 4-1+2 ]			
Lymph Node	Mandibular	Cyst	
	Mesenteric	Hemorrhage	Mild
Note: HEMORRHAGE TGLs = 5-8			
Pancreas	Artery	Mineralization	Mild
Parathyroid Gland		Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 15

TRT#: 1

SEX: Male

DAY ON TEST: 702

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: HYPERPLASIA TGLs = 11-8

Skin

Note: SKIN MASS TGL #1 IS NECROSED

Spleen

Hematopoietic Cell Proliferation

Minimal

Pigmentation

Mild

Mineralization

Moderate

Stomach

Glandular

Note: MINERALIZATION TGLs = 10-7

Note: DIFFUSE MINERALIZATION OF ARTERIES, GLANDULAR

Note: PARATHYROID GLANDS MAY BE ASSOCIATED WITH MARKED

Note: STOMACH, AND HEART, AND HYPERPLASIA OF THE

Note: CHANGES IN THE KIDNEYS AND MAY ALSO SUGGEST UREMIA

Testes

Bilateral, Interstit Cell

Adenoma

Seminif Tub

Atrophy

Minimal

Note: ADENOMA TGLs = 2-6

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 15

TRT#: 2

SEX: Male

DAY ON TEST: 736

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Zymbal's Gland

Brain

Islets, Pancreatic

Thymus

OBSERVATIONS

Adrenal Gland  
Note: PHEOCHROM BGN TGLs = 7-5

Medulla

Pheochromocytoma Benign

Kidney

Transit Epithe

Hyperplasia  
Nephropathy  
Mixed Cell Focus

Mild  
Moderate

Liver

Note: MIXED CL FOCUS TGLs = 8-1

Lymph Node

Note: ANGIECTASIS TGLs = 6-5

Mediastinal

Angiectasis

Mild

Pancreas

[ Necrosis TGLs = 9-1.1 ]

Artery

Necrosis

Fibrinoid, Mild

Preputial Gland

Note: ADENOMA TGLs = 1-6,2-6

Bilateral

Adenoma

Spleen

Note: HEMA CELL PROL TGLs = 5-5

Hematopoietic Cell Proliferation

Mild

Testes

Note: ADENOMA TGLs = 3-4,4-4

Bilateral, Interstit Cell

Adenoma

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 15

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Pancreas	Parathyroid Gland	Pituitary Gland	Preputial Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
	Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN TGLs = 3-8			
Heart		Cardiomyopathy	Mild
Kidney	Transit Epithe	Hyperplasia	Minimal
		Nephropathy	Moderate
Note: THICKENING OF MESANGIUM AND GLOMERULAR			
Note: BASEMENT MEMBRANE			
Liver		Focal Cellular Change	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Infiltration Cellular	Histiocyte, Minimal
Nose		Inflammation	Acute, Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
		Pigmentation	Minimal
Note: PIGMENT TGLs = 2-3			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
Note: ADENOMA TGLs = 1-6			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 16

TRT#: 1

SEX: Male

DAY ON TEST: 625

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Nose	Preputial Gland
Skin	Stomach - Forestomach	Thyroid Gland	Trachea
Zymbal's Gland			

MISSING

Mammary Gland	Parathyroid Gland
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OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Bone Marrow		Leukemia Mononuclear	
Brain		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
	Papilla	Mineralization	Minimal
		Nephropathy	Mild
Note: LEUKEMIA MONUC	TGLs = 13-4,14-4		
Liver		Fatty Change	Diffuse, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 11-3,12-3		
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-1+2		
Lymph Node	Axillary	Leukemia Mononuclear	
	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-10		
Note: LEUKEMIA MONUC	TGLs = 1-9.1		
Note: LEUKEMIA MONUC	TGLs = 7-9.1		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

**ANIMAL ID:** 16

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 625

**DOSE:** CONTROL

**DISP:** Dead

**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

Pancreas		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 9-9,10-9		
Pituitary Gland		Leukemia Mononuclear	
Prostate		Leukemia Mononuclear	
Salivary Glands		Leukemia Mononuclear	
Seminal Vesicle		Leukemia Mononuclear	
Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 8-3		
Stomach	Glandular	Leukemia Mononuclear	
Note: 1991 CONVERSION DISCREPANCY. ORIGINAL DIAGNOSIS SITE NOT SPECIFIED.			
Testes	Interstit Cell	Adenoma	
	Interstit Cell	Hyperplasia	Mild
Thymus		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 2-2		
Urinary Bladder		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-9,15-9		

PRIMARY CAUSE OF DEATH

-

Animal Note: LEUKEMIA CELLS IN MANY ORGANS ARE AUTOLYZED.

Animal Note: C.O.D.:PROBABLY LEUKEMIA.

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:12  
First Dose M/F: NA / NA  
Lab: TSI MASON

ANIMAL ID: 16	TRT#: 2 DOSE: 2.5%	SEX: Male DISP: Dead	DAY ON TEST: 723 HISTO:
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
<b>NORMAL</b>			
Brain	Pancreas	Zymbal's Gland	
<b>OBSERVATIONS</b>			
Islets, Pancreatic		Hyperplasia	Mild
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 4-1			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
[ Angiectasis TGLs = 5-4 ]			
Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 2-5			
Testes	Bilateral, Interstit Cell	Adenoma	
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA TGLs = 3-4			
PRIMARY CAUSE OF DEATH	-		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 16

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Epididymis  
Intestine Large - Rectum  
Islets, Pancreatic  
Parathyroid Gland  
Seminal Vesicle  
Thymus  
Zymbal's Gland

Bone  
Esophagus  
Intestine Small - Duodenum  
Lymph Node - Mandibular  
Preputial Gland  
Skin  
Thyroid Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mesenteric  
Prostate  
Stomach - Forestomach  
Trachea

Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Pancreas  
Salivary Glands  
Stomach - Glandular  
Urinary Bladder

**MISSING**

Mammary Gland

**OBSERVATIONS**

Adrenal Gland  
Heart  
Kidney  
Liver

Medulla

Hyperplasia  
Cardiomyopathy  
Nephropathy  
Angiectasis  
Basophilic Focus  
Clear Cell Focus

Minimal  
Mild  
Moderate  
Mild

Lung  
Nose  
Pituitary Gland  
Spleen

Bile Duct

Hyperplasia  
Infiltration Cellular  
Inflammation

Mild  
Histiocyte, Minimal  
Acute, Mild

Note: PIGMENT TGLs = 3-3  
Testes

Pars Distalis

Hyperplasia  
Hematopoietic Cell Proliferation  
Pigmentation

Minimal  
Minimal  
Minimal

Bilateral, Interstit Cell  
Seminif Tub  
Interstit Cell

Adenoma  
Atrophy  
Hyperplasia

Mild  
Minimal

Note: ADENOMA TGLs = 1-6,2-6

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 17

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Pancreas	Parathyroid Gland	Pituitary Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder			

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Islets, Pancreatic		Adenoma	
Kidney	Transit Epithe	Cyst	
		Hyperplasia	Minimal
		Nephropathy	Moderate
<p>Note: CYST TGLs = 9-4.1</p> <p>Note: NEPHROPATHY TGLs = 8-4+4.1</p> <p>Note: MESENCHYMAL CELLS, WITH FUSIFORM OR ROUND NUCLEI</p> <p>Note: SURROUND THE CYST AND A FEW DISTENDED TUBULES</p> <p>Note: FIBROSIS OR AN EARLY NEPHROBLASTOMA.</p> <p>Note: IN THE VICINITY. THESE CHANGES EITHER SUGGEST</p>			
Liver		Basophilic Focus	
		Hepatodiaphragmatic Nodule	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
<p>Note: ANOM HEPAT LOB TGLs = 11-13</p>			
Mammary Gland		Fibroadenoma	
<p>Note: FIBROADENOMA TGLs = 1-13</p>			
Spleen		Hematopoietic Cell Proliferation	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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**ANIMAL ID:** 17

**TRT#:** 1  
**DOSE:** CONTROL

**SEX:** Male  
**DISP:** Terminal Sacrifice

**DAY ON TEST:** 737  
**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Testes

Bilateral, Interstit Cell  
Seminif Tub  
Interstit Cell

Leukemia Mononuclear  
Adenoma  
Atrophy  
Hyperplasia

Mild  
Minimal

Note: ADENOMA TGLs = 3-6,4-6

Zymbal's Gland

Cyst

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 17

TRT#: 2

SEX: Male

DAY ON TEST: 736

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Islets, Pancreatic	Testes	Thymus
Trachea			

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Kidney	Transit Epithe	Hyperplasia	Minimal
		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 6-2		
Liver	Bile Duct	Hyperplasia	Mild
Lung		Congestion	Mild
Note: CONGESTION	TGLs = 4-5+6		
Lymph Node	Mandibular	Angiectasis	Mild
	Mediastinal	Angiectasis	Mild
Note: ANGIECTASIS	TGLs = 2-7,3-6		
Pancreas	Acinus	Adenoma	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 7-7		
Skin	Subcut Tiss	Fibroma	
[ Fibroma TGLS = 1-8+8.1 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 17

TRT#: 3

SEX: Male

DAY ON TEST: 589

DOSE: 5.0%

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Ear
Epididymis	Eye	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Mesentery	Nose	Pancreas
Preputial Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Zymbal's Gland			

MISSING

Esophagus	Parathyroid Gland
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OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 7-2		
Kidney		Leukemia Mononuclear	
	Papilla	Mineralization	Minimal
Note: LEUKEMIA MONUC	TGLs = 10-4		
Liver		Fatty Change	Diffuse, Mild
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 11,12-3+13		
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Mesenteric	Necrosis	Mild
Note: LEUKEMIA MONUC	TGLs = 2-9,9-9		
Note: LEUKEMIA MONUC	TGLs = 6-2		

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 17	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Dead	<b>DAY ON TEST:</b> 589 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Mammary Gland Note: ADENOCARC TGLs = 3-13		Adenocarcinoma	
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Prostate		Necrosis	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 8-3			
Stomach	Forestomach	Hyperkeratosis	Mild
Testes	Seminif Tub	Atrophy	Mild
Note: ATROPHY TGLs = 4-6			
Urinary Bladder		Calculus Gross Observation	
		Calculus Micro Observation Only	
Note: CALCUS GRO OBS TGLs = 5-9			

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PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 18

TRT#: 1

SEX: Male

DAY ON TEST: 632

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Epididymis	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Nose
Preputial Gland	Prostate	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thyroid Gland	Trachea
Zymbal's Gland			

MISSING

Mammary Gland	Parathyroid Gland
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 7-8		
Brain		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Mild
		Leukemia Mononuclear	
Note: SECONDARY TO MCL			
Note: LEUKEMIA MONUC	TGLs = 6-3		
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 1-9		
Pancreas		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-9		
Pituitary Gland	Pars Distalis	Hyperplasia	Focal, Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

**ANIMAL ID:** 18

**TRT#:** 1  
**DOSE:** CONTROL

**SEX:** Male  
**DISP:** Moribund

**DAY ON TEST:** 632  
**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

Seminal Vesicle

Spleen

Note: LEUKEMIA MONUC TGLs = 2-3

Testes

Note: ADENOMA TGLs = 4-6,5-6

Thymus

Urinary Bladder

Bilateral, Interstit Cell  
Seminif Tub  
Interstit Cell

Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear

Adenoma  
Atrophy  
Hyperplasia

Mild  
Minimal

Leukemia Mononuclear  
Leukemia Mononuclear

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 18

TRT#: 2

DOSE: 2.5%

SEX: Male

DISP: Terminal Sacrifice

DAY ON TEST: 737

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Islets, Pancreatic	Mammary Gland	Pancreas
Skin	Zymbal's Gland		

OBSERVATIONS

Eye	Lens	Cataract	Moderate
Note: CATARACT	TGLs = 1-6		
Kidney		Nephropathy	Mild
Note: NEPHROPATHY	TGLs = 6-2		
Liver		Angiectasis	Mild
		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 9-7		
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 7-5 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 4-4,5-4		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 18

TRT#: 3

SEX: Male

DAY ON TEST: 709

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Pituitary Gland	Preputial Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Trachea	Urinary Bladder	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
	Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN TGLs = 7-8			
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-2.1			
Kidney		Nephropathy	Moderate
Liver		Angiectasis	Minimal
		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Infiltration Cellular	Histiocyte, Minimal
		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 4-2			
Note: LEUKEMIA MONUC TGLs = 1-9,2-9			
Nose			
Note: BLOOD IN TURBINATES			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

**ANIMAL ID:** 18

**TRT#:** 3  
**DOSE:** 5.0%

**SEX:** Male  
**DISP:** Moribund

**DAY ON TEST:** 709  
**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

Spleen [ Leukemia Mononuclear TGLS = 6-3 ]		Leukemia Mononuclear	
Testes	Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Mild Minimal
Note: ADENOMA Thymus Thyroid Gland	TGLs = 5-6 C Cell	Leukemia Mononuclear Adenoma	
PRIMARY CAUSE OF DEATH	-		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 19

TRT#: 1

SEX: Male

DAY ON TEST: 640

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Eye	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Pituitary Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
Preputial Gland		Carcinoma	
Note: CARCINOMA	TGLs = 1-13		
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal

[ Hyperplasia TGLS = 3-6 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 19

TRT#: 2

SEX: Male

DAY ON TEST: 736

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Islets, Pancreatic	Lung	Pancreas
Seminal Vesicle	Trachea		

**OBSERVATIONS**

Islets Panc			
Note: LARGE ISLETS			
Kidney		Nephropathy	Marked
Liver		Clear Cell Focus	
	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
		Adenoma	
Preputial Gland			
Note: ADENOMA TGLs = 1-8			
Skin		Squamous Cell Papilloma	
Note: PAPILOMA SQUA TGLs = 2-7			
Testes	Bilateral, Interstit Cell	Adenoma	
Note: ADENOMA TGLs = 5-4			
Tongue		Squamous Cell Papilloma	
Note: PAPILOMA SQUA TGLs = 3-7			
Zymbal's Gland		Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 19

TRT#: 3

SEX: Male

DAY ON TEST: 669

DOSE: 5.0%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Parathyroid Gland	Pituitary Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

**MISSING**

Mammary Gland

**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Pancreas	Acinus	Adenoma	
Skin	Subcut Tiss	Fibrosarcoma	
Note: FIBROSARC	TGLs = 1-13		
Spleen		Hematopoietic Cell Proliferation	Moderate
Note: HEMA CELL PROL	TGLs = 4-3		
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 2-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 20

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Nose	Pancreas	Parathyroid Gland	Preputial Gland
Salivary Glands	Seminal Vesicle	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Mammary Gland	Thymus
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Intestine Large	Colon	Parasite	Mild
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 6-4			
Liver	Bile Duct	Basophilic Focus	
		Hyperplasia	Moderate
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 8-3			
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 5-9			
Nose			
Note: BLOOD IN NASAL TURBINATE			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Prostate		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 20	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Skin Note: HYPERKERATOSIS TGLs = 1-13		Hyperkeratosis	Marked
Spleen [ Leukemia Mononuclear TGLS = 4-3 ]		Leukemia Mononuclear	
Testes Note: ADENOMA TGLs = 2-6,3-6	Bilateral, Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Mild Minimal
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 20

TRT#: 2

SEX: Male

DAY ON TEST: 735

DOSE: 2.5%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Eye	Harderian Gland	Islets, Pancreatic	Preputial Gland
Zymbal's Gland			

**OBSERVATIONS**

Brain		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 7-3.1		
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 6-1		
Pancreas		Leukemia Mononuclear	
Spleen		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLS = 5-5 ]		
Stomach	Glandular	Inflammation	Chronic, Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	[ Adenoma TGLS = 4-4 ]		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 20

TRT#: 3

SEX: Male

DAY ON TEST: 703

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Brain	Epididymis	Esophagus
Eye	Harderian Gland	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Mammary Gland	Parathyroid Gland	Salivary Glands	Skin
Thyroid Gland	Trachea	Zymbal's Gland	

MISSING

Islets, Pancreatic	Pancreas
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Bone Marrow		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Inflammation	Acute, Mild
		Leukemia Mononuclear	
Note: FOCI OF MINERALIZATION OR FUNGAL GRANULOMA			
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 8-4			
Note: INFLAMMATION TGLs = 9-4			
Note: SUGGESTION OF PYELONEPHRITIS IN ONE KIDNEY			
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: HYPERPLASIA TGLs = 7-3			
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Mesentery	Fat	Mineralization	Minimal
	Fat	Necrosis	Moderate
Nose		Inflammation	Acute, Minimal
Pituitary Gland	Pars Distalis	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

<b>ANIMAL ID:</b> 20	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 703 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
	Pars Distalis	Hyperplasia Leukemia Mononuclear Necrosis	Minimal
Preputial Gland Note: NECROSIS TGLs = 2-10			Moderate
Prostate Note: INFLAMMATION TGLs = 4-6		Inflammation	Chronic Active, Moderate
Seminal Vesicle		Leukemia Mononuclear	
Spleen Note: LEUKEMIA MONUC TGLs = 6-3		Leukemia Mononuclear	
Stomach	Forestomach	Leukemia Mononuclear	
	Glandular	Leukemia Mononuclear	
Testes Note: INTERSTITIAL CELL TUMOR IN ONE TESTIS Note: ADENOMA TGLs = 3-6	Interstit Cell Interstit Cell	Adenoma Hyperplasia	Minimal
Thymus		Leukemia Mononuclear	
Urinary Bladder		Leukemia Mononuclear	
<b>PRIMARY CAUSE OF DEATH</b>	-		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 21

TRT#: 1

SEX: Male

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mesenteric
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Preputial Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Zymbal's Gland		

**MISSING**

Prostate

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Minimal
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
Lymph Node	Bile Duct	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 1	Mandibular	Hemorrhage	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
Note: ADENOMA TGLs = 4-8	Pars Distalis	Angiectasis	Mild
Spleen		Pigmentation	Mild
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Moderate
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA TGLs = 3-6			
Thyroid Gland	Follicular Cel	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 21

TRT#: 2

SEX: Male

DAY ON TEST: 630

DOSE: 2.5%

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Epididymis	Esophagus
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Mammary Gland	Nose	Pituitary Gland
Preputial Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Intestine Large - Cecum	Islets, Pancreatic	Parathyroid Gland
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Brain		Hemorrhage	Mild
		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Leukemia Mononuclear	
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 4-9			
Pancreas		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-9			
Prostate		Inflammation	Chronic Active, Mild
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-3 ]			
Stomach	Glandular	Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 21	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Dead	<b>DAY ON TEST:</b> 630 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: ADENOMA	TGLs = 1-6	Seminif Tub	Atrophy
Thymus			Leukemia Mononuclear
Thyroid Gland			Leukemia Mononuclear

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 21

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Mammary Gland	Nose	Parathyroid Gland	Preputial Gland
Salivary Glands	Seminal Vesicle	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
	Renal Tubule	Necrosis	Minimal
		Nephropathy	Moderate
Liver		Leukemia Mononuclear	
Lymph Node	Mesenteric	Angiectasis	Mild
	Renal	Infiltration Cellular	Histiocyte, Mild
	Renal	Pigmentation	Mild
Note: INFILTRAT CELL TGLs = 7-4			
Pancreas	Acinus	Hyperplasia	Focal, Minimal
Pituitary Gland	Pars Distalis	Hyperplasia	Minimal
Prostate	Epithelium	Hyperplasia	Minimal
Skin	Subcut Tiss	Fibroma	Multiple
	Note: FIBROMA TGLs = 1-13,2-13.1		
Spleen		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
		Pigmentation	Minimal
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Note: ADENOMA TGLs = 5-6,6-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 22

TRT#: 1

SEX: Male

DAY ON TEST: 711

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Parathyroid Gland	Pituitary Gland
Salivary Glands	Seminal Vesicle	Spleen	Stomach - Forestomach
Stomach - Glandular	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Epididymis		Mineralization	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 8-4		
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
		Adenoma	
Preputial Gland			
Note: ADENOMA	TGLs = 3-10		
Prostate		Inflammation	Chronic Active, Mild
Skin	Subcut Tiss	Fibroma	
Note: FIBROMA	TGLs = 1-13		
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 5-6,6-6		
Thyroid Gland	C Cell	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 22

TRT#: 2

SEX: Male

DAY ON TEST: 730

DOSE: 2.5%

DISP: Dead

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain

Islets, Pancreatic

Preputial Gland

Zymbal's Gland

**OBSERVATIONS**

Kidney

Nephropathy

Mild

Liver

Angiectasis

Mild

Basophilic Focus

Bile Duct

Hyperplasia

Mild

Leukemia Mononuclear

Note: THICK FIBROUS CAPSULE AROUND ONE SECTION

Pancreas

Acinus

Hyperplasia

Mild

Note: HYPERPLASIA TGLs = 4-1

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 3-5 ]

Testes

Interstit Cell

Adenoma

Seminif Tub

Atrophy

Marked

Interstit Cell

Hyperplasia

Minimal

Note: ADENOMA TGLs = 2-4

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 22

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mandibular	Mammary Gland	Nose	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Thymus	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Parathyroid Gland

OBSERVATIONS

Adrenal Gland	Cortex	Hyperplasia	Minimal
	Medulla	Hyperplasia	Minimal
	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Marked
Note: NEPHROPATHY	TGLs = 6-4+4.1		
Liver		Basophilic Focus	
		Degeneration	Cystic, Mild
	Bile Duct	Hyperplasia	Mild
Note: DEGEN	TGLs = 14-3		
Lung		Infiltration Cellular	Histiocyte, Minimal
Lymph Node	Mesenteric	Infiltration Cellular	Histiocyte, Mild
	Pancreatic	Infiltration Cellular	Plasma Cell, Mild
Note: INFILTRAT CELL	TGLs = 12-9,13-8		
Mesentery	Fat	Pigmentation	Moderate
Note: PIGMENT	TGLs = 2-13		
Pancreas	Acinus	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	Multiple
	Pars Distalis	Angiectasis	Mild
	Pars Intermed	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 22	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Preputial Gland		Dilatation Hyperplasia	Mild Moderate
Note: HYPERPLASIA	TGLs = 1-10		
Spleen		Hematopoietic Cell Proliferation Pigmentation	Mild Mild
Stomach	Glandular	Hyperplasia	Mild
Testes	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Mild
Note: ATROPHY	TGLs = 3-6		
Note: ADENOMA	TGLs = 4-6		
Thyroid Gland	C Cell	Carcinoma	
Note: CARCINOMA	TGLs = 7-8.1		

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 23

TRT#: 1

SEX: Male

DAY ON TEST: 479

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Liver	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Pituitary Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

**MISSING**

Parathyroid Gland

**OBSERVATIONS**

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Epididymis		Mineralization	Minimal
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
Preputial Gland		Carcinoma	
Note: CARCINOMA	TGLs = 1-10+10.1		
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 23

TRT#: 2

SEX: Male

DAY ON TEST: 711

DOSE: 2.5%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Islets, Pancreatic	Pancreas	Seminal Vesicle
Trachea	Zymbal's Gland		

**OBSERVATIONS**

Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
Lung		Alveolar/Bronchiolar Adenoma	
Note: ALV BRON ADEN	TGLs = 4-5		
Skin		Acanthosis	Mild
		Hyperkeratosis	Marked
[ Hyperkeratosis TGLS = 1-7 ]			
Spleen		Hematopoietic Cell Proliferation	Minimal
		Pigmentation	Moderate
Note: CONGESTED			
[ Hematopoietic Cell Proliferation TGLS = 6-6 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 2,3-4		
Note: ATROPHY	TGLs = 3-4		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 23

TRT#: 3

SEX: Male

DAY ON TEST: 641

DOSE: 5.0%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Pancreas	Parathyroid Gland	Salivary Glands	Seminal Vesicle
Skin	Spleen	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Zymbal's Gland

**MISSING**

Mammary Gland

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Mild
	Bilateral, Medulla	Pheochromocytoma Benign	
Bone	Tarsal	Hyperostosis	Mild
Note: HYPEROSTOSIS	TGLs = 11-13		
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 8-4		
Liver		Degeneration	Cystic, Minimal
	Bile Duct	Hyperplasia	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Hyperplasia	Mild
Note: ADENOMA	TGLs = 10-8		
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 2-10		
Prostate		Inflammation	Chronic Active, Mild
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA	TGLs = 6-6		
Thyroid Gland	C Cell	Carcinoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 23

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 641

**DOSE:** 5.0%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: CARCINOMA      TGLs = 3-8

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 24

TRT#: 1

SEX: Male

DAY ON TEST: 577

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Epididymis	Esophagus	Eye	Intestine Small - Duodenum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Pancreas
Parathyroid Gland	Preputial Gland	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Testes	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland	Nose
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AUTO PRECLUDES DIAG.

Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Ileum
Intestine Small - Jejunum	Stomach - Glandular		

OBSERVATIONS

Brain		Hemorrhage	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
Liver		Fatty Change	Focal, Minimal
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Alveolar/Bronchiolar Adenoma	
		Congestion	Moderate
		Edema	Mild
[ Congestion TGLS = 2-1.1 ]			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 1-8			
Prostate		Inflammation	Chronic Active, Mild
Spleen		Leukemia Mononuclear	
		Pigmentation	Minimal
Thymus		Depletion Lymphoid	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 24

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 577

**DOSE:** CONTROL

**DISP:** Dead

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

PRIMARY CAUSE OF DEATH

-

Animal Note: C.O.D.:PROBABLY 1)PULMONARY EDEMA; 2)PITUITARY &

Animal Note: LUNG TUMORS.

Animal Note: VARYING DEGREES OF AUTOLYSIS IN MANY TISSUES.

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:12  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 24	TRT#: 2 DOSE: 2.5%	SEX: Male DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Brain	Zymbal's Gland
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**OBSERVATIONS**

Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
		Clear Cell Focus	
		Leukemia Mononuclear	
Pancreas	Acinus	Adenoma	
	Acinus	Hyperplasia	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Moderate
[ Atrophy TGLS = 1-4,2-4 ]			

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 24

TRT#: 3

SEX: Male

DAY ON TEST: 687

DOSE: 5.0%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Coagulating Gland  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Parathyroid Gland  
Seminal Vesicle  
Urinary Bladder

Adrenal Gland - Medulla  
Epididymis  
Intestine Large - Rectum  
Islets, Pancreatic  
Mammary Gland  
Preputial Gland  
Skin

Bone  
Esophagus  
Intestine Small - Duodenum  
Liver  
Nose  
Prostate  
Thyroid Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Pancreas  
Salivary Glands  
Trachea

**MISSING**

Thymus

**OBSERVATIONS**

Brain	Cerebellum	Carcinoma Hemorrhage	Metastatic (Zymbal'S Gland) Mild
Note: HEMORRHAGE TGLs = 6-5			
Heart		Cardiomyopathy	Mild
Note: CARDIOMYOPATHY TGLs = 4-2+2.1			
Note: INCREASE OF ANITSCHKOW MYOCYTE IN FIBROTIC AREA			
Kidney	Renal Tubule	Nephropathy Pigmentation	Mild Minimal
Lung		Congestion Inflammation	Mild Chronic Active, Minimal
Nose			
Note: BLOOD IN TURBINATES			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
Stomach	Glandular Forestomach	Degeneration Hyperkeratosis	Minimal Minimal
Testes	Bilateral, Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Mild Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 24

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 687

**DOSE:** 5.0%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: ADENOMA TGLs = 5-6

Zymbal's Gland

Carcinoma

Note: CARCINOMA TGLs = 3-13

Note: MORE A SQUAMOUS CELL CARCINOMA

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**PRIMARY CAUSE OF DEATH**

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 25

TRT#: 1

SEX: Male

DAY ON TEST: 639

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Pancreas	Parathyroid Gland	Preputial Gland	Salivary Glands
Seminal Vesicle	Skin	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Epididymis	Esophagus
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OBSERVATIONS

Heart		Cardiomyopathy	Minimal
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
Note: NECROSIS	TGLs = 6-3		
Mammary Gland		Galactocele	
Note: GALACTOCELE	TGLs = 1-10		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: PITUITARY TUMOR INFILTRATED INTO THE BRAIN.			
Note: ADENOMA	TGLs = 7-8		
Prostate		Inflammation	Chronic Active, Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Forestomach	Acanthosis	Minimal
	Forestomach	Fibrosis	Mild
	Forestomach	Hyperkeratosis	Minimal
	Forestomach	Necrosis	Moderate
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 25

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 639

**DOSE:** CONTROL

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: ADENOMA      TGLs = 2-6,3-6

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 25

TRT#: 2

SEX: Male

DAY ON TEST: 564

DOSE: 2.5%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Epididymis	Esophagus	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Pancreas	Parathyroid Gland
Preputial Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thyroid Gland	Trachea
Zymbal's Gland			

MISSING

Intestine Small - Ileum	Mammary Gland
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-8,4-8		
Bone Marrow		Leukemia Mononuclear	
Brain		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Intestine Large	Cecum	Leukemia Mononuclear	
Intestine Small	Duodenum	Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Fatty Change	Focal, Mild
		Leukemia Mononuclear	
Lung		Atelectasis	Mild
		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
	Pars Intermed	Hyperplasia	Mild
		Leukemia Mononuclear	
Prostate		Inflammation	Chronic Active, Mild
Spleen		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 25	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 564 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Leukemia Mononuclear TGLS = 2-3 ]

Testes	Interstitial Cell	Hyperplasia Leukemia Mononuclear	Mild
Note: LEUKEMIA MONUC TGLs = 1-6			
Thymus		Leukemia Mononuclear	
Urinary Bladder		Calculus Micro Observation Only Leukemia Mononuclear	

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 25

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Medulla	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Prostate	Salivary Glands	Seminal Vesicle
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Zymbal's Gland		

OBSERVATIONS

Adrenal Gland Note: HEMORRHAGE TGLs = 8-8	Cortex	Hemorrhage	Mild
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Intestine Small Note: HYPERPLASIA TGLs = 7-7	Ileum, Lymphoid Tiss	Hyperplasia	Mild
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Liver		Basophilic Focus	
Lung		Hemorrhage	Minimal
		Infiltration Cellular	Histiocyte, Minimal
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Preputial Gland		Adenoma	
		Necrosis	Mild
Note: ADENOMA TGLs = 3-10			
Note: NECROSIS TGLs = 2-10			
Skin		Acanthosis	Mild
		Hyperkeratosis	Marked
		Keratoacanthoma	
Note: KERATOACANTHMA TGLs = 1-13			
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:12  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 25	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: ADENOMA Thyroid Gland	TGLs = 5-6,6-6 Seminif Tub C Cell	Atrophy Hyperplasia	Mild Minimal
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 26

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mesenteric
Nose	Pancreas	Parathyroid Gland	Preputial Gland
Salivary Glands	Seminal Vesicle	Skin	Spleen
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder		

OBSERVATIONS

Adrenal Gland	Bilateral, Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 4-4		
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Lymph Node	Mandibular	Cyst	
Mammary Gland		Galactocele	
Note: GALACTOCELE	TGLs = 1-10+13		
Mesentery	Fat	Mineralization	Minimal
	Fat	Necrosis	Moderate
Note: NECROSIS	TGLs = 3-10		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 5-8		
Prostate		Inflammation	Chronic Active, Moderate
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 2-6		
Zymbal's Gland		Cyst	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 26

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 737

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 26

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Islets, Pancreatic	Pancreas	Zymbal's Gland
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**OBSERVATIONS**

Brain			
Note: INDENTATION AND DISTENDED VENTRICLES			
Ear		Sarcoma	
Note: SARCOMA TGLs = 1-5			
Kidney		Nephropathy	Mild
Liver	Bile Duct	Hyperplasia	Mild
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: MORE LIKE A CARCINOMA [ Angiectasis TGLS = 4-5 ]			
Preputial Gland		Inflammation	Acute, Mild
Note: INFLAMMATION TGLs = 2-4			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA TGLs = 3-4			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:12

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 26

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Ear	Epididymis	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Pancreas	Parathyroid Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	

MISSING

Mammary Gland	Zymbal's Gland
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OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Liver		Basophilic Focus	
		Degeneration	Cystic, Mild
		Focal Cellular Change	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
		Leukemia Mononuclear	
Lung			
Note: LEUKEMIA MONUC	TGLs = 1-1+2		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Fibrosis	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-3		
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Moderate
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA	TGLs = 3-6		
Note: ATROPHY	TGLs = 2-6		

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 26

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 735

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:12

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 27

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 413

**DOSE:** CONTROL

**DISP:** Dead

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**MISSING**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Cecum  
Intestine Small - Ileum  
Liver  
Mammary Gland  
Pituitary Gland  
Seminal Vesicle  
Stomach - Glandular  
Trachea

Adrenal Gland - Medulla  
Epididymis  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lung  
Nose  
Preputial Gland  
Skin  
Testes  
Urinary Bladder

Bone  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Lymph Node - Mandibular  
Pancreas  
Prostate  
Spleen  
Thymus  
Zymbal's Gland

Bone Marrow  
Heart  
Intestine Small - Duodenum  
Kidney  
Lymph Node - Mesenteric  
Parathyroid Gland  
Salivary Glands  
Stomach - Forestomach  
Thyroid Gland

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**PRIMARY CAUSE OF DEATH**

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
 Test Type: CHRONIC  
 Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
 Test Compound: Pentaerythritol tetranitrate  
 CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
 Time Report Requested: 18:40:13  
 First Dose M/F: NA / NA  
 Lab: TSI MASON

ANIMAL ID: 27	TRT#: 2 DOSE: 2.5%	SEX: Male DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Islets, Pancreatic	Pancreas	Zymbal's Gland
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**OBSERVATIONS**

Kidney	Transit Epithe	Hyperplasia Nephropathy	Minimal Moderate
Note: NEPHROPATHY TGLs = 5-2			
Liver	Bile Duct	Hyperplasia Leukemia Mononuclear	Mild
Pituitary Gland	Pars Distalis Pars Distalis	Adenoma Angiectasis	Mild
[ Angiectasis TGLS = 6-7 ]			
Preputial Gland		Adenoma	
Note: ADENOMA TGLs = 1-6			
Skin	Scrotal	Fibroma	
Note: FIBROMA TGLs = 4-4			
Testes	Seminif Tub	Atrophy	Moderate
Note: ATROPHY TGLs = 3-4			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 27

TRT#: 3

SEX: Male

DAY ON TEST: 707

DOSE: 5.0%

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Epididymis	Lymph Node - Mandibular	Nose
Pancreas	Preputial Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Thymus
Thyroid Gland	Trachea		

MISSING

Esophagus	Mammary Gland	Parathyroid Gland	Zymbal's Gland
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AUTO PRECLUDES DIAG.

Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mesenteric
Stomach - Glandular	Urinary Bladder		

OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Note: POOL OF BLOOD IN ATRIUM			
Kidney	Cortex	Mineralization	Mild
		Nephropathy	Minimal
		Necrosis	Moderate
Liver		Alveolar/Bronchiolar Adenoma	
Note: NECROSIS TGLs = 9-3		Congestion	Minimal
Lung		Inflammation	Chronic Active, Mild
[ Congestion TGLS = 4-1+2 ]			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Hyperplasia	Mild
Note: ADENOMA TGLs = 10-8			
Spleen		Depletion Lymphoid	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA TGLs = 1-6,2-6			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 27

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 707

**DOSE:** 5.0%

**DISP:** Dead

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 28

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland	Pancreas
Parathyroid Gland	Preputial Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Islets, Pancreatic		Adenoma	
[ Adenoma TGLS = 3-9 ]			
Kidney		Cyst	
Note: NEPHROPATHY TGLs = 5-4		Nephropathy	Moderate
Liver	Bile Duct	Hepatodiaphragmatic Nodule	
Note: ANOM HEPAT LOB TGLs = 6-3		Hyperplasia	Minimal
Lung		Leukemia Mononuclear	
Note: CONGESTION TGLs = 1-1		Mixed Cell Focus	
Nose		Congestion	Mild
Note: BLOOD IN TURBINATES			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Minimal
Note: LEUKEMIA MONUC TGLs = 4-3+3.1		Leukemia Mononuclear	
Note: AN EARLY LEUKEMIA			

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 28	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Testes  Note: ADENOMA      TGLs = 2-6	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Mild
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 28

TRT#: 2

DOSE: 2.5%

SEX: Male

DISP: Moribund

DAY ON TEST: 644

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Preputial Gland	Prostate
Salivary Glands	Seminal Vesicle	Stomach - Forestomach	Stomach - Glandular
Thymus	Urinary Bladder	Zymbal's Gland	

MISSING

Parathyroid Gland

OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 9-4+4.1		
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 11-3+3.1		
Lung		Hemorrhage	Minimal
		Infiltration Cellular	Histiocyte, Moderate
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 8-1+2		
Lymph Node	Lumbar	Infiltration Cellular	Histiocyte, Mild
	Mediastinal	Infiltration Cellular	Histiocyte, Mild
	Mediastinal	Leukemia Mononuclear	
Note: INFILTRAT CELL	TGLs = 7-2,13-10		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Skin		Squamous Cell Carcinoma	
Note: SQUAM CEL CARC	TGLs = 2-13,3-13		

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 28	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 644 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Spleen		Hematopoietic Cell Proliferation Hemorrhage Leukemia Mononuclear	Mild Mild
Note: LEUKEMIA MONUC TGLs = 12-3			
Testes	Interstit Cell Interstit Cell	Adenoma Hyperplasia	Mild
[ Hyperplasia TGLS = 4-6 ]			
Thyroid Gland	C Cell	Adenoma	
Note: ADENOMA TGLs = 6-8			

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 28

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Nose
Parathyroid Gland	Salivary Glands	Seminal Vesicle	Thyroid Gland
Trachea			

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Islets, Pancreatic		Adenoma	
Kidney		Nephropathy	Moderate
	Renal Tubule	Pigmentation	Mild
		Angiectasis	Mild
		Developmental Malformation	
		Hemorrhage	Marked
	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Focal, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 11-3		
Note: SECONDARY TO MCL			
Lung		Infiltration Cellular	Histiocyte, Moderate
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-1+2		
Lymph Node	Lumbar	Leukemia Mononuclear	
	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 28	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
	Pancreatic	Leukemia Mononuclear	
	Renal	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-9		
Note: LEUKEMIA MONUC	TGLs = 12-3.1		
Note: LEUKEMIA MONUC	TGLs = 13-3		
Note: LEUKEMIA MONUC	TGLs = 4-2		
Note: LEUKEMIA MONUC	TGLs = 9-9		
Mammary Gland		Galactocele	
Note: GALACTOCELE	TGLs = 2-13+14		
Pancreas		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 14-8		
Preputial Gland		Necrosis	Minimal
Prostate		Inflammation	Chronic Active, Mild
Skin		Hyperkeratosis	Moderate
		Inflammation	Chronic Active, Mild
Note: HYPERKERATOSIS	TGLs = 1-13		
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 10-3.1 ]			
Stomach	Forestomach	Edema	Mild
	Forestomach	Hyperkeratosis	Mild
	Glandular	Leukemia Mononuclear	
Note: 1991 CONVERSION DISCREPANCY. ORIGINAL DIAGNOSIS SITE NOT SPECIFIED.			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 7-6,8-6		
Thymus		Leukemia Mononuclear	
Urinary Bladder		Leukemia Mononuclear	
PRIMARY CAUSE OF DEATH	-		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 29

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Eye	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Nose	Pancreas	Parathyroid Gland	Preputial Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

**MISSING**

Mammary Gland

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN TGLs = 5-8			
Eye			
Note: THE RETINA ARE NOT WELL PRESERVED.			
Note: LENS EPITHELIUM APPEARS NORMAL. ALL LAYERS OF			
Note: ANTERIOR CHAMBER DISTENDED.			
Heart		Cardiomyopathy	Minimal
Kidney		Cyst	
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 6-4			
Liver		Basophilic Focus	
		Clear Cell Focus	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lymph Node	Mesenteric	Degeneration	Cystic, Mild
Nose			
Note: BLOOD IN NASAL TURBINATES			
Pituitary Gland	Pars Distalis	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

<b>ANIMAL ID:</b> 29	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
	Pars Distalis	Angiectasis	Minimal
	Pars Distalis	Hyperplasia	Mild
Note: ADENOMA TGLs = 7-8 Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear Pigmentation	Minimal
Note: LEUKEMIA MONUC TGLs = 4-3 Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA TGLs = 2-6,3-6			
<b>PRIMARY CAUSE OF DEATH</b>	-		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

<b>ANIMAL ID:</b> 29	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 674 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
<b>NORMAL</b>			
Brain	Eye	Harderian Gland	Islets, Pancreatic
Pancreas			
<b>OBSERVATIONS</b>			
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
Lymph Node	Pancreatic	Infiltration Cellular	Histiocyte, Mild
Note: INFILTRAT CELL TGLs = 3-1.1			
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA TGLs = 2-4			
Zymbal's Gland		Cyst	
<b>PRIMARY CAUSE OF DEATH</b>	-		

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 29

TRT#: 3

SEX: Male

DAY ON TEST: 735

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Mammary Gland	Nose
Pancreas	Parathyroid Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
Lymph Node	Mesenteric	Degeneration	Cystic, Mild
Note: DEGEN	TGLs = 10-8		
Mesentery	Fat	Necrosis	Mild
	Fat	Pigmentation	Moderate
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 9-8		
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10+10.1		
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 6-6,7-6		
Thyroid Gland	C Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 30

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Parathyroid Gland	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Minimal
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Degeneration	Cystic, Minimal
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Alveolar/Bronchiolar Carcinoma	
		Atelectasis	Mild
		Infiltration Cellular	Histiocyte, Moderate
Note: ALV BRON CARC	TGLs = 3-1+3		
Pituitary Gland	Pars Distalis	Cyst	
Preputial Gland		Dilatation	Moderate
		Inflammation	Chronic Active, Mild
Note: DESQUAMATION IN DUCT AND INCREASED CELLULARITY			
Note: DILATATION	TGLs = 1-10		
Prostate		Inflammation	Chronic Active, Mild
Spleen		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 2-6		

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 30

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 737

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

Thyroid Gland  
Zymbal's Gland

C Cell

Adenoma  
Cyst

---

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 30

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain

Seminal Vesicle

Trachea

MISSING

Zymbal's Gland

OBSERVATIONS

Islets, Pancreatic

Adenoma

Note: ADENOMA TGLs = 9-1.1

Kidney

Renal Tubule

Hyperplasia  
Nephropathy

Minimal  
Mild

Note: NEPHROPATHY TGLs = 6-2

Liver

Basophilic Focus  
Clear Cell Focus  
Developmental Malformation  
Hyperplasia  
Alveolar/Bronchiolar Adenoma  
Congestion

Mild  
Mild

Lung

Bile Duct

Note: VACUOLES IN CELLS OF ADENOMA

Note: CONGESTION TGLs = 4-6+7

Note: ALV BRON ADEN TGLs = 10-7

Lymph Node

Renal

Infiltration Cellular

Histiocyte, Moderate

Note: INFILTRAT CELL TGLs = 5-5

Pancreas

Acinus

Adenoma  
Hematopoietic Cell Proliferation  
Pigmentation

Mild  
Mild

Spleen

Note: PIGMENT TGLs = 7-5

Testes

Bilateral, Interstit Cell  
Seminif Tub

Adenoma  
Atrophy

Mild

Note: ADENOMA TGLs = 1-4,2-4

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 30

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Mammary Gland  
Prostate  
Stomach - Forestomach  
Trachea

Adrenal Gland - Medulla  
Epididymis  
Intestine Small - Duodenum  
Lung  
Pancreas  
Salivary Glands  
Stomach - Glandular  
Urinary Bladder

Bone  
Esophagus  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Parathyroid Gland  
Seminal Vesicle  
Thymus  
Zymbal's Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pituitary Gland  
Skin  
Thyroid Gland

**OBSERVATIONS**

Heart  
Intestine Large  
Kidney  
    Note: NEPHROPATHY   TGLs = 5-4  
Liver  
  
Nose  
Preputial Gland  
    Note: INFLAMMATION   TGLs = 1-10  
Spleen  
Testes  
  
    Note: ADENOMA        TGLs = 2-6,3-6

Colon  
  
Bile Duct  
  
Bilateral, Interstit Cell  
Seminif Tub

Cardiomyopathy  
Parasite  
Nephropathy  
  
Basophilic Focus  
Hyperplasia  
Leukemia Mononuclear  
Inflammation  
Inflammation  
  
Leukemia Mononuclear  
Adenoma  
Atrophy

Mild  
Mild  
Moderate  
  
Mild  
  
Acute, Mild  
Chronic Active, Minimal  
  
Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 31

TRT#: 1

SEX: Male

DAY ON TEST: 711

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Brain	Epididymis	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Nose
Pancreas	Parathyroid Gland	Preputial Gland	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
	Bilateral, Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN	TGLs = 5-8,6-8		
Note: LEUKEMIA MONUC	TGLs = 7-8		
Bone Marrow		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Fatty Change	Diffuse, Mild
		Leukemia Mononuclear	
		Neoplastic Nodule	
Note: LEUKEMIA MONUC	TGLs = 4-3		
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 8-8		
Note: LEUKEMIA MONUC	TGLs = 9-2.1		
Note: MORE A LYMPHOCYTIC THAN MONONUCLEAR CELL LEUKEMIA			
Mammary Gland		Galactocele	
Pituitary Gland		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 31

TRT#: 1

SEX: Male

DAY ON TEST: 711

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Prostate

Leukemia Mononuclear

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 3-3 ]

Stomach

Glandular

Necrosis

Minimal

Testes

Interstit Cell

Adenoma

Interstit Cell

Hyperplasia

Mild

Note: ADENOMA TGLs = 2-6

Thymus

Leukemia Mononuclear

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 31

TRT#: 2

SEX: Male

DAY ON TEST: 672

DOSE: 2.5%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain  
Zymbal's Gland

Islets, Pancreatic

Pancreas

Trachea

**OBSERVATIONS**

Kidney

Cyst

Nephropathy

Moderate

Note: CYST TGLs = 5-2

Liver

Degeneration

Cystic, Minimal

Bile Duct

Hyperplasia

Mild

Lung

Congestion

Mild

Note: CONGESTION TGLs = 2-4+5

Lymph Node

Infiltration Cellular

Plasma Cell, Moderate

Note: INFILTRAT CELL TGLs = 6-5

Preputial Gland

Bilateral

Carcinoma

[ Carcinoma TGLs = 1-7 ]

Testes

Interstit Cell

Adenoma

Moderate

Seminif Tub

Atrophy

Mild

Interstit Cell

Hyperplasia

[ Atrophy TGLs = 4-6 ]

[ Hyperplasia TGLs = 3-6 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 31

TRT#: 3

DOSE: 5.0%

SEX: Male

DISP: Moribund

DAY ON TEST: 718

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Pancreas	Parathyroid Gland	Preputial Gland
Salivary Glands	Seminal Vesicle	Skin	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
Brain			
Note: MODERATELY DISTENDED VENTRICLES			
Heart		Cardiomyopathy	Mild
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Liver	Bile Duct	Hyperplasia	Mild
Lymph Node			
Note: MAST CELLS INCREASED IN THE MESENTERIC NODE			
Mammary Gland		Fibroadenoma	
		Galactocele	
[ Galactocele TGLS = 1-13 ]			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 3-8			
Prostate		Inflammation	Chronic Active, Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Forestomach	Acanthosis	Mild
	Forestomach	Hyperkeratosis	Mild
	Forestomach	Inflammation	Chronic Active, Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 31

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 718

**DOSE:** 5.0%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: INFLAMMATION TGLs = 6-7

Note: HYPERKERATOSIS TGLs = 6-7

Note: ACANTHOSIS TGLs = 6-7

Testes

Interstit Cell

Adenoma

Seminif Tub

Atrophy

Mild

Interstit Cell

Hyperplasia

Minimal

Note: ADENOMA TGLs = 2-6

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 32

TRT#: 1

SEX: Male

DAY ON TEST: 641

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Brain	Epididymis	Esophagus
Eye	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Pituitary Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Trachea	Urinary Bladder
Zymbal's Gland			

MISSING

Thymus

OBSERVATIONS

Adrenal Gland	Cortex	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Bone Marrow		Leukemia Mononuclear	
Heart		Cardiomyopathy	Minimal
		Leukemia Mononuclear	
Kidney		Cyst	Mild
		Nephropathy	
	Note: NEPHROPATHY TGLs = 10-4,11-4 Note: CYST TGLs = 11-4		
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 14-3 Note: LEUKEMIA MONUC TGLs = 18-4			
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 2-1+2			
Lymph Node	Lumbar	Leukemia Mononuclear	
	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 32

TRT#: 1

SEX: Male

DAY ON TEST: 641

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Mesenteric

Leukemia Mononuclear

Pancreatic

Leukemia Mononuclear

Renal

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 12-10

Note: LEUKEMIA MONUC TGLs = 9-8

Note: LEUKEMIA MONUC TGLs = 13-10

Note: LEUKEMIA MONUC TGLs = 8-9

Preputial Gland

Necrosis

Minimal

Prostate

Inflammation

Chronic Active, Minimal

Spleen

Hematopoietic Cell Proliferation

Minimal

Leukemia Mononuclear

Note: HEMA CELL PROL TGLs = 7-3

Testes

Bilateral, Interstit Cell

Adenoma

Seminif Tub

Atrophy

Minimal

Note: ADENOMA TGLs = 4-6

Thyroid Gland

Follicular Cel

Carcinoma

Note: TGL #3 IS NOT A PARATHYROID LESION BUT

Note: A FOLLICULAR NEOPLASM OF THE THYROID GLAND

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 32

TRT#: 2

DOSE: 2.5%

SEX: Male

DISP: Dead

DAY ON TEST: 658

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex

Brain

Esophagus

Islets, Pancreatic

Pancreas

Parathyroid Gland

Trachea

Zymbal's Gland

OBSERVATIONS

Adrenal Gland

Medulla

Pheochromocytoma Benign

Note: PHEOCHROM BGN TGLs = 8-8

Kidney

Leukemia Mononuclear

Nephropathy

Mild

Liver

Leukemia Mononuclear

Lung

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 5-6+7,6-6+7

Lymph Node

Mediastinal

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 7-7

Preputial Gland

Adenoma

Note: ADENOMA TGLs = 1-4

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLs = 3-5 ]

Testes

Bilateral, Interstit Cell

Adenoma

Seminif Tub

Atrophy

Mild

Note: ADENOMA TGLs = 2-4

Thymus

Leukemia Mononuclear

Thyroid Gland

C Cell

Adenoma

Note: ADENOMA TGLs = 4-8

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 32

TRT#: 3

SEX: Male

DAY ON TEST: 727

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Mammary Gland	Nose
Parathyroid Gland	Pituitary Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Thyroid Gland
Trachea	Urinary Bladder		

MISSING

Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
	Bilateral, Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Nephropathy	Mild
	Renal Tubule	Pigmentation	Minimal
Liver		Leukemia Mononuclear	
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Lymph Node	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Pancreas		Leukemia Mononuclear	
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10		
Spleen		Leukemia Mononuclear	
Stomach	Glandular	Hyperplasia	Minimal
	Glandular	Necrosis	Mild
	Glandular	Pigmentation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 32

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 727

**DOSE:** 5.0%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

Interstit Cell

Hyperplasia

Minimal

Note: ADENOMA      TGLs = 2-6

Thymus

Leukemia Mononuclear

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 33

TRT#: 1

SEX: Male

DAY ON TEST: 731

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mesenteric	Nose	Pancreas	Parathyroid Gland
Pituitary Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
	Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN TGLs = 6-8			
Heart		Leukemia Mononuclear	
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
	Oval Cell	Hyperplasia	Mild
		Leukemia Mononuclear	
		Vacuolization Cytoplasmic	Mild
Note: SECONDARY TO MCL			
Lung		Fibrosis	Mild
	Alveolar Epith	Hyperplasia	Mild
		Infiltration Cellular	Histiocyte, Moderate
		Leukemia Mononuclear	
Lymph Node	Mandibular	Cyst	
Mammary Gland		Fibroadenoma	Multiple
Note: FIBROADENOMA TGLs = 2-13			
Preputial Gland		Adenoma	
		Necrosis	Mild
Note: NECROSIS TGLs = 1-10			

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 33	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 731 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Spleen		Hematopoietic Cell Proliferation Leukemia Mononuclear	Mild
Note: LEUKEMIA MONUC TGLs = 4-3			
Testes	Bilateral, Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Mild Mild
Note: ADENOMA TGLs = 3-6			
Zymbal's Gland		Cyst	

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PRIMARY CAUSE OF DEATH

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 33

TRT#: 2

SEX: Male

DAY ON TEST: 696

DOSE: 2.5%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Esophagus	Pancreas	Parathyroid Gland
Preputial Gland	Zymbal's Gland		

OBSERVATIONS

Islets, Pancreatic		Adenoma	Multiple
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Liver		Degeneration	Cystic, Minimal
		Leukemia Mononuclear	
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 4-5 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA TGLs = 5-4			
Thyroid Gland	Follicular Cel	Carcinoma	
Note: CARCINOMA TGLs = 3-6			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 33

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mesenteric	Nose	Pancreas	Parathyroid Gland
Pituitary Gland	Prostate	Salivary Glands	Seminal Vesicle
Spleen	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	

MISSING

Mammary Gland	Zymbal's Gland
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OBSERVATIONS

Adrenal Gland Note: PHEOCHROM BGN TGLs = 7-8	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 8-4			
Liver		Basophilic Focus	
		Hemorrhage	Minimal
	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
Lung [ Congestion TGLS = 6-1+2 ]		Congestion	Mild
Lymph Node	Mandibular	Cyst	
Preputial Gland		Adenoma	
Note: ADENOMA TGLs = 1-10.1			
Skin		Erosion	Marked
		Necrosis	Moderate
Note: EROSION TGLs = 2-10.1			
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 33

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

Seminif Tub

Atrophy

Mild

Note: ADENOMA TGLs = 3-6,4-6

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 34

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Pituitary Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

MISSING

Preputial Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN TGLs = 8-8			
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 9-4			
Liver	Bile Duct	Basophilic Focus	
		Hyperplasia	Mild
		Leukemia Mononuclear	
Spleen		Congestion	Mild
		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Note: CONGESTION TGLs = 7-3			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
Note: ADENOMA TGLs = 4-6,5-6			
Tongue		Squamous Cell Papilloma	
[ Squamous Cell Papilloma TGLS = 1-10 ]			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

---

**ANIMAL ID:** 34

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 737

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 34

TRT#: 2

DOSE: 2.5%

SEX: Male

DISP: Terminal Sacrifice

DAY ON TEST: 737

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex

Brain

Esophagus

Islets, Pancreatic

Parathyroid Gland

Thyroid Gland

Zymbal's Gland

OBSERVATIONS

Adrenal Gland

Medulla

Pheochromocytoma Benign

Note: PHEOCHROM BGN TGLs = 7-6

Kidney

Leukemia Mononuclear

Nephropathy

Moderate

Note: NEPHROPATHY TGLs = 8-2

Liver

Bile Duct

Hyperplasia

Leukemia Mononuclear

Mild

Note: LEUKEMIA MONUC TGLs = 10-1

Lymph Node

Mesenteric

Infiltration Cellular

Plasma Cell, Mild

Note: INFILTRAT CELL TGLs = 5-5

Note: INFILTRAT CELL TGLs = 12-1

Pancreatic

Infiltration Cellular

Histiocyte, Mild

Mammary Gland

Fibroadenoma

Note: FIBROADENOMA TGLs = 2-7

Pancreas

Acinus

Hyperplasia

Mild

Pituitary Gland

Pars Distalis

Adenoma

Multiple

Note: ADENOMA TGLs = 11-6

Pars Distalis

Angiectasis

Mild

Preputial Gland

Adenoma

Note: ADENOMA TGLs = 3-8

Skin

Acanthosis

Mild

Cyst Epithelial Inclusion

Hyperkeratosis

Marked

Note: HYPERKERATOSIS TGLs = 1-9

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLs = 6-5 ]

Testes

Bilateral, Interstit Cell

Adenoma

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 34	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: ADENOMA      TGLs = 9-4	Seminif Tub	Atrophy	Moderate
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 34

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Harderian Gland	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Preputial Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder			

MISSING

Parathyroid Gland	Zymbal's Gland
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OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Eye	Lens	Cataract	Mild
Note: CATARACT TGLs = 1-10			
Note: FIBRINOUS MATERIAL IN THE ANTERIOR CHAMBER			
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 5-4			
Liver		Basophilic Focus	
		Fatty Change	Focal, Mild
	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Focal, Moderate
		Neoplastic Nodule	
Note: NEOPLASTIC NOD TGLs = 6-3			
Lung		Congestion	Mild
		Inflammation	Chronic Active, Mild
Note: CONGESTION TGLs = 4-1+2			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 34

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

Testes

Bilateral, Interstit Cell

Pigmentation

Mild

Seminif Tub

Adenoma

Atrophy

Mild

Interstit Cell

Hyperplasia

Minimal

Note: ADENOMA TGLs = 2-6,3-6

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 35

TRT#: 1

SEX: Male

DAY ON TEST: 695

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Small - Duodenum	Intestine Small - Ileum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mesentery	Nose	Pancreas
Parathyroid Gland	Pituitary Gland	Preputial Gland	Prostate
Salivary Glands	Seminal Vesicle	Stomach - Forestomach	Stomach - Glandular
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Intestine Small - Jejunum	Mammary Gland
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Intestine Large	Rectum	Parasite	Mild
Kidney		Nephropathy	Moderate
Liver	Bile Duct	Basophilic Focus	
		Hyperplasia	Mild
		Hyperplasia	Focal, Mild
		Leukemia Mononuclear	
Note: HYPERPLASIA TGLs = 9-3			
Lung		Leukemia Mononuclear	
Lymph Node	Mediastinal	Leukemia Mononuclear	
	Mediastinal	Pigmentation	Mild
Note: LEUKEMIA MONUC TGLs = 10-2			
Pancreas			
Note: LOOSE ADIPOSE TISSUE AROUND PANCREAS			
Skin		Acanthosis	Mild
	Subcut Tiss	Fibroma	
	Tail	Keratoacanthoma	
		Keratoacanthoma	
Note: FIBROMA TGLs = 3-13			

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 35

TRT#: 1

SEX: Male

DAY ON TEST: 695

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: KERATOACANTHMA TGLs = 4-10

Note: KERATOACANTHMA TGLs = 2-13

Spleen

Hematopoietic Cell Proliferation

Minimal

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 6-3

Testes

Bilateral, Interstit Cell

Adenoma

Seminif Tub

Atrophy

Minimal

Note: ADENOMA TGLs = 5-6

Thyroid Gland

C Cell

Adenoma

Tooth

Gingiva

Inflammation

Chronic, Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 35

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain

Islets, Pancreatic

Zymbal's Gland

OBSERVATIONS

Kidney

Nephropathy

Moderate

Liver

Basophilic Focus

Fatty Change

Focal, Minimal

Pancreas

Artery

Inflammation

Chronic Active, Minimal

Note: INFLAMMATION TGLs = 5-1

Spleen

Hemorrhage

Moderate

Mineralization

Minimal

Necrosis

Mild

Thrombosis

Mild

Note: HEMORRHAGE TGLs = 2-5

Note: RECANALIZED THROMBUS OR EARLY VASCULAR TUMOR

Testes

Bilateral, Interstit Cell

Adenoma

Seminif Tub

Atrophy

Mild

Interstit Cell

Hyperplasia

Mild

Note: ADENOMA TGLs = 1-4

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 35

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 5.0%

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Coagulating Gland	Epididymis	Esophagus	Eye
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Glandular	Thymus	Trachea	Urinary Bladder
Zymbal's Gland			

AUTO PRECLUDES DIAG.

Intestine Small - Jejunum

OBSERVATIONS

Brain		Astrocytoma Malignant	
		Hemorrhage	Mild
Note: ASTROCYTO MAL	TGLs = 5-5		
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
Liver	Bile Duct	Hyperplasia	Mild
Lung		Congestion	Mild
		Edema	Mild
		Inflammation	Chronic Active, Minimal
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Preputial Gland		Necrosis	Mild
Note: NECROSIS	TGLs = 2-10		
Spleen		Pigmentation	Mild
Stomach	Forestomach	Hyperkeratosis	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 3-6		
Thyroid Gland	C Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 35

**TRT#:** 3

**DOSE:** 5.0%

**SEX:** Male

**DISP:** Dead

**DAY ON TEST:** 729

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 36

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Parathyroid Gland	Preputial Gland
Salivary Glands	Seminal Vesicle	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Adrenal Gland Note: PHEOCHROM BGN TGLs = 6-8,7-8	Bilateral, Medulla	Pheochromocytoma Benign	
Heart	Artery	Cardiomyopathy	Mild
Intestine Large	Colon	Mineralization	Minimal
Kidney Note: NEPHROPATHY TGLs = 8-4	Renal Tubule	Parasite	Mild
Liver Note: MIXED CL FOCUS TGLs = 9-3	Bile Duct	Necrosis	Minimal
Lymph Node Note: CYST TGLs = 2-9	Mandibular	Nephropathy	Moderate
Mesentery Note: NECROSIS TGLs = 5-13	Fat	Fatty Change	Focal, Minimal
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Prostate	Pars Distalis	Leukemia Mononuclear	
		Mixed Cell Focus	
	Fat	Cyst	
	Fat	Mineralization	Mild
		Necrosis	Moderate
		Adenoma	
		Hyperplasia	Mild
		Inflammation	Chronic Active, Moderate

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 36	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Skin Note: ARE NECROSED AND MORE GHOST-LIKE Note: THIS MAY OR MAY NOT BE A NEOPLASM. CELLS Note: NECROSIS TGLs = 1-13		Necrosis	Moderate
Spleen Testes Note: ADENOMA TGLs = 4-6	Bilateral, Interstit Cell Seminif Tub	Leukemia Mononuclear Adenoma Atrophy	Minimal

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PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 36

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Islets, Pancreatic	Seminal Vesicle	Zymbal's Gland
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OBSERVATIONS

Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
		Thrombosis	Mild
Note: CARDIOMYOPATHY	TGLs = 3-4		
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
	Renal Tubule	Pigmentation	Moderate
Note: NEPHROPATHY	TGLs = 10-2		
Liver		Degeneration	Cystic, Mild
	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Multifocal, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 12-1		
Lymph Node	Pancreatic	Infiltration Cellular	Histiocyte, Mild
	Mediastinal	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-4,8-1		
Pancreas	Acinus	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation	TGLS = 9-6 ]		
Stomach	Glandular	Erosion	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Moderate
Note: ATROPHY	TGLs = 5-5		
Note: ADENOMA	TGLs = 6-5		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 36

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Liver	Lymph Node - Mandibular	Mammary Gland
Nose	Pancreas	Parathyroid Gland	Pituitary Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Mild
Kidney	Renal Tubule	Adenoma	
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 3-4			
Lung		Congestion	Mild
Lymph Node	Mesenteric	Infiltration Cellular	Histiocyte, Mild
Note: INFILTRAT CELL TGLs = 5-8			
Spleen		Pigmentation	Mild
Note: PIGMENT TGLs = 2-3			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
Note: ADENOMA TGLs = 1-6			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 37

TRT#: 1

SEX: Male

DAY ON TEST: 711

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Parathyroid Gland	Pituitary Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Mild
	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Neoplastic Nodule	
Note: NEOPLASTIC NOD TGLs = 7-3			
Lung		Congestion	Mild
		Infiltration Cellular	Histiocyte, Minimal
Note: THICKENING OF INTERSTITIUM IN AREAS			
Preputial Gland		Adenoma	
Note: ADENOMA TGLs = 2-10			
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
	Seminif Tub	Mineralization	Minimal
Note: NUMEROUS MAST CELLS			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 37

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Pancreas	Seminal Vesicle	Thymus
Trachea	Zymbal's Gland		

OBSERVATIONS

Islets, Pancreatic		Hyperplasia	Moderate
Kidney	Transit Epithe	Hyperplasia	Minimal
		Leukemia Mononuclear	
		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 9-2			
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Note: HEMORRHAGE TGLs = 13-7+8			
Note: LEUKEMIA MONUC TGLs = 12-7+8			
Lymph Node	Axillary	Infiltration Cellular	Plasma Cell, Mild
	Inguinal	Infiltration Cellular	Plasma Cell, Mild
	Mediastinal	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 11-8,14-1			
Note: INFILTRAT CELL TGLs = 2-2,4-9			
Preputial Gland		Carcinoma	
		Inflammation	Acute, Moderate
Note: CARCINOMA TGLs = 3-6			
Note: INFLAMMATION TGLs = 1-6,			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 10-5 ]			
Stomach	Forestomach	Acanthosis	Moderate
Testes	Bilateral, Interstit Cell	Adenoma	
Note: ADENOMA TGLs = 5-4,6-4,7-4			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 37

TRT#: 3

SEX: Male

DAY ON TEST: 731

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney	Transit Epithe	Hyperplasia	Minimal
		Nephropathy	Moderate
Liver		Angiectasis	Moderate
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 6-3		
Note: MORE LIKE PELIOSIS HEPATIS			
Lung		Inflammation	Chronic Active, Mild
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: ADENOMA	TGLs = 5-8		
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10		
Prostate	Epithelium	Hyperplasia	Minimal
		Inflammation	Chronic Active, Moderate
Spleen		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
		Pigmentation	Mild
Note: LEUKEMIA MONUC	TGLs = 4-3		
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 37	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 731 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
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Note: ADENOMA	TGLs = 2-6,3-6		
Thymus		Depletion Lymphoid	Mild
Thyroid Gland	C Cell	Hyperplasia	Minimal

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<b>PRIMARY CAUSE OF DEATH</b>	-		
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 38

TRT#: 1

SEX: Male

DAY ON TEST: 564

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Pituitary Gland	Prostate	Salivary Glands	Seminal Vesicle
Stomach - Forestomach	Stomach - Glandular	Thyroid Gland	Trachea
Urinary Bladder	Zymbal's Gland		

MISSING

Esophagus	Parathyroid Gland
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Minimal
Liver		Necrosis	Minimal
Lung		Embolus Tumor	
		Inflammation	Acute, Moderate
		Liposarcoma	Metastatic (Skin)
Note: LIPOSARC	TGLs = 5-1+2		
Lymph Node	Mandibular	Liposarcoma	Metastatic (Skin)
Note: LIPOSARC	TGLs = 3-9,4-9		
Preputial Gland		Adenoma	
		Necrosis	Mild
Note: ADENOMA	TGLs = 2-10		
Skin	Subcut Tiss	Liposarcoma	
Note: OF A POORLY DIFFERENTIATED CARCINOMA OR GRANULAR			
Note: LIPOSARC	TGLs = 1-10		
Note: THE NEOPLASM IN THE SKIN OF THE LIP IS CALLED A			
Note: LIPOSARCOMA BECAUSE OF LARGE CELLS WITH CLEAR			
Note: AND/OR CLEAR-GRANULAR CYTOPLASM. THE POSSIBILITY			

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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**ANIMAL ID:** 38

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 564

**DOSE:** CONTROL

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: CELL MYOBLASTOMA HAS TO BE CONSIDERED.

Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 7-6		
Thymus		Depletion Lymphoid	Mild

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 38

TRT#: 2

SEX: Male

DAY ON TEST: 326

DOSE: 2.5%

DISP: Dead

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Kidney  
Mammary Gland  
Prostate  
Spleen  
Thyroid Gland

Adrenal Gland - Medulla  
Epididymis  
Liver  
Nose  
Salivary Glands  
Stomach - Forestomach  
Trachea

Bone  
Esophagus  
Lymph Node - Mandibular  
Parathyroid Gland  
Seminal Vesicle  
Testes  
Urinary Bladder

Bone Marrow  
Intestine Large - Colon  
Lymph Node - Mesenteric  
Pituitary Gland  
Skin  
Thymus  
Zymbal's Gland

**MISSING**

Preputial Gland

**AUTO PRECLUDES DIAG.**

Intestine Large - Cecum  
Intestine Small - Jejunum

Intestine Large - Rectum  
Islets, Pancreatic

Intestine Small - Duodenum  
Pancreas

Intestine Small - Ileum  
Stomach - Glandular

**OBSERVATIONS**

Heart  
Lung

Cardiomyopathy  
Congestion  
Edema

Mild  
Moderate  
Minimal

Note: CONGESTION TGLs = 2-1+2

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 38

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Brain	Epididymis	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Pancreas	Parathyroid Gland
Preputial Gland	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Zymbal's Gland		

OBSERVATIONS

Adrenal Gland	Cortex	Hyperplasia	Minimal
	Medulla	Hyperplasia	Minimal
	Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN TGLs = 10-8			
Bone Marrow		Hyperplasia	Reticulum Cell, Mild
Heart		Cardiomyopathy	Mild
Kidney	Renal Tubule	Carcinoma	
	Capsule	Fibrosis	Mild
		Nephropathy	Moderate
Note: INFILTRATED INTO THE THICK CAPSULE			
Note: NEPHROPATHY TGLs = 5-4+4.1			
Note: CARCINOMA TGLs = 5-4+4.1			
Note: FAIRLY WELL DIFFERENTIATED TUMOR AND HAS			
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lung		Hemorrhage	Minimal
		Infiltration Cellular	Histiocyte, Minimal
Lymph Node	Mediastinal	Congestion	Mild
	Mediastinal	Pigmentation	Mild
	Renal	Pigmentation	Mild
Note: CONGESTION TGLs = 4-1			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 38	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: PIGMENT	TGLs = 7-3		
Mammary Gland		Galactocele	
Mesentery	Fat	Necrosis	Marked
[ Necrosis TGLS = 3-13 ]			
Pancreas			
Note: INVASIVE TUMOR CELLS NEAR THE ISOLATED ISLET			
Pituitary Gland	Pars Distalis	Adenoma	
Prostate		Inflammation	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 1-6,2-6		
Thyroid Gland	C Cell	Adenoma	
Note: ADENOMA	TGLs = 11-8		
PRIMARY CAUSE OF DEATH	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 39

TRT#: 1

SEX: Male

DAY ON TEST: 629

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Medulla

Bone

Bone Marrow

Epididymis

Esophagus

Intestine Large - Cecum

Intestine Large - Colon

Intestine Large - Rectum

Intestine Small - Duodenum

Intestine Small - Ileum

Islets, Pancreatic

Mammary Gland

Nose

Pituitary Gland

Prostate

Salivary Glands

Seminal Vesicle

Skin

Stomach - Glandular

Thyroid Gland

Trachea

Urinary Bladder

Zymbal's Gland

MISSING

Parathyroid Gland

AUTO PRECLUDES DIAG.

Intestine Small - Jejunum

OBSERVATIONS

Adrenal Gland

Cortex

Leukemia Mononuclear

Note: 1991 CONVERSION DISCREPANCY. ORIGINAL DIAGNOSIS SITE NOT SPECIFIED.

Brain

Hemorrhage

Mild

Heart

Cardiomyopathy

Mild

Note: LEUKEMIA MONUC TGLs = 7-2

Leukemia Mononuclear

Kidney

Leukemia Mononuclear

Cortex

Mineralization

Minimal

Note: INCREASED CELLULARITY IN TRANSITIONAL CELL EPI-

Note: THELIUM.

Note: BLOOD IN RENAL PELVIS.

Nephropathy

Mild

Liver

Bile Duct

Hyperplasia

Mild

Leukemia Mononuclear

Lung

Edema

Minimal

Leukemia Mononuclear

Lymph Node

Mandibular

Leukemia Mononuclear

Mediastinal

Leukemia Mononuclear

Mesenteric

Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 39	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Dead	<b>DAY ON TEST:</b> 629 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: LEUKEMIA MONUC TGLs = 6-9 Pancreas Preputial Gland Note: NECROSIS TGLs = 2-10 Spleen  Note: HEMA CELL PROL TGLs = 5-3 Stomach  Note: NECROSIS TGLs = 8-8 Testes Note: ADENOMA TGLs = 4-6 Thymus Tongue  Note: PAPILLOMA SQUA TGLs = 3-10	Pancreatic      Forestomach Forestomach Forestomach Forestomach Forestomach  Bilateral, Interstit Cell  Epithel Cell	Leukemia Mononuclear  Mixed Tumor Benign Necrosis  Hematopoietic Cell Proliferation Leukemia Mononuclear  Acanthosis Edema Hyperkeratosis Inflammation Necrosis  Adenoma  Hyperplasia Hyperkeratosis Squamous Cell Papilloma	Moderate  Minimal  Mild Mild Minimal Chronic Active, Moderate Mild   Mild Mild
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PRIMARY CAUSE OF DEATH -

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Animal Note: C.O.D. ? LEUKEMIA

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 39

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain

Islets, Pancreatic

Pancreas

Zymbal's Gland

**OBSERVATIONS**

Kidney

Transit Epithe

Hyperplasia

Minimal

Nephropathy

Moderate

Note: NEPHROPATHY TGLs = 4-2

Liver

Bile Duct

Hyperplasia

Mild

Hyperplasia

Focal, Mild

Degeneration

Cystic, Mild

Lymph Node

Mandibular

Note: DEGEN TGLs = 5-5

Salivary Glands

Inflammation

Chronic Active, Mild

Note: INFLAMMATION TGLs = 1

Stomach

Glandular

Infiltration Cellular

Lymphocyte, Moderate

Testes

Bilateral, Interstit Cell

Adenoma

Note: ADENOMA TGLs = 3-4

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 39

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 4-4		
Liver		Basophilic Focus	
		Hyperplasia	Focal, Marked
		Leukemia Mononuclear	
Note: HYPERPLASIA	TGLs = 5-3		
Lung	Alveolar Epith	Hyperplasia	Mild
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-13		
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 2-6,3-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 40

TRT#: 1

SEX: Male

DAY ON TEST: 534

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Coagulating Gland	Epididymis	Esophagus
Intestine Large - Colon	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Pancreas	Preputial Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Spleen	Stomach - Forestomach
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

MISSING

Parathyroid Gland	Thymus
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AUTO PRECLUDES DIAG.

Intestine Large - Cecum	Intestine Large - Rectum
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OBSERVATIONS

Heart	Cardiomyopathy	Mild
Kidney	Nephropathy	Minimal
Liver	Basophilic Focus	
Lung	Congestion	Moderate
	Edema	Mild
Mammary Gland	Fibroadenoma	
Note: FIBROADENOMA TGLs = 1-13		
Pituitary Gland	Pars Distalis	
	Pars Distalis	Mild
Note: ADENOMA TGLs = 2-8		
Testes	Bilateral, Interstit Cell	
	Seminif Tub	Minimal
	Interstit Cell	Minimal

PRIMARY CAUSE OF DEATH

-

Animal Note: C.O.D.:COULD BE PULMONARY EDEMA.

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 40	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL			
Islets, Pancreatic	Pancreas	Salivary Glands	Zymbal's Gland
<b>OBSERVATIONS</b>			
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
		Degeneration	Cystic, Mild
Lymph Node	Pancreatic	Angiectasis	Mild
	Mandibular	Infiltration Cellular	Plasma Cell, Moderate
Note: ANGIECTASIS	TGLs = 5-1		
Note: INFILTRAT CELL	TGLs = 6-5		
Skin		Acanthosis	Mild
		Cyst Epithelial Inclusion	
		Hyperkeratosis	Marked
Note: HYPERKERATOSIS	TGLs = 1-6		
Spleen		Hemorrhage	Moderate
Note: CONGESTED			
Note: HEMORRHAGE	TGLs = 4-5		
Testes	Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 3-4		
<b>PRIMARY CAUSE OF DEATH</b>			
-			

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 40

TRT#: 3

SEX: Male

DAY ON TEST: 648

DOSE: 5.0%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Nose	Parathyroid Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Heart		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Angiectasis	Mild
		Focal Cellular Change	
		Leukemia Mononuclear	
Note: ANGIECTASIS	TGLs = 9-3		
Note: MANY LEUKEMIC CELLS WITH INDENTED AND DONUT-SHAPED NUCLEI			
Note: FOCAL CELL CH	TGLs = 8-2.1		
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-1+2		
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 2-9		
Pancreas		Fibrosis	Mild
Note: FIBROSIS	TGLs = 6-9		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 40

TRT#: 3

SEX: Male

DAY ON TEST: 648

DOSE: 5.0%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Preputial Gland

Adenoma

Note: ADENOMA TGLs = 1-10.1

Spleen

Leukemia Mononuclear

Note: MORE LIKE LARGE GRANULAR LYMPHOCYTIC LEUKEMIA

[ Leukemia Mononuclear TGLS = 7-3 ]

Stomach

Glandular

Mineralization

Minimal

Testes

Bilateral, Interstit Cell

Adenoma

Seminif Tub

Atrophy

Mild

Interstit Cell

Hyperplasia

Minimal

Note: ADENOMA TGLs = 4-6,5-6

Thymus

Leukemia Mononuclear

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 41

TRT#: 1

SEX: Male

DAY ON TEST: 645

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mesenteric	Mammary Gland	Nose	Parathyroid Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Spleen	Stomach - Forestomach	Stomach - Glandular	Thymus
Trachea	Urinary Bladder	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland Note: PHEOCHROM BGN TGLs = 11-8	Bilateral, Medulla	Pheochromocytoma Benign	
Epididymis		Mineralization	Minimal
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Congestion	Mild
Note: CONGESTION TGLs = 12-3		Hyperplasia	Mild
Lung [ Congestion TGLS = 9-1+2 ]		Congestion	Mild
Lymph Node Note: ERYTHROPHAGOCY TGLs = 6-9	Mandibular	Erythrophagocytosis	Mild
Pancreas	Acinus	Atrophy	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
Note: ADENOMA TGLs = 13-8	Pars Distalis	Angiectasis	Mild
Preputial Gland Note: ADENOMA TGLs = 1-10		Adenoma	
Testes Note: ATROPHY TGLs = 4-6	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

---

**ANIMAL ID:** 41

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 645

**DOSE:** CONTROL

**DISP:** Dead

**HISTO:**

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: ADENOMA TGLs = 3-6

Thyroid Gland

C Cell

Hyperplasia

Minimal

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 41

TRT#: 2

SEX: Male

DAY ON TEST: 718

DOSE: 2.5%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain	Islets, Pancreatic	Pancreas	Trachea
Zymbal's Gland			

OBSERVATIONS

Brain			
Note: DISTENDED VENTRICLES			
Kidney		Leukemia Mononuclear	
		Nephropathy	Moderate
Liver		Degeneration	Cystic, Minimal
		Hyperplasia	Mild
		Leukemia Mononuclear	
[ Degeneration TGLS = 8-1 ]			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-4+5			
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 1-6,7-1.1,11-5			
Note: LEUKEMIA MONUC TGLs = 9-1.1			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
		Leukemia Mononuclear	
Note: ADENOMA TGLs = 10-8			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 2-6 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA TGLs = 4-7,5-7			
Thymus		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 41

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Eye	Harderian Gland
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland	Nose
Pancreas	Parathyroid Gland	Preputial Gland	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
Pituitary Gland	Pars Distalis	Hyperplasia	Minimal
Prostate	Epithelium	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Minimal
Stomach	Glandular	Infiltration Cellular	Lymphocyte, Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Moderate
	Interstit Cell	Hyperplasia	Minimal

Note: ADENOMA TGLs = 4-6

Note: ATROPHY TGLs = 3-6

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 42

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Lung	Lymph Node - Mesenteric	Mammary Gland	Nose
Prostate	Seminal Vesicle	Skin	Spleen
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

**MISSING**

Lymph Node - Mandibular	Parathyroid Gland	Salivary Glands	
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**OBSERVATIONS**

Adrenal Gland Note: PHEOCHROM BGN TGLs = 4-8	Medulla	Pheochromocytoma Benign	
Intestine Large Islets, Pancreatic	Colon	Parasite Adenoma	Minimal
Kidney Note: A PIECE OF PROLIFERATIVE TISSUE ( WITH MANY Note: MITOTIC FIGURES) ADHERENT TO THE CAPSULE OF Note: OF ONE KIDNEY.	Renal Tubule	Nephropathy Pigmentation	Moderate Minimal
Liver		Basophilic Focus Fatty Change	Focal, Mild
Pancreas	Bile Duct	Hyperplasia	Mild
Pituitary Gland	Artery	Necrosis	Fibrinoid, Mild
Preputial Gland Note: ADENOMA TGLs = 2-10	Pars Distalis Pars Distalis	Adenoma Angiectasis Adenoma	Mild
Testes	Bilateral, Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Mild Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 42

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 737

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: ADENOMA      TGLs = 3-6

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 42

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Liver	Thymus	Trachea
Zymbal's Gland			

**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Note: CARDIOMYOPATHY	TGLs = 2-6		
Kidney	Transit Epithe	Hyperplasia	Minimal
		Nephropathy	Moderate
		Congestion	Moderate
Lung			
Note: CONGESTION	TGLs = 1-5+6		
Lymph Node	Mediastinal	Pigmentation	Mild
Note: PIGMENT	TGLs = 6-6		
Pancreas	Artery	Hemorrhage	Mild
	Acinus	Hyperplasia	Mild
	Artery	Inflammation	Chronic Active, Moderate
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 3-4,4-4		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 42

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Trachea	Urinary Bladder	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Note: NEPHROPATHY TGLs = 4-4			
Liver		Angiectasis	Minimal
		Basophilic Focus	
		Focal Cellular Change	
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Nose			
Note: BLOOD IN THE TURBINATE			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA TGLs = 2-6			
Thyroid Gland	C Cell	Hyperplasia	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 43

TRT#: 1

SEX: Male

DAY ON TEST: 621

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Epididymis	Esophagus
Islets, Pancreatic	Lymph Node - Mandibular	Nose	Pituitary Gland
Prostate	Salivary Glands	Seminal Vesicle	Skin
Stomach - Forestomach	Stomach - Glandular	Thyroid Gland	Zymbal's Gland

MISSING

Mammary Gland	Parathyroid Gland	Urinary Bladder
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AUTO PRECLUDES DIAG.

Bone Marrow	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Lymph Node - Mesenteric
Spleen	Thymus	Trachea	

OBSERVATIONS

Adrenal Gland Note: PHEOCHROM BGN TGLs = 5-8	Medulla	Pheochromocytoma Benign	
Brain		Hemorrhage	Mild
Heart Note: CARDIOMYOPATHY TGLs = 9-2.1		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
Liver  Note: LEUKEMIA MONUC TGLs = 7-1		Fatty Change	Diffuse, Minimal
Lung  Note: PROBABLY MONONUCLEAR LEUKEMIA [ Hemorrhage TGLS = 1-2+2.1 ]		Leukemia Mononuclear	Mild
Pancreas		Necrosis	Mild
Preputial Gland Note: SKIN-INGUINAL MASS IS PREPUTIAL GLAND Note: ADENOMA TGLs = 6-10		Hemorrhage	Mild
Testes	Bilateral, Interstit Cell	Leukemia Mononuclear	
		Adenoma	
		Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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**ANIMAL ID:** 43

**TRT#:** 1  
**DOSE:** CONTROL

**SEX:** Male  
**DISP:** Dead

**DAY ON TEST:** 621  
**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: ADENOMA      TGLs = 2-6,3-6

Seminif Tub

Atrophy

Mild

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 43

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Eye	Harderian Gland	Seminal Vesicle
Trachea	Zymbal's Gland		

**OBSERVATIONS**

Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Marked
Liver		Angiectasis	Mild
		Fatty Change	Diffuse, Mild
Lung		Alveolar/Bronchiolar Adenoma	
Note: ALV BRON ADEN	TGLs = 4-4		
Pancreas	Acinus	Atrophy	Moderate
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 7-7		
Stomach	Forestomach	Acanthosis	Mild
	Glandular	Erosion	Mild
	Forestomach	Inflammation	Chronic, Moderate
	Glandular	Inflammation	Chronic, Mild
	Forestomach	Ulcer	Marked
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 5-5		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 43

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Pituitary Gland	Preputial Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Zymbal's Gland		

MISSING

Parathyroid Gland

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Mild
Note: NEPHROPATHY	TGLs = 3-4		
Liver		Angiectasis	Minimal
		Fatty Change	Focal, Minimal
		Focal Cellular Change	
Note: AN AREA IN #3A. ? ANAMOLOUS LOBE IN 3A ?			
Note: A FEW PLUMP ELONGATED CELLS SURROUND HEPATOICYTES IN			
Lung		Hemorrhage	Minimal
Mammary Gland		Galactocele	
Pancreas	Duct	Hyperplasia	Mild
Spleen		Pigmentation	Mild
Note: PIGMENT	TGLs = 2-3		
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal
Note: ADENOMA	TGLs = 1-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 43

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 44

TRT#: 1

SEX: Male

DAY ON TEST: 641

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Mammary Gland	Nose
Pancreas	Parathyroid Gland	Pituitary Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Zymbal's Gland			

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Moderate
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Liver		Leukemia Mononuclear	
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 2-1+2			
Lymph Node	Mesenteric	Infiltration Cellular	Plasma Cell, Mild
Note: INFILTRAT CELL TGLs = 6-9,7-9			
Preputial Gland		Adenoma	
Note: ADENOMA TGLs = 1-10+13			
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLs = 5-3 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild
	Seminif Tub	Mineralization	Minimal
Note: ADENOMA TGLs = 3-6			
Urinary Bladder		Calculus Micro Observation Only	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 44

TRT#: 2

SEX: Male

DAY ON TEST: 501

DOSE: 2.5%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Epididymis	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Pancreas	Preputial Gland
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Esophagus	Parathyroid Gland
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OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Brain		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Necrosis	Mild
		Nephropathy	Minimal
Note: MORE LIKE AN INFARCT			
Note: NECROSIS TGLs = 3-4			
Liver		Fatty Change	Focal, Minimal
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 2-3			
Lung		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Adenoma	
		Leukemia Mononuclear	
Prostate		Inflammation	Chronic Active, Mild
Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 1-3			
Stomach	Glandular	Necrosis	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 44	<b>TRT#:</b> 2 <b>DOSE:</b> 2.5%	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 501 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Testes	Interstit Cell	Hyperplasia	Minimal
Thymus		Depletion Lymphoid	Minimal
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 44

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Epididymis	Esophagus	Harderian Gland
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland	Pituitary Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Parathyroid Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Kidney		Cyst	
		Nephropathy	Moderate
Note: CYST      TGLs = 5-4			
Liver	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Nose		Inflammation	Acute, Mild
Pancreas	Acinus	Adenoma	
Skin		Acanthosis	Moderate
		Hyperkeratosis	Moderate
Note: ? SQUAMOUS CELL PAPILLOMA ?			
Note: ACANTHOSIS      TGLs = 1-12.1			
Spleen		Depletion Lymphoid	Minimal
		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 44

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 736

**DOSE:** 5.0%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: ADENOMA      TGLs = 2-6,3-6

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 45

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Liver	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Parathyroid Gland	Preputial Gland	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Thymus

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Islets, Pancreatic		Adenoma	
Note: ADENOMA TGLs = 11-10			
Kidney		Nephropathy	Moderate
	Renal Tubule	Pigmentation	Minimal
Note: NEPHROPATHY TGLs = 8-4			
Lung		Congestion	Mild
[ Congestion TGLS = 7-1+2 ]			
Lymph Node	Pancreatic	Infiltration Cellular	Plasma Cell, Minimal
Note: MAST CELLS INCREASED IN ALL LYMPH NODES			
Note: INFILTRAT CELL TGLs = 12-9			
Mammary Gland	Acinus	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 2-10			
Pancreas	Acinus	Adenoma	
	Acinus	Hyperplasia	Mild
Note: ADENOMA TGLs = 10-3			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Minimal
Note: ADENOMA TGLs = 13-8			
Note: SUGGESTION OF A CARCINOMA			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 45

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 737

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Prostate		Inflammation	Chronic Active, Mild
Spleen		Pigmentation	Mild
Note: PIGMENT	TGLs = 9-3		
Testes		Bilateral, Interstit Cell	
		Seminif Tub	
Note: ADENOMA	TGLs = 3-6,5-6	Adenoma	
		Atrophy	Minimal

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**PRIMARY CAUSE OF DEATH**

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 45	TRT#: 2 DOSE: 2.5%	SEX: Male DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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**NORMAL**

Brain	Islets, Pancreatic
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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus Inflammation	Granulomatous, Minimal
Pancreas	Acinus	Hyperplasia Adenoma	Focal, Minimal
Preputial Gland			
Note: ADENOMA	TGLs = 1-5		
Stomach	Glandular	Infiltration Cellular	Lymphocyte, Mild
Testes	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Marked
Note: ADENOMA	TGLs = 2-4,3-4		
Note: ATROPHY	TGLs = 3-4		

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 45

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Parathyroid Gland	Pituitary Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 4-4		
Liver		Fatty Change	Focal, Minimal
	Bile Duct	Hyperplasia	Mild
Spleen		Pigmentation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Minimal
Note: ADENOMA	TGLs = 1-6,2-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 46

TRT#: 1

SEX: Male

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Epididymis	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mesenteric
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Salivary Glands	Seminal Vesicle	Skin	Stomach - Forestomach
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

MISSING

Thymus

OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
		Inflammation	Chronic Active, Minimal
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
		Fatty Change	Focal, Minimal
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Lymph Node	Mandibular	Hemorrhage	Mild
Note: HEMORRHAGE	TGLs = 2-9		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 3-8		
Preputial Gland		Necrosis	Mild
Prostate		Inflammation	Chronic Active, Mild
Spleen		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 46

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 738

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Note: ADENOMA      TGLs = 1-6

Interstit Cell

Hyperplasia

Minimal

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 46

TRT#: 2

SEX: Male

DAY ON TEST: 562

DOSE: 2.5%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Epididymis	Esophagus	Eye
Harderian Gland	Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Pancreas	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	

**MISSING**

Mammary Gland	Parathyroid Gland
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**AUTO PRECLUDES DIAG.**

Intestine Small - Ileum	Urinary Bladder
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**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Lung		Carcinoma	Metastatic (Zymbal'S Gland)
Pituitary Gland	Pars Distalis	Angiectasis	Minimal
Preputial Gland		Necrosis	Mild
Note: NECROSIS	TGLs = 2-10		
Spinal Cord		Hemorrhage	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Interstit Cell	Hyperplasia	Mild
Zymbal's Gland		Carcinoma	
Note: CARCINOMA	TGLs = 1-13		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 46

TRT#: 3

SEX: Male

DAY ON TEST: 715

DOSE: 5.0%

DISP: Dead

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Coagulating Gland	Epididymis	Esophagus	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Mammary Gland	Nose	Pancreas
Parathyroid Gland	Pituitary Gland	Preputial Gland	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

**AUTO PRECLUDES DIAG.**

Intestine Large - Cecum	Intestine Small - Ileum	Intestine Small - Jejunum
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**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Mild
	Bilateral, Medulla	Pheochromocytoma Benign	
Note: PHEOCHROM BGN TGLs = 4-8			
Heart		Cardiomyopathy	Mild
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Liver		Necrosis	Moderate
Lymph Node	Mesenteric	Hemorrhage	Mild
	Pancreatic	Hemorrhage	Mild
Note: MAST CELLS INCREASED IN THE PANCREATIC NODE			
Pharynx	Epithelium, Palate	Hyperplasia	Marked
Prostate		Inflammation	Chronic Active, Mild
Spleen		Atrophy	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
Note: ADENOMA TGLs = 3-6			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 47

TRT#: 1

SEX: Male

DAY ON TEST: 718

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Coagulating Gland  
Intestine Large - Rectum  
Nose  
Stomach - Forestomach

Adrenal Gland - Medulla  
Epididymis  
Intestine Small - Duodenum  
Preputial Gland  
Trachea

Bone  
Esophagus  
Islets, Pancreatic  
Prostate  
Urinary Bladder

Brain  
Intestine Large - Cecum  
Mammary Gland  
Salivary Glands  
Zymbal's Gland

MISSING

Parathyroid Gland

OBSERVATIONS

Bone Marrow  
Heart

Leukemia Mononuclear  
Cardiomyopathy

Mild

Intestine Large  
Intestine Small

Colon  
Ileum  
Jejunum

Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Nephropathy

Mild

Note: LEUKEMIA MONUC TGLs = 14-4+4.1  
Liver

Fatty Change  
Leukemia Mononuclear

Focal, Minimal

Note: MONOTONOUS POPULATION OF CELLS  
Note: LEUKEMIA MONUC TGLs = 9-3  
Note: VERY LITTLE NORMAL HEPATIC PARENCHYMA.  
Lung

Congestion  
Hemorrhage  
Leukemia Mononuclear

Mild  
Minimal

Note: CONGESTION TGLs = 4-1+2  
Lymph Node

Bronchial  
Mandibular  
Mesenteric  
Pancreatic

Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 47	TRT#: 1 DOSE: CONTROL	SEX: Male DISP: Moribund	DAY ON TEST: 718 HISTO:
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: LEUKEMIA MONUC TGLs = 2-9,10-8,11-10,12-4 Pancreas		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Hyperplasia Leukemia Mononuclear	Minimal
Note: LEUKEMIA MONUC TGLs = 13-8 Seminal Vesicle		Atrophy Leukemia Mononuclear	Minimal
Note: ATROPHY TGLs = 8-6 Skin		Acanthosis Hyperkeratosis Keratoacanthoma	Mild Marked
Note: KERATOACANTHMA TGLs = 1-13 Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-3 Stomach	Glandular	Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell Seminif Tub Interstit Cell	Adenoma Atrophy Hyperplasia	Mild Mild
Note: ADENOMA TGLs = 6-6,7-6 Thymus		Leukemia Mononuclear	
Note: POPULATION OF CELLS Note: LEUKEMIA MONUC TGLs = 5-2 Note: STARRY-SKIED APPEARANCE AND MONOTONOUS Thyroid Gland		Leukemia Mononuclear	
PRIMARY CAUSE OF DEATH	-		

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 47	TRT#: 2 DOSE: 2.5%	SEX: Male DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Brain	Islets, Pancreatic	Lung	Seminal Vesicle
Trachea	Zymbal's Gland		

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OBSERVATIONS

Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 4-2		
Liver		Angiectasis	Minimal
		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Pancreas	Acinus	Adenoma	Multiple
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Mild
Note: ADENOMA	TGLs = 2-5,3-5		

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 47

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Pancreas  
Seminal Vesicle  
Thymus

Adrenal Gland - Medulla  
Epididymis  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Parathyroid Gland  
Skin  
Trachea

Bone  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Mammary Gland  
Preputial Gland  
Stomach - Forestomach  
Urinary Bladder

Bone Marrow  
Heart  
Intestine Small - Duodenum  
Lung  
Nose  
Salivary Glands  
Stomach - Glandular  
Zymbal's Gland

OBSERVATIONS

Kidney  
Liver

Nephropathy  
Basophilic Focus  
Fatty Change  
Focal Cellular Change  
Hyperplasia

Mild  
Focal, Minimal  
Mild

Note: FOCAL CELL CH TGLs = 6-10

Pituitary Gland  
Prostate  
Spleen  
Testes

Bile Duct

Pars Distalis

Hyperplasia  
Inflammation  
Hematopoietic Cell Proliferation

Mild  
Chronic Active, Mild  
Minimal

Note: ADENOMA TGLs = 1-6,2-6

Thyroid Gland

Bilateral, Interstit Cell  
Seminif Tub  
Interstit Cell

C Cell

Adenoma  
Atrophy  
Hyperplasia

Mild  
Minimal

Note: ADENOMA TGLs = 4-8

Note: A FEW FUSIFORM CELLS

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 48

TRT#: 1

SEX: Male

DAY ON TEST: 672

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Pancreas	Parathyroid Gland	Pituitary Gland
Prostate	Salivary Glands	Seminal Vesicle	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Zymbal's Gland		

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Minimal
Kidney		Nephropathy	Moderate
Liver		Angiectasis	Minimal
		Basophilic Focus	
		Eosinophilic Focus	
	Bile Duct	Hyperplasia	Minimal
		Leukemia Mononuclear	
Note: SUGGESTION OF TRANSFORMATION IN THE SECTION CIRCLED			
Lung		Adenosquamous Carcinoma	
		Congestion	Mild
		[ Congestion TGLS = 5-1 ]	
Preputial Gland		Carcinoma	
Note: CARCINOMA	TGLs = 2-10+13		
Skin		Hyperkeratosis	Moderate
		Keratoacanthoma	
Note: KERATOACANTHOMA	TGLs = 1-13		
Spleen		Leukemia Mononuclear	
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 48	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 672 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
	Seminif Tub	Atrophy	Mild
Note: ADENOMA	TGLs = 4-14		
Note: ADENOMA	TGLs = 3-6		

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 48

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain	Islets, Pancreatic	Pancreas	Seminal Vesicle
Trachea	Zymbal's Gland		

**OBSERVATIONS**

Kidney		Nephropathy	Mild
Note: NEPHROPATHY	TGLs = 3-2		
Liver	Bile Duct	Basophilic Focus	
		Hyperplasia	Mild
		Leukemia Mononuclear	
		Mixed Cell Focus	
		Pigmentation	Moderate
Note: PIGMENT	TGLs = 6-1		
Lung		Congestion	Mild
Note: CONGESTION	TGLs = 4-4+5		
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 5-6 ]			
Testes	Bilateral, Interstit Cell	Adenoma	
Note: ADENOMA	TGLs = 1-7		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 48

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Coagulating Gland	Epididymis	Esophagus
Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Parathyroid Gland	Preputial Gland	Prostate
Salivary Glands	Seminal Vesicle	Skin	Thymus
Thyroid Gland	Trachea	Urinary Bladder	

MISSING

Zymbal's Gland

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Note: NEPHROPATHY	TGLs = 4-4		
Liver		Basophilic Focus	
		Clear Cell Focus	
	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Multifocal, Mild
		Inflammation	Minimal
		Leukemia Mononuclear	
		Necrosis	Minimal
Note: HYPERPLASIA	TGLs = 8-3,9-3		
Lung		Infiltration Cellular	Histiocyte, Minimal
Lymph Node	Pancreatic	Infiltration Cellular	Histiocyte, Minimal
Note: INFILTRAT CELL	TGLs = 7-9		
Nose		Inflammation	Acute, Mild
Note: BLOOD IN TURBINATES			
Pancreas	Acinus	Adenoma	
Note: THE NODULE ADJACENT TO PANCREAS IS PROBABLY			
Note: SPLENIC TISSUE			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 48	<b>TRT#:</b> 3 <b>DOSE:</b> 5.0%	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Pituitary Gland Spleen	Pars Distalis	Adenoma Fibrosis Leukemia Mononuclear Pigmentation	Moderate Minimal
Note: FIBROSIS      TGLs = 5-3 Testes	Bilateral, Interstit Cell Seminif Tub	Adenoma Atrophy	Moderate
Note: ATROPHY      TGLs = 1-6 Note: ADENOMA      TGLs = 2-6			
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 49

TRT#: 1

SEX: Male

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Coagulating Gland
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Parathyroid Gland	Pituitary Gland	Prostate	Salivary Glands
Seminal Vesicle	Skin	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
	Bilateral, Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY TGLs = 7-4			
Liver		Angiectasis	Mild
	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Mild
		Leukemia Mononuclear	
Note: SECONDARY TO MCL			
Note: LEUKEMIA MONUC TGLs = 9-3+3.1			
Lung		Leukemia Mononuclear	
Lymph Node			
Note: MAST CELLS INCREASED IN MEDIASTINAL AND MESENTERIC NODES			
Mammary GI			
Note: SUGGESTIVE OF FIBROADENOMA			
Nose		Inflammation	Acute, Mild
Note: BLOOD IN TURBINATE			
Pancreas	Acinus	Hyperplasia	Mild
Preputial Gland		Necrosis	Mild

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 49	<b>TRT#:</b> 1 <b>DOSE:</b> CONTROL	<b>SEX:</b> Male <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 738 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: NECROSIS	TGLs = 1-10		
Spleen		Hematopoietic Cell Proliferation Leukemia Mononuclear	Mild
[ Hematopoietic Cell Proliferation TGLS = 6-3 ]			
Testes	Bilateral, Interstit Cell Seminif Tub Interstit Cell Seminif Tub	Adenoma Atrophy Hyperplasia Mineralization	Mild Minimal Minimal
Note: ADENOMA	TGLs = 3-6,4-6		
Thymus		Depletion Lymphoid	Mild

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 49

TRT#: 2

SEX: Male

DAY ON TEST: 737

DOSE: 2.5%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Brain

Lymph Node - Mandibular

Zymbal's Gland

**OBSERVATIONS**

Islets, Pancreatic

Hyperplasia

Focal, Mild

Kidney

Nephropathy

Moderate

Note: NEPHROPATHY TGLs = 2-2

Liver

Basophilic Focus

Bile Duct

Hyperplasia

Mild

Leukemia Mononuclear

Pancreas

Acinus

Hyperplasia

Mild

Spleen

Hematopoietic Cell Proliferation

Mild

Leukemia Mononuclear

[ Hematopoietic Cell Proliferation TGLS = 4-4 ]

Stomach

Forestomach

Acanthosis

Mild

Testes

Bilateral, Interstit Cell

Adenoma

Seminif Tub

Atrophy

Mild

Interstit Cell

Hyperplasia

Mild

Note: ADENOMA TGLs = 1-5

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 49

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Epididymis
Esophagus	Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Mammary Gland	Pancreas	Parathyroid Gland	Pituitary Gland
Preputial Gland	Prostate	Salivary Glands	Seminal Vesicle
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Zymbal's Gland		

MISSING

Adrenal Gland - Cortex	Adrenal Gland - Medulla
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OBSERVATIONS

Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Mild
Kidney		Nephropathy	Moderate
Liver	Bile Duct	Hyperplasia	Moderate
		Hyperplasia	Focal, Moderate
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 6-3		
Lung		Leukemia Mononuclear	
Lymph Node	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Nose		Inflammation	Chronic Active, Minimal
Skin		Acanthosis	Moderate
		Basal Cell Adenoma	
		Hyperkeratosis	Moderate
		Squamous Cell Papilloma	
Note: PAPILLOMA SQUA	TGLs = 1-10		
Note: BASAL CEL ADEN	TGLs = 2-10		
Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-3.1		
Testes	Bilateral, Interstit Cell	Adenoma	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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**ANIMAL ID:** 49

**TRT#:** 3  
**DOSE:** 5.0%

**SEX:** Male  
**DISP:** Terminal Sacrifice

**DAY ON TEST:** 736  
**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Seminif Tub  
Interstit Cell

Atrophy  
Hyperplasia

Mild  
Mild

Note: ADENOMA      TGLs = 3-4,4-6  
Thyroid Gland

C Cell

Adenoma

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**PRIMARY CAUSE OF DEATH**

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 50

TRT#: 1

SEX: Male

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Epididymis	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Mammary Gland	Nose	Pancreas	Parathyroid Gland
Pituitary Gland	Salivary Glands	Seminal Vesicle	Stomach - Forestomach
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

MISSING

Thymus

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Mild
Islets, Pancreatic		Adenoma	
Kidney		Nephropathy	Moderate
Liver		Focal Cellular Change	
	Bile Duct	Hyperplasia	Mild
Lung		Alveolar/Bronchiolar Adenoma	
		Inflammation	Chronic Active, Minimal
Note: ALV BRON ADEN	TGLs = 5-2		
Preputial Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10		
Prostate		Inflammation	Chronic Active, Minimal
		Pigmentation	Mild
Skin		Acanthosis	Mild
		Hyperkeratosis	Marked
Note: HYPERKERATOSIS	TGLs = 2-9		
Spleen		Hematopoietic Cell Proliferation	Mild
Testes	Bilateral, Interstit Cell	Adenoma	
	Seminif Tub	Atrophy	Mild
	Interstit Cell	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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**ANIMAL ID:** 50

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 737

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

Seminif Tub

Mineralization

Minimal

Note: ADENOMA TGLs = 3-6

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 50

TRT#: 2

SEX: Male

DAY ON TEST: 674

DOSE: 2.5%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Brain  
Islets, Pancreatic  
Zymbal's Gland

Epididymis  
Parathyroid Gland

Esophagus  
Thyroid Gland

Harderian Gland  
Trachea

OBSERVATIONS

Adrenal Gland

Cortex  
Medulla  
Medulla

Leukemia Mononuclear  
Leukemia Mononuclear  
Pheochromocytoma Benign

Note: LEUKEMIA MONUC TGLs = 9-10

Eye

Lens

Cataract

Mild

Note: CATARACT TGLs = 1-11

Kidney

Leukemia Mononuclear  
Nephropathy

Mild

Note: LEUKEMIA MONUC TGLs = 10-2

Liver

Bile Duct

Hyperplasia  
Leukemia Mononuclear  
Necrosis

Mild

Mild

Note: LEUKEMIA MONUC TGLs = 13-1

Lung

Leukemia Mononuclear

Note: SOME BRONCHIOLES

Note: LEUKEMIA MONUC TGLs = 3-4+5

Note: MUCINOUS MATERIAL AND HISTIOCYTES IN

Lymph Node

Lumbar  
Mandibular  
Mediastinal  
Mesenteric  
Pancreatic  
Renal

Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 12-10

Note: LEUKEMIA MONUC TGLs = 17-6

Note: LEUKEMIA MONUC TGLs = 11-9

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 50

TRT#: 2

SEX: Male

DAY ON TEST: 674

DOSE: 2.5%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: LEUKEMIA MONUC TGLs = 8-1.1

Note: LEUKEMIA MONUC TGLs = 7-8

Note: LEUKEMIA MONUC TGLs = 4-5

Mesentery

Leukemia Mononuclear

Pancreas

Leukemia Mononuclear

Pituitary Gland

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 15-10

Seminal Vesicle

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 5-7

Spleen

Hematopoietic Cell Proliferation

Mild

Leukemia Mononuclear

[ Hematopoietic Cell Proliferation TGLS = 6-6 ]

Testes

Interstit Cell

Adenoma

Interstit Cell

Hyperplasia

Mild

Thymus

Leukemia Mononuclear

PRIMARY CAUSE OF DEATH

-

Animal Note: MORE LIKE LYMPHOCYTIC THAN MONONUCLEAR LEUKEMIA

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 50

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Islets, Pancreatic  
Pituitary Gland  
Stomach - Forestomach  
Zymbal's Gland

Adrenal Gland - Medulla  
Epididymis  
Intestine Large - Rectum  
Mammary Gland  
Preputial Gland  
Stomach - Glandular

Bone  
Esophagus  
Intestine Small - Ileum  
Nose  
Salivary Glands  
Trachea

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Jejunum  
Parathyroid Gland  
Seminal Vesicle  
Urinary Bladder

**MISSING**

Intestine Small - Duodenum

**OBSERVATIONS**

Heart

Cardiomyopathy  
Leukemia Mononuclear

Mild

[ Cardiomyopathy TGLS = 8-2 ]

Kidney

Leukemia Mononuclear  
Nephropathy

Mild

Renal Tubule  
Bile Duct

Pigmentation  
Hyperplasia

Minimal  
Mild

Liver

Leukemia Mononuclear

Lung

Leukemia Mononuclear

Lymph Node

Mandibular  
Mediastinal  
Mesenteric  
Pancreatic

Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear  
Leukemia Mononuclear

Note: MORE LIKE LYMPHATIC THAN MONONUCLEAR LEUKEMIA

Note: LEUKEMIA MONUC TGLs = 7-2

[ Leukemia Mononuclear TGLS = 4-9,5-8 ]

Pancreas

Acinus

Hyperplasia  
Leukemia Mononuclear

Mild

Prostate

Epithelium

Hyperplasia  
Hemorrhage

Mild  
Moderate

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 50

TRT#: 3

SEX: Male

DAY ON TEST: 736

DOSE: 5.0%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Subcut Tiss

Leukemia Mononuclear  
Necrosis

Moderate

Note: (TRICHROME STAIN) RULES OUT A FIBROSARCOMA.

Note: SUBCUTANEOUS TISSUE. ABSENCE OF COLLAGEN

Note: A HEAVY LEUKEMIC INFILTRATE IN THE

Note: LEUKEMIA MONUC TGLs = 2-13+13.1,3-13+13.1

Spleen

Hematopoietic Cell Proliferation  
Leukemia Mononuclear

Minimal

Testes

Bilateral, Interstit Cell  
Seminif Tub  
Interstit Cell

Adenoma  
Atrophy  
Hyperplasia

Moderate  
Mild

Note: ATROPHY TGLs = 9-6

Note: ADENOMA TGLs = 10-6

Thymus

Thyroid Gland

Follicle

Leukemia Mononuclear  
Cyst  
Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 6-8

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 1	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 639 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mesenteric
Nose	Ovary	Pancreas	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

MISSING

Clitoral Gland	Lymph Node - Mandibular	Parathyroid Gland
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OBSERVATIONS

Kidney	Pelvis	Mineralization	Minimal
		Nephropathy	Minimal
Liver		Basophilic Focus	
		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLS = 5-6 ]			
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA TGLs = 1-10			
Pituitary Gland	Pars Distalis	Cyst	
	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 6-8			
Spleen		Hematopoietic Cell Proliferation	Mild

PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 1

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Clitoral Gland		Adenoma	
		Carcinoma	
Note: CARCINOMA	TGLs = 3-10,4-10		
Intestine Large	Colon	Parasite	Mild
Kidney	Cortex	Mineralization	Minimal
	Papilla	Mineralization	Minimal
		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 9-4		
Liver		Basophilic Focus	
		Leukemia Mononuclear	
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 13-8		
Note: LEUKEMIA MONUC	TGLs = 12-9		
Mammary Gland		Galactocele	
Note: GALACTOCELE	TGLs = 1-10+13,2-10+13		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 1	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Note: ADENOMA	TGLs = 14-8	Leukemia Mononuclear	
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 11-3 ]			
Thymus		Leukemia Mononuclear	
Thyroid Gland		Carcinoma	
Note: CARCINOMA	TGLs = 6-8		
Uterus		Polyp Stromal	
Note: POLYP STROMAL	TGLs = 10-6		
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 1

TRT#: 7

DOSE: CONTROL

SEX: Female

DISP: Moribund

DAY ON TEST: 723

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	Zymbal's Gland

MISSING

Clitoral Gland

OBSERVATIONS

Kidney	Nephropathy	Minimal
Liver	Basophilic Focus	
	Congestion	Mild
	Fatty Change	Diffuse, Minimal

Note: PROMINENT NUCLEOLI AND NUMEROUS MITOTIC FIGURES  
[ Basophilic Focus TGLS = 8-3 ]

Lymph Node

Note: PLASMA CELLS AND RE CELLS INCREASED IN ALL NODES

Mammary Gland

Adenoma  
Fibroadenoma  
Galactocele

Note: FIBROADENOMA TGLs = 3-10,4-10

Note: ADENOMA TGLs = 2-13

Pituitary Gland

Pars Distalis

Hyperplasia

Moderate

Note: HYPERPLASIA TGLs = 9-8

Spleen

Hematopoietic Cell Proliferation  
Pigmentation

Mild  
Mild

Note: ? RE CELL HYPERPLASIA OR LEUKEMIA ?  
[ Hematopoietic Cell Proliferation TGLS = 7-3 ]

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 1

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 723

**DOSE:** CONTROL

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 2	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Moribund	DAY ON TEST: 708 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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**NORMAL**

Esophagus	Parathyroid Gland	Thyroid Gland	Trachea
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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Leukemia Mononuclear Mixed Cell Focus	
Note: MIXED CL FOCUS	TGLs = 5-5		
Lung		Congestion	Mild
Mammary Gland		Fibroadenoma Galactocele	
Note: FIBROADENOMA	TGLs = 1-6		
Pituitary Gland	Pars Distalis	Adenoma	
Note: ADENOMA	TGLs = 4-5		
Spleen		Hematopoietic Cell Proliferation Leukemia Mononuclear	Mild
Note: LEUKEMIA MONUC	TGLs = 3-5		
Uterus		Polyp Stromal	
Note: POLYP STROMAL	TGLs = 2-1		

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 2	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 724 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thyroid Gland	Trachea	Uterus
Zymbal's Gland			

MISSING

Clitoral Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Leukemia Mononuclear	
Kidney		Nephropathy	Mild
Liver		Fatty Change	Diffuse, Mild
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 4-3			
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-1			
Mammary Gland		Adenocarcinoma	
		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA TGLs = 2-10			
Note: ADENOCARC TGLs = 1-13			
Pituitary Gland	Pars Distalis	Adenoma	
		Leukemia Mononuclear	
Note: ADENOMA TGLs = 5-8			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 2	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 724 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Spleen		Leukemia Mononuclear Pigmentation	Mild
Thymus	Epithel Cell	Hyperplasia Leukemia Mononuclear	Mild
Urinary Bladder		Leukemia Mononuclear	
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 2	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Medulla	Bone	Bone Marrow	Brain
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	Zymbal's Gland

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**MISSING**

Lymph Node - Mandibular	Parathyroid Gland
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**OBSERVATIONS**

Adrenal Gland	Cortex	Degeneration	Mild
Note: LIPOID DEGENERATION NOT IN PCT			
Clitoral Gland		Necrosis	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Inflammation	Granulomatous, Minimal
Note: PORTAL TRACTS			
Note: HEAVY LEUCOCYTIC EXUDATE AROUND A FEW			
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 1-10,2-13			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Pigmentation	Mild

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

**NORMAL**

Esophagus	Eye	Harderian Gland	Islets, Pancreatic
Kidney	Parathyroid Gland	Thymus	Trachea
Uterus			

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Liver		Basophilic Focus Clear Cell Focus Eosinophilic Focus	
[ Basophilic Focus TGLS = 10-1.1 ]			
Lung		Congestion	Mild
Lymph Node	Renal	Angiectasis	Mild
	Mediastinal	Infiltration Cellular	Histiocyte, Mild
	Pancreatic	Infiltration Cellular	Histiocyte, Mild
	Renal	Infiltration Cellular	Histiocyte, Mild
Note: INFILTRAT CELL TGLs = 4-5,5-6,8-1.1			
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA TGLs = 3-8+9			
Mesentery	Artery	Inflammation	Chronic Active, Minimal
	Artery	Pigmentation	Mild
	Artery	Thrombosis	Moderate
Note: PIGMENT TGLs = 6-6,9-7			
Note: THROMBUS TGLs = 9-7			
Pancreas	Artery	Inflammation	Chronic Active, Mild
Note: INFLAMMATION TGLs = 7-7			
Thyroid Gland	C Cell	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Pituitary Gland	Salivary Glands
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	

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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
Skin	Subcut Tiss	Fibroma	
Note: FIBROMA	TGLs = 1-10		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 3	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

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**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Minimal
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 1-14,2-13,3-13			
Pituitary Gland	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 5-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	C Cell	Adenoma	
	C Cell	Hyperplasia	Minimal

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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<b>ANIMAL ID:</b> 4	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Uterus

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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Congestion	Mild
Note: CONGESTION	TGLs = 2-4+3		
Mammary Gland		Galactocele	
	Acinus	Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 1-5		
Thyroid Gland	C Cell	Hyperplasia	Mild

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 4	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Pituitary Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

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**OBSERVATIONS**

Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
Lymph Node	Mesenteric	Congestion	Mild
Note: CONGESTION	TGLs = 4-8		
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-10,2-13		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 4	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus

MISSING

Zymbal's Gland

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
	Renal Tubule	Pigmentation	Minimal
Liver		Basophilic Focus	
Mesentery	Fat	Necrosis	Mild
Note: NECROSIS	TGLs = 2-4.1		
Nose			
Note: BLOOD IN THE TURBINATES			
Pituitary Gland	Pars Distalis	Cyst	Multiple
		Hyperplasia	Mild
Spleen		Pigmentation	Mild
Uterus			
Note: STROMAL POLYP OR PLANE OF SECTION			

PRIMARY CAUSE OF DEATH -

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 5	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus	Liver	Parathyroid Gland	Thyroid Gland
Trachea	Uterus		

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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Lung		Congestion	Mild
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate

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Note: ADENOMA TGLs = 1-5

PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 5	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus

OBSERVATIONS

Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Mild
Liver		Basophilic Focus	
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA TGLs = 1-10+10.1			
Mesentery	Fat	Hemorrhage	Moderate
Note: ? HEMANGIOMA ?			
Note: HEMORRHAGE TGLs = 2-13			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 5-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Zymbal's Gland		Adenoma	
Note: ? SEBACEOUS ADENOMA ?			
Note: ADENOMA TGLs = 3-8			

PRIMARY CAUSE OF DEATH -

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 5	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Clitoral Gland
Esophagus	Eye	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Nose	Oviduct	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Trachea
Uterus	Zymbal's Gland		

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Eye			
Note: ONLY THE LENS IS IN THE SECTION			
Heart		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Basophilic Focus	
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 7-3			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 5-1+2			
Lymph Node	Axillary	Leukemia Mononuclear	
	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 6-2			
Note: LEUKEMIA MONUC TGLs = 3-10			
Mammary Gland		Galactocele	
Note: GALACTOCELE TGLs = 2-10+13			
Ovary		Cyst	
Pancreas		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 5	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Pituitary Gland	Pars Distalis	Angiectasis Leukemia Mononuclear	Marked
Note: ANGIECTASIS TGLs = 8-8			
Spleen		Leukemia Mononuclear Pigmentation	Mild
[ Pigmentation TGLS = 4-3 ]			
Stomach	Glandular	Leukemia Mononuclear	
Note: 1991 CONVERSION DISCREPANCY. ORIGINAL DIAGNOSIS SITE NOT SPECIFIED.			
Thymus		Leukemia Mononuclear	
Thyroid Gland	Follicular Cel	Hyperplasia	Minimal
Urinary Bladder		Leukemia Mononuclear	
PRIMARY CAUSE OF DEATH	-		

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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 6	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Trachea	Uterus	Zymbal's Gland
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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
[ Basophilic Focus TGLS = 3-1+1.1 ]			
Lung		Congestion	Mild
Note: CONGESTION	TGLs = 2-3+4		
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA	TGLs = 1-5		
Thyroid Gland	C Cell	Carcinoma	

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 6	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

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**OBSERVATIONS**

Clitoral Gland Note: DILATATION TGLs = 4-10		Dilatation	Moderate
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Mixed Cell Focus	
Mammary Gland  Note: FIBROADENOMA TGLs = 3-13 Note: GALACTOCELE TGLs = 2-10.1		Fibroadenoma	
		Galactocele	
Nose Note: BLOOD IN THE TURBINATES			
Pituitary Gland  Note: ADENOMA TGLs = 6-8	Pars Distalis Pars Distalis	Adenoma	
		Angiectasis	Mild
Skin Note: ACANTHOSIS TGLs = 1-10.1		Acanthosis	Moderate
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Moderate

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PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 6

TRT#: 7

SEX: Female

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Clitoral Gland		Necrosis	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Infiltration Cellular	Histiocyte, Minimal
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-13		
Ovary		Cyst	
Pituitary Gland	Pars Distalis	Angiectasis	Minimal
	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 3-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

Note: CAPSULE THICK IN AREAS

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 7

TRT#: 4

SEX: Female

DAY ON TEST: 585

DOSE: 0.62%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Kidney	Lymph Node - Mesenteric	Nose
Ovary	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

MISSING

Lymph Node - Mandibular

OBSERVATIONS

Clitoral Gland		Hyperplasia Inflammation Necrosis	Mild Chronic Active, Mild Moderate
Note: NECROSIS TGLs = 2-9			
Heart		Cardiomyopathy Basophilic Focus Hepatodiaphragmatic Nodule Leukemia Mononuclear	Mild
Liver			
Note: ANOM HEPAT LOB TGLs = 4-3.1			
Lung		Congestion	Mild
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA TGLs = 1-10			
Pituitary Gland	Pars Intermed	Hyperplasia Leukemia Mononuclear	Minimal
Spleen		Pigmentation	Mild
Note: PIGMENT TGLs = 3-3			

PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 7	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 735 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

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**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
	Artery	Necrosis	Fibrinoid, Mild
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
		Fatty Change	Focal, Minimal
Pituitary Gland	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Hyperplasia	Mild
Note: ANGIECTASIS	TGLs = 5-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Uterus		Leiomyosarcoma	
		Necrosis	Moderate

Note: SIMILAR TO ENDOMETRIAL STROMAL CARCINOMAS

Note: LEIOMYOSAR TGLs = 1-6.1+6.2

Note: IN FEMALE RATS TREATED WITH P-ROSANILINE

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 7	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 739 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	Zymbal's Gland

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**OBSERVATIONS**

Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Mixed Cell Focus	
Lymph Node	Mandibular	Angiectasis	Mild
	Mediastinal	Angiectasis	Minimal
Note: ANGIECTASIS	TGLs = 3-9		
Mammary Gland		Galactocele	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 1-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 8	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Parathyroid Gland	Thyroid Gland	Trachea
Uterus	Zymbal's Gland		

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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Congestion	Mild
Pituitary Gland	Pars Distalis	Cyst	
Note: CYST	TGLs = 1-5		

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**PRIMARY CAUSE OF DEATH** -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 8	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 508 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Colon	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Pituitary Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Zymbal's Gland		

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**MISSING**

Intestine Large - Cecum	Intestine Large - Rectum	Mammary Gland	Parathyroid Gland
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**OBSERVATIONS**

Kidney	Nephropathy	Minimal
Liver	Basophilic Focus	
	Fatty Change	Focal, Mild
	Necrosis	Mild
Spleen	Hematopoietic Cell Proliferation	Mild
	Pigmentation	Mild
Uterus	Polyp Stromal	

Note: POLYP STROMAL TGLs = 1-6

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PRIMARY CAUSE OF DEATH -

Animal Note: A FEW ORGANS ARE CONGESTED.

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

<b>ANIMAL ID:</b> 8	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 567 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

**MISSING**

Esophagus	Parathyroid Gland
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**OBSERVATIONS**

Kidney Note: BLOOD IN RENAL PELVIS.		Nephropathy	Moderate
Liver		Basophilic Focus	
Mammary Gland		Galactocele	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 2-8			
Spleen		Pigmentation	Moderate

PRIMARY CAUSE OF DEATH	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 9	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 722 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Parathyroid Gland	Thyroid Gland	Trachea
Uterus	Zymbal's Gland		

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**OBSERVATIONS**

Eye	Retina	Atrophy	Mild
Note: ATROPHY	TGLs = 5-5		
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Basophilic Focus	
		Fatty Change	Diffuse, Mild
		Hyperplasia	Mild
		Leukemia Mononuclear	
Note: SECONDARY TO MCL			
[ Basophilic Focus TGLS = 4-1 ]			
Lung		Leukemia Mononuclear	
Mammary Gland		Galactocele	
Note: GALACTOCELE	TGLs = 1-5		
Pituitary Gland	Pars Distalis	Adenoma	
		Leukemia Mononuclear	
Note: ADENOMA	TGLs = 6-2		
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-6 ]			

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 9

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Esophagus	Heart	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Mammary Gland
Nose	Oviduct	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

**MISSING**

Parathyroid Gland

**OBSERVATIONS**

Brain		Mineralization	Minimal
Clitoral Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10		
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Clear Cell Focus	
Lung		Hemorrhage	Minimal
		Infiltration Cellular	Histiocyte, Minimal
Ovary		Cyst	
Pancreas	Acinus	Adenoma	
Note: ADENOMA	TGLs = 4-9		
Pituitary Gland	Pars Distalis	Adenoma	Multiple
	Pars Distalis	Angiectasis	Minimal
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	Follicular Cel	Carcinoma	
Note: CARCINOMA	TGLs = 2-8		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

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<b>ANIMAL ID:</b> 9	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thyroid Gland	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

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**MISSING**

Thymus

**OBSERVATIONS**

Clitoral Gland		Adenoma	
[ Adenoma TGLS = 2-10 ]			
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Mild
Liver		Basophilic Focus	
Mammary Gland		Galactocele	
[ Galactocele TGLS = 1-10 ]			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Hyperplasia	Mild
Note: ADENOMA TGLs = 4-8			
Spleen		Pigmentation	Mild

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 10

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus

Islets, Pancreatic

Kidney

Lung

Pancreas

Parathyroid Gland

Thyroid Gland

Trachea

Uterus

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Clitoral Gland

Carcinoma

Note: CARCINOMA TGLs = 2-6

Liver

Basophilic Focus

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 10

TRT#: 5

SEX: Female

DAY ON TEST: 634

DOSE: 1.25%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Eye	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mesenteric
Mammary Gland	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Pituitary Gland	Skin
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder

**MISSING**

Lymph Node - Mandibular	Salivary Glands	Thymus
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**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Congestion	Mild
		Fatty Change	Diffuse, Mild
		Mixed Cell Focus	
[ Fatty Change TGLS = 4-3+6 ]			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Forestomach	Hyperkeratosis	Mild
Uterus		Polyp Stromal	
Note: POLYP STROMAL TGLs = 3-6			
Zymbal's Gland		Carcinoma	
Note: CARCINOMA TGLs = 1-13			
Note: PREDOMINANTLY SQUAMOUS CELL CA			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 10

TRT#: 7

SEX: Female

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea

Adrenal Gland - Medulla  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Bone  
Heart  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Thymus  
Uterus

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

OBSERVATIONS

Clitoral Gland  
Note: NECROSIS TGLs = 2-10

Kidney  
Liver  
Note: SUGGESTION OF LEUKEMIA IN LIVER, KIDNEY & ADRENAL

Mammary Gland  
Note: FIBROADENOMA TGLs = 1-13

Pituitary Gland  
Note: ADENOMA TGLs = 4-8

Spleen

Pars Distalis  
Pars Distalis

Necrosis Moderate  
Nephropathy Mild  
Basophilic Focus  
Fibroadenoma  
Galactocele  
Adenoma Multiple  
Angiectasis Mild  
Hematopoietic Cell Proliferation Minimal  
Pigmentation Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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<b>ANIMAL ID:</b> 11	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Lung	Parathyroid Gland	Thyroid Gland
Trachea	Uterus		

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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Eye Note: ATROPHY      TGLs = 1-5	Retina	Atrophy	Mild
Kidney Liver		Nephropathy Basophilic Focus Fatty Change	Mild
Pituitary Gland Note: ANGIOCTASIS      TGLs = 2-5	Pars Distalis	Angiectasis	Focal, Minimal Moderate

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 11

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Salivary Glands  
Thymus  
Uterus

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Pancreas  
Stomach - Forestomach  
Trachea

**OBSERVATIONS**

Heart  
Kidney  
Liver  
Mammary Gland  
    Note: FIBROADENOMA   TGLs = 1-13+13.1  
Ovary  
    Note: CYST            TGLs = 3-6  
Pituitary Gland  
  
Spleen

Pars Distalis  
Pars Distalis

Cardiomyopathy  
Nephropathy  
Focal Cellular Change  
Fibroadenoma  
  
Cyst  
  
Angiectasis  
Hyperplasia  
Hematopoietic Cell Proliferation  
Pigmentation

Mild  
Minimal  
  
  
  
  
Minimal  
Mild  
Minimal  
Moderate

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 11

TRT#: 7

SEX: Female

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Islets, Pancreatic  
Nose  
Salivary Glands  
Trachea

Adrenal Gland - Medulla  
Esophagus  
Intestine Large - Rectum  
Lung  
Ovary  
Skin  
Urinary Bladder

Bone  
Heart  
Intestine Small - Duodenum  
Lymph Node - Mandibular  
Oviduct  
Stomach - Forestomach  
Uterus

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Glandular  
Zymbal's Gland

MISSING

Clitoral Gland

Intestine Small - Ileum

Parathyroid Gland

Thymus

OBSERVATIONS

Kidney  
Liver

Nephropathy  
Basophilic Focus  
Inflammation  
Fibroadenoma  
Galactocele

Minimal  
Chronic, Focal, Minimal  
Multiple

Mammary Gland

Note: FIBROADENOMA TGLs = 1-10,2-13

Pituitary Gland

Pars Distalis

Angiectasis

Mild

Note: ANGIECTASIS TGLs = 4-8

Spleen

Hematopoietic Cell Proliferation  
Pigmentation

Mild  
Mild

Thyroid Gland

Bilateral, C Cell

Adenoma

Note: ADENOMA TGLs = 3-8

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 12

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Esophagus	Islets, Pancreatic	Lung	Pancreas
Parathyroid Gland	Salivary Glands	Trachea	

OBSERVATIONS

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
		Hyperplasia	Minimal
		Leukemia Mononuclear	
Note: SECONDARY TO MCL			
Lymph Node	Mandibular	Degeneration	Cystic, Mild
Note: DEGEN TGLs = 4-6			
Mammary Gland		Galactocele	
Note: GALACTOCELE TGLs = 3-7			
Ovary		Cyst	
Note: CYST TGLs = 5-8			
Pancreas			
Note: SPLENIC TISSUE ATTACHED TO PANCREAS			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: ADENOMA TGLs = 9-2			
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLs = 7-6 ]			
Thyroid Gland	C Cell	Hyperplasia	Mild
Uterus	Bilateral	Polyp Stromal	
Note: POLYP STROMAL TGLs = 6-1,10-1			
Zymbal's Gland		Carcinoma	
Note: CARCINOMA TGLs = 1-5+5.1,2-5+5.1			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 12

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

**MISSING**

Intestine Small - Duodenum

**OBSERVATIONS**

Clitoral Gland		Adenoma	
Note: ADENOMA	TGLs = 2-13		
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Minimal
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Mild
Lung		Infiltration Cellular	Histiocyte, Minimal
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-14		
Pituitary Gland	Pars Distalis	Adenoma	Multiple
Note: ADENOMA	TGLs = 4-8		
Note: CELLS WITH AN EOSINOPHILIC CYTOPLASM			
Note: ADENOMA	TGLs = 5-8		
Note: ONE ADENOMA APPEARS TO BE LOADED WITH			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Uterus		Polyp Stromal	
Note: POLYP STROMAL	TGLs = 3-6		

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 12

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 735

**DOSE:** 1.25%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 12

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Eye	Harderian Gland
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

MISSING

Clitoral Gland

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Fatty Change	Focal, Minimal
Lung		Congestion	Mild
Lymph Node	Mesenteric	Angiectasis	Mild
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 4-10,5-13		
Mesentery	Fat	Necrosis	Moderate
Note: NECROSIS	TGLs = 7-9		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Minimal
Note: ADENOMA	TGLs = 8-8		
Skin	Subcut Tiss	Acanthosis	Moderate
		Fibroma	
		Hemorrhage	Mild
		Hyperkeratosis	Minimal
Note: ACANTHOSIS	TGLs = 2-6		

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

---

**ANIMAL ID:** 12

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 738

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

Note: FIBROMA TGLs = 3-14

Note: ACANTHOSIS, HEMORRHAGE, AND HYPERKERATOSIS AFFECT

Note: THE SKIN OF THE LIP.

Spleen

Hematopoietic Cell Proliferation

Mild

Pigmentation

Mild

Thyroid Gland

C Cell

Adenoma

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 13	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Harderian Gland	Kidney	Uterus	Zymbal's Gland
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**OBSERVATIONS**

Liver		Basophilic Focus	
Lung		Congestion	Mild
Skin	Subcut Tiss	Fibrosarcoma	
[ Fibrosarcoma TGLS = 1-5 ]			
Thyroid Gland	C Cell	Hyperplasia	Minimal

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

**ANIMAL ID:** 13

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 735

**DOSE:** 1.25%

**DISP:** Terminal Sacrifice

**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Mammary Gland  
Pancreas  
Stomach - Glandular  
Uterus

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Lung  
Nose  
Salivary Glands  
Thymus  
Zymbal's Gland

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Ovary  
Skin  
Trachea

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Oviduct  
Stomach - Forestomach  
Urinary Bladder

**MISSING**

Parathyroid Gland

**OBSERVATIONS**

Clitoral Gland  
Note: ADENOMA TGLs = 1-13  
Heart  
Kidney  
Liver  
Pituitary Gland  
Spleen  
Thyroid Gland

Adenoma  
Cortex  
Pars Distalis  
Pars Distalis  
C Cell

Adenoma  
Cardiomyopathy  
Mineralization  
Nephropathy  
Basophilic Focus  
Adenoma  
Angiectasis  
Hematopoietic Cell Proliferation  
Pigmentation  
Hyperplasia

Mild  
Minimal  
Mild  
Mild  
Mild  
Mild  
Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 13

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Zymbal's Gland

MISSING

Clitoral Gland	Skin
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OBSERVATIONS

Brain			
Note: PITUITARY TUMOR CELLS INFILTRATED IN MENINGES			
Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
		Fatty Change	Focal, Minimal
		Mixed Cell Focus	
Lung		Hemorrhage	Minimal
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA TGLs = 1-10			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 3-8			
Spleen		Hematopoietic Cell Proliferation	Mild
Thyroid Gland	C Cell	Hyperplasia	Minimal
Uterus		Polyp Stromal	
Note: POLYP STROMAL TGLs = 2-6			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 14	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Esophagus	Parathyroid Gland	Thyroid Gland	Zymbal's Gland
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OBSERVATIONS

Clitoral Gland	Bilateral	Adenoma	
Note: ADENOMA	TGLs = 1-5,2-5.1		
Kidney		Nephropathy	Mild
Liver		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLS = 7-1.1 ]			
Lung		Congestion	Mild
Note: CONGESTION	TGLs = 4-3+4		
Spleen		Hematopoietic Cell Proliferation	Mild
[ Hematopoietic Cell Proliferation TGLS = 3-1.1 ]			
Uterus		Polyp Stromal	
[ Polyp Stromal TGLS = 6-1 ]			

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 14

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Trachea	Urinary Bladder
Uterus	Zymbal's Gland		

**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Eosinophilic Focus	
		Fatty Change	Focal, Minimal
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-13+13.1		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thymus	Epithel Cell	Hyperplasia	Mild
Thyroid Gland	C Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 14

TRT#: 7

SEX: Female

DAY ON TEST: 557

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Eye
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

**MISSING**

Parathyroid Gland

**OBSERVATIONS**

Heart		Cardiomyopathy	Minimal
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
Mammary Gland		Galactocele	
	Acinus	Hyperplasia	Mild
Note: GALACTOCELE	TGLs = 1-10		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: ADENOMA	TGLs = 3-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Uterus		Polyp Stromal	
Note: POLYP STROMAL	TGLs = 2-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 15	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 715 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus Zymbal's Gland	Thyroid Gland	Trachea	Uterus
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**OBSERVATIONS**

Kidney  Note: NECROSIS      TGLs = 6-2 Liver  [ Fatty Change TGLS = 5-1 ] Lung Mammary Gland Note: ADENOCARC      TGLs = 1-6 Pituitary Gland Note: ANGIECTASIS      TGLs = 8-3 Spleen [ Leukemia Mononuclear TGLS = 3-5 ]	Cortex         Pars Distalis	Necrosis Nephropathy  Fatty Change Leukemia Mononuclear  Leukemia Mononuclear Adenocarcinoma  Angiectasis  Leukemia Mononuclear	Mild Minimal  Diffuse, Moderate     Mild
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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

**ANIMAL ID:** 15

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 441

**DOSE:** 1.25%

**DISP:** Moribund

**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex

Adrenal Gland - Medulla

Bone

Bone Marrow

Brain

Esophagus

Intestine Large - Colon

Intestine Large - Rectum

Intestine Small - Duodenum

Intestine Small - Ileum

Intestine Small - Jejunum

Lung

Nose

Ovary

Oviduct

Pancreas

Parathyroid Gland

Pituitary Gland

Salivary Glands

Skin

Stomach - Forestomach

Stomach - Glandular

Thymus

Thyroid Gland

Trachea

Urinary Bladder

Uterus

Zymbal's Gland

**MISSING**

Clitoral Gland

Intestine Large - Cecum

Islets, Pancreatic

Lymph Node - Mandibular

Lymph Node - Mesenteric

**OBSERVATIONS**

Heart

Cardiomyopathy

Minimal

Kidney

Nephropathy

Mild

Liver

Basophilic Focus

Mammary Gland

Fibroadenoma

Note: FIBROADENOMA REPRESENTS SALIVARY GLAND NODULE

Spleen

Hematopoietic Cell Proliferation

Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 15

TRT#: 7

SEX: Female

DAY ON TEST: 722

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Esophagus	Heart
Intestine Large - Colon	Islets, Pancreatic	Mammary Gland	Nose
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thyroid Gland
Trachea	Urinary Bladder	Uterus	

MISSING

Zymbal's Gland

AUTO PRECLUDES DIAG.

Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Spleen		

OBSERVATIONS

Adrenal Gland	Cortex	Hyperplasia	Mild
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 9-8			
Brain		Leukemia Mononuclear	
Clitoral Gland		Adenoma	
Note: ADENOMA TGLs = 3-10			
Kidney		Leukemia Mononuclear	
		Nephropathy	Minimal
Liver		Fatty Change	Diffuse, Mild
		Hepatodiaphragmatic Nodule	
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 8-3+4.1			
[ Hepatodiaphragmatic Nodule TGLS = 7-4.1 ]			
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 4-1+2			
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 15	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Dead	<b>DAY ON TEST:</b> 722 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>	
Mesenteric	Leukemia Mononuclear
Pancreatic	Leukemia Mononuclear
Note: LEUKEMIA MONUC TGLs = 2-9	
Ovary	Leukemia Mononuclear
Pituitary Gland	Leukemia Mononuclear
Thymus	Leukemia Mononuclear

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

**ANIMAL ID:** 16

**TRT#:** 4  
**DOSE:** 0.62%

**SEX:** Female  
**DISP:** Terminal Sacrifice

**DAY ON TEST:** 737  
**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus  
Zymbal's Gland

Thyroid Gland

Trachea

Uterus

**OBSERVATIONS**

Kidney  
Liver  
Lung  
Note: CONGESTION TGLs = 2-3+4  
Mammary Gland  
Note: FIBROADENOMA TGLs = 1-5

Nephropathy  
Basophilic Focus  
Congestion  
Fibroadenoma

Minimal  
Mild

**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 16

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Uterus		

**MISSING**

Clitoral Gland	Zymbal's Gland
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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Mixed Cell Focus	
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA	TGLs = 1-13		
Pituitary Gland	Pars Distalis	Adenoma	Multiple
	Pars Distalis	Pigmentation	Minimal
Note: ADENOMA	TGLs = 7-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Glandular	Hyperplasia	Minimal
Uterus			
Note: ACELLULAR RED MASS. PROBABLY BURNT OUT POLYP			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 16

TRT#: 7

SEX: Female

DAY ON TEST: 660

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Clitoral Gland
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Nose	Oviduct	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Thyroid Gland	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Minimal
Note: LEUKEMIA MONUC	TGLs = 13-4		
Liver		Fatty Change	Diffuse, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 11-3		
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	
Note: MORE LIKE LYMPHOCYTIC THAN MONONUCLEAR LEUKEMIA			
Note: LEUKEMIA MONUC	TGLs = 15-8		
Note: LEUKEMIA MONUC	TGLs = 3-9,4-9		
Note: LEUKEMIA MONUC	TGLs = 7-9		
Note: LEUKEMIA MONUC	TGLs = 6-2		
Mammary Gland		Galactocele	
Ovary		Leukemia Mononuclear	
Pancreas		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 16	<b>TRT#:</b> 7 <b>DOSE:</b> CONTROL	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 660 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Pituitary Gland	Pars Distalis	Angiectasis	Minimal
	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA TGLs = 14-8			
Spleen		Leukemia Mononuclear	
		Necrosis	Mild
[ Necrosis TGLs = 8-3.1 ]			
Stomach	Glandular	Mineralization	Minimal
Thymus		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 5-2			
Uterus			
Note: ACELLULAR NECROTIC MASS			
Note: MUCINOUS EPITHELIUM LINING CERVIX AND VAGINA			
Note: NEUTROPHILS AND EXUDATE			

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 17

TRT#: 4

SEX: Female

DAY ON TEST: 639

DOSE: 0.62%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Kidney	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Pancreas
Parathyroid Gland	Pituitary Gland	Salivary Glands	Skin
Spleen	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

**MISSING**

Clitoral Gland

**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Liver		Basophilic Focus	
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA TGLs = 1-13			
Mesentery	Fat	Necrosis	Moderate
Note: NECROSIS TGLs = 2-10			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 17

TRT#: 5

DOSE: 1.25%

SEX: Female

DISP: Moribund

DAY ON TEST: 662

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Medulla	Bone	Bone Marrow	Esophagus
Heart	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Thymus	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

MISSING

Lymph Node - Mesenteric

OBSERVATIONS

Adrenal Gland	Cortex	Hyperplasia	Minimal
Brain		Hemorrhage	Mild
Clitoral Gland		Hyperplasia	Mild
		Inflammation	Chronic Active, Minimal
[ Inflammation TGLS = 1-10 ]			
Intestine Small	Duodenum	Adenocarcinoma	
Note: ADENOCARC	TGLs = 4-7		
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Minimal
Liver		Basophilic Focus	
		Fatty Change	Focal, Mild
Lung		Hemorrhage	Minimal
		Infiltration Cellular	Histiocyte, Minimal
Mammary Gland		Galactocele	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 3-8		
Spleen		Hematopoietic Cell Proliferation	Minimal
		Pigmentation	Moderate
Stomach	Glandular	Mineralization	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 17

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 662

**DOSE:** 1.25%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

Thyroid Gland

C Cell

Adenoma

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

**ANIMAL ID:** 17

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 738

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Adrenal Gland - Medulla  
Esophagus  
Intestine Large - Rectum  
Lung  
Ovary  
Salivary Glands  
Thymus  
Uterus

Bone  
Heart  
Intestine Small - Duodenum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea

**OBSERVATIONS**

Clitoral Gland  
[ Necrosis TGLS = 1-10 ]  
Islets, Pancreatic  
Note: ADENOMA TGLs = 2-9  
Kidney  
Liver  
Mammary Gland  
Pituitary Gland  
Pars Distalis  
Pars Distalis  
Note: ADENOMA TGLs = 3-8  
Spleen

Necrosis Moderate  
Adenoma  
Nephropathy Moderate  
Basophilic Focus  
Galactocele  
Adenoma  
Angiectasis Mild  
Hematopoietic Cell Proliferation Mild  
Pigmentation Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 18	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus Zymbal's Gland	Parathyroid Gland	Trachea	Uterus
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**OBSERVATIONS**

Intestine Small Note: HYPERPLASIA TGLs = 2-5	Ileum, Lymphoid Nodul	Hyperplasia	Mild
Kidney Liver Note: A FEW LARGE BASOPHILIC FOCI		Nephropathy Basophilic Focus	Mild
Lung		Congestion Hemorrhage	Mild Minimal
Spleen [ Hematopoietic Cell Proliferation TGLS = 1-5 ]		Hematopoietic Cell Proliferation Pigmentation	Mild Moderate
Thyroid Gland	C Cell	Adenoma	

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 18

TRT#: 5

SEX: Female

DAY ON TEST: 708

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	

MISSING

Zymbal's Gland

OBSERVATIONS

Kidney		Nephropathy	Moderate
Liver		Angiectasis	Minimal
		Basophilic Focus	
Lung		Edema	Moderate
	Goblet Cell	Hypertrophy	Moderate
		Infiltration Cellular	Histiocyte, Mild
		Mineralization	Mild
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-14,2-6		
Pituitary Gland		Angiectasis	Mild
	Pars Distalis	Hyperplasia	Mild
	Pars Distalis		
Note: HYPERPLASIA	TGLs = 4-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 18

TRT#: 7

SEX: Female

DAY ON TEST: 737

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Pituitary Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Note: ANITSCHKOW MYOCYTES INCREASED			
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
		Developmental Malformation	
	Bile Duct	Hyperplasia	Mild
Lung	Alveolar Epith	Hyperplasia	Mild
Lymph Node	Mediastinal	Pigmentation	Mild
	Pancreatic	Pigmentation	Mild
Mammary Gland		Fibroadenoma	
		Galactocele	
		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	C Cell	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 19	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Moribund	DAY ON TEST: 653 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Esophagus	Parathyroid Gland	Thyroid Gland	Trachea
Uterus	Zymbal's Gland		

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OBSERVATIONS

Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
		Fatty Change	Focal, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-1			
Lung	Alveolar Epith	Fibrosis	Moderate
		Hyperplasia	Mild
		Inflammation	Chronic Active, Mild
		Leukemia Mononuclear	
Note: FIBROSIS TGLs = 1-3+4			
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 2-5 ]			

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 19

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Heart	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Clitoral Gland		Necrosis	Mild
Kidney		Nephropathy	Mild
Liver		Developmental Malformation	
		Fatty Change	Focal, Minimal
		Focal Cellular Change	
Lung		Hemorrhage	Minimal
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 1-14,2-13			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Hyperplasia	Mild
Note: ADENOMA TGLs = 6-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Glandular	Hyperplasia	Mild
Uterus		Polyp Stromal	
Note: POLYP STROMAL TGLs = 4-6			

PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 19

TRT#: 7

SEX: Female

DAY ON TEST: 718

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Nose
Ovary	Oviduct	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Clitoral Gland

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Heart		Leukemia Mononuclear	
Islets Panc			
Note: SUGGESTION OF AN ADENOMA			
Kidney		Leukemia Mononuclear	
		Nephropathy	Minimal
Liver		Fatty Change	Diffuse, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 14-3			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 10-1+2			
Lymph Node	Axillary	Leukemia Mononuclear	
	Deep Cervical	Leukemia Mononuclear	
	Inguinal	Leukemia Mononuclear	
	Lumbar	Leukemia Mononuclear	
	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
	Pancreatic	Leukemia Mononuclear	

Note: MORE LIKE LYMPHOCYTIC THAN MONONUCLEAR LEUKEMIA

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 19

TRT#: 7

SEX: Female

DAY ON TEST: 718

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

Note: LEUKEMIA MONUC TGLs = 7-15,4-15

Note: LEUKEMIA MONUC TGLs = 6-14

Note: LEUKEMIA MONUC TGLs = 5-14

Note: LEUKEMIA MONUC TGLs = 15-13

Note: LEUKEMIA MONUC TGLs = 13-9

Note: LEUKEMIA MONUC TGLs = 3-9

Note: LEUKEMIA MONUC TGLs = 18-2

Note: LEUKEMIA MONUC TGLs = 16-6

Mammary Gland

Fibroadenoma

Leukemia Mononuclear

Note: FIBROADENOMA TGLs = 8-10

Pancreas

Leukemia Mononuclear

Pituitary Gland

Pars Distalis

Hyperplasia

Mild

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 17-8

Spleen

Hematopoietic Cell Proliferation

Mild

Leukemia Mononuclear

Note: THICK FIBROUS CAPSULE

[ Hematopoietic Cell Proliferation TGLS = 12-3.1 ]

Thymus

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 9-2

Uterus

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 11-6

Note: STROMAL POLYP OR PLANE OF SECTION IN ONE HORN

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

**ANIMAL ID:** 20

**TRT#:** 4  
**DOSE:** 0.62%

**SEX:** Female  
**DISP:** Terminal Sacrifice

**DAY ON TEST:** 737  
**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus	Parathyroid Gland	Thyroid Gland	Trachea
Uterus	Zymbal's Gland		

**OBSERVATIONS**

Ear		Fibrosarcoma	
Note: FIBROSARC	TGLs = 1-5		
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Congestion	Mild
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 2-6,3-7		

**PRIMARY CAUSE OF DEATH** -

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 20

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder
Zymbal's Gland			

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 4-4		
Liver		Basophilic Focus	
Lung		Hemorrhage	Minimal
Note: HEMORRHAGE	TGLs = 6-1+2		
Lymph Node	Renal	Angiectasis	Moderate
Note: ANGIECTASIS	TGLs = 5-4		
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-13		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thymus		Depletion Lymphoid	Mild
Uterus	Endometrium	Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 2-6,3-6.1		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 20

TRT#: 7

SEX: Female

DAY ON TEST: 739

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thyroid Gland
Trachea	Urinary Bladder	Uterus	

**MISSING**

Mammary Gland	Zymbal's Gland
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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Fatty Change	Focal, Minimal
		Inflammation	Chronic Active, Minimal
Note: INFLAMMATION	TGLs = 2-3		
Lymph Node			
Note: MAST CELLS INCREASED IN LYMPH NODES			
Pituitary Gland	Pars Distalis	Adenoma	Multiple
	Pars Distalis	Angiectasis	Mild
[ Angiectasis TGLS = 3-8 ]			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thymus	Epithel Cell	Hyperplasia	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 21	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Parathyroid Gland	Thyroid Gland	Uterus
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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Kidney	Nephropathy	Mild
Liver	Basophilic Focus	
	Fatty Change	Focal, Minimal
	Leukemia Mononuclear	
[ Basophilic Focus TGLS = 4-1 ]		
Lung	Congestion	Mild
Note: CONGESTION TGLs = 2-3+4		
Mammary Gland	Fibroadenoma	
Note: FIBROADENOMA TGLs = 1-6+6.1		
Spleen	Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 3-5 ]		

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 21

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Thyroid Gland
Trachea	Urinary Bladder	Uterus	Zymbal's Gland

MISSING

Thymus

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Moderate
Eye	Cornea	Inflammation	Chronic Active, Minimal
Note: INFLAMMATION TGLs = 8-10			
Harderian Gland		Abscess	Moderate
		Pigmentation	Moderate
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Hepatodiaphragmatic Nodule	
Note: ANOM HEPAT LOB TGLs = 5-3.1,6-3.1,7-3.1			
Lung		Congestion	Mild
Lymph Node	Mandibular	Infiltration Cellular	Plasma Cell, Mild
Note: INFILTRAT CELL TGLs = 3-9			
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 1-6,2-13			
Pituitary Gland	Pars Distalis	Adenoma	
Note: ADENOMA TGLs = 9-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Glandular	Hyperplasia	Minimal

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:13

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 21

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 735

**DOSE:** 1.25%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 21

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Mammary Gland  
Pancreas  
Stomach - Forestomach  
Trachea

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Ovary  
Salivary Glands  
Thymus  
Uterus

**OBSERVATIONS**

Heart		Cardiomyopathy	Minimal
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Minimal
Liver		Basophilic Focus	
		Eosinophilic Focus	
Pituitary Gland	Pars Distalis	Angiectasis	Minimal
		Hyperplasia	Focal, Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:13  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 22	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Moribund	<b>DAY ON TEST:</b> 695 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Kidney	Thyroid Gland	Trachea
Uterus			

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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Kidney			
Note: BLOOD IN PELVIS			
Liver		Basophilic Focus	
Lung		Congestion	Mild
Note: CONGESTION TGLs = 5-3+4			
Mammary Gland		Fibroadenoma	Multiple
Note: FIBROADENOMA TGLs = 2-5,3-6			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: ADENOMA TGLs = 7-4			
Spleen		Pigmentation	Moderate
Note: PIGMENT TGLs = 4-1			

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**PRIMARY CAUSE OF DEATH** -

---

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 22

TRT#: 5

SEX: Female

DAY ON TEST: 442

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Glandular  
Urinary Bladder

Adrenal Gland - Medulla  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Salivary Glands  
Thymus  
Uterus

Bone  
Heart  
Intestine Small - Duodenum  
Lung  
Ovary  
Skin  
Thyroid Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Stomach - Forestomach  
Trachea

MISSING

Clitoral Gland

Mammary Gland

Parathyroid Gland

Zymbal's Gland

OBSERVATIONS

Brain

Note: VENTRICLES DILATED

Kidney

Nephropathy

Mild

Liver

Basophilic Focus

Mesentery

Fat

Necrosis

Minimal

Note: NECROSIS

TGLs = 2-3

Pituitary Gland

Pars Distalis

Adenoma

Note: ADENOMA

TGLs = 1-8

Pars Distalis

Angiectasis

Moderate

Spleen

Hematopoietic Cell Proliferation

Mild

Pigmentation

Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

**ANIMAL ID:** 22

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 738

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Cecum  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Urinary Bladder

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Colon  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Uterus

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Thymus  
Zymbal's Gland

Bone Marrow  
Heart  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Trachea

**OBSERVATIONS**

Intestine Large  
Kidney  
Liver  
Mammary Gland

Rectum

Parasite  
Nephropathy  
Basophilic Focus  
Fibroadenoma  
Galactocele

Minimal  
Minimal

Note: FIBROADENOMA TGLs = 1-13

Pituitary Gland

Pars Distalis  
Pars Distalis

Angiectasis  
Hyperplasia

Mild  
Moderate

Note: HYPERPLASIA TGLs = 3-8

Spleen

Thyroid Gland

C Cell

Hematopoietic Cell Proliferation  
Adenoma

Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:13  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 23	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

Esophagus	Parathyroid Gland	Trachea	Uterus
Zymbal's Gland			

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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Congestion	Mild
Note: CONGESTION	TGLs = 1-3+4		
Pancreas	Acinus	Adenoma	
Thyroid Gland	C Cell	Hyperplasia	Minimal

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 23

TRT#: 5

SEX: Female

DAY ON TEST: 689

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Uterus		

MISSING

Clitoral Gland	Zymbal's Gland
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OBSERVATIONS

Intestine Large	Colon	Parasite	Minimal
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Mild
Liver		Angiectasis	Mild
		Basophilic Focus	
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 1-13,2-10			
Pituitary Gland	Pars Distalis	Adenoma	Multiple
	Pars Distalis	Angiectasis	Minimal
Note: ADENOMA TGLs = 3-8,4-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 23

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Eye	Harderian Gland
Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mesenteric	Mammary Gland
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Pituitary Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thyroid Gland	Trachea
Urinary Bladder	Uterus		

MISSING

Lymph Node - Mandibular	Zymbal's Gland
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OBSERVATIONS

Clitoral Gland		Hyperplasia Inflammation	Mild Chronic Active, Mild
Note: HYPERPLASIA TGLs = 4-10			
Eye			
Note: ANTERIOR CHAMBER			
Note: BLOOD AND PROTEINACEOUS MATERIAL IN THE			
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
Lung		Congestion	Mild
Note: CONGESTION TGLs = 3-1+2			
Nose			
Note: BLOOD IN THE TURBINATES			
Spleen		Pigmentation	Mild
Thymus	Epithel Cell	Hyperplasia	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:13

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 24

TRT#: 4

DOSE: 0.62%

SEX: Female

DISP: Moribund

DAY ON TEST: 586

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Ear	Esophagus
Eye	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lymph Node - Mesenteric	Mammary Gland	Nose	Ovary
Pancreas	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

MISSING

Lymph Node - Mandibular	Parathyroid Gland	Thyroid Gland
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OBSERVATIONS

Heart		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-1+2		
Kidney	Renal Tubule	Pigmentation	Mild
Liver		Basophilic Focus	
		Fatty Change	Focal, Mild
		Leukemia Mononuclear	
[ Basophilic Focus TGLS = 8-3 ]			
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-1+2		
Pituitary Gland	Pars Distalis	Angiectasis	Mild
Note: ANGIECTASIS	TGLs = 10-8		
Salivary Glands		Leukemia Mononuclear	
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-3 ]			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 24

TRT#: 5

SEX: Female

DAY ON TEST: 709

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Eye
Harderian Gland	Heart	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Trachea	Urinary Bladder	Uterus	

MISSING

Zymbal's Gland

OBSERVATIONS

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Infiltration Cellular	Histiocyte, Minimal
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 3-13		
Ovary		Cyst	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 4-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	C Cell	Carcinoma	
Note: CARCINOMA	TGLs = 2-8		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 24

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Uterus

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Mild
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Developmental Malformation	
Lung		Alveolar/Bronchiolar Adenoma	
Note: ALV BRON ADEN TGLs = 6-1			
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 1-10,2-13			
Pituitary Gland	Pars Distalis	Hyperplasia	Minimal
Note: HYPERPLASIA TGLs = 5-8			
Spleen		Pigmentation	Mild
Thyroid Gland	C Cell	Hyperplasia	Mild
Zymbal's Gland		Hyperplasia	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 25	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

Esophagus	Mammary Gland	Parathyroid Gland	Skin
Thyroid Gland	Uterus	Zymbal's Gland	

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**OBSERVATIONS**

Clitoral Gland [ Adenoma TGLS = 1-5 ]	Adenoma		
Kidney	Nephropathy		Mild
Liver	Basophilic Focus		
Lung	Congestion		Mild

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PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 25

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Zymbal's Gland		

MISSING

Parathyroid Gland

OBSERVATIONS

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Developmental Malformation	
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-13,2-13		
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 5-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	C Cell	Hyperplasia	Minimal
Uterus		Polyp Stromal	
Note: POLYP STROMAL	TGLs = 3-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

**ANIMAL ID:** 25

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 739

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Cecum  
Intestine Small - Jejunum  
Nose  
Salivary Glands  
Thymus  
Vagina

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Colon  
Islets, Pancreatic  
Oviduct  
Skin  
Trachea

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Pancreas  
Stomach - Forestomach  
Urinary Bladder

Bone Marrow  
Heart  
Intestine Small - Ileum  
Lymph Node - Mesenteric  
Parathyroid Gland  
Stomach - Glandular  
Uterus

**MISSING**

Intestine Large - Rectum

Lymph Node - Mandibular

Zymbal's Gland

**OBSERVATIONS**

Kidney  
Note: NEPHROPATHY TGLs = 3-4  
Liver  
Mammary Gland  
Ovary  
Note: CYST TGLs = 1-6  
Pituitary Gland  
Pars Distalis  
Pars Distalis  
Note: ADENOMA TGLs = 5-8  
Spleen  
Thyroid Gland  
C Cell

Nephropathy Mild  
Basophilic Focus  
Galactocele  
Cyst  
Adenoma  
Angiectasis Mild  
Hematopoietic Cell Proliferation Mild  
Pigmentation Mild  
Hyperplasia Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 26

TRT#: 4

DOSE: 0.62%

SEX: Female

DISP: Moribund

DAY ON TEST: 673

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Parathyroid Gland

Intestine Large - Cecum  
Thyroid Gland

Lymph Node - Mandibular  
Trachea

Ovary

OBSERVATIONS

Adrenal Gland  
Intestine Small  
Note: HYPERPLASIA TGLs = 7-6

Medulla  
Ileum, Lymphoid Nodul

Hyperplasia  
Hyperplasia

Minimal  
Minimal

Kidney  
Note: NEPHROPATHY TGLs = 10-2

Transit Epithe

Hyperplasia  
Nephropathy

Minimal  
Marked

Liver  
Note: FATTY CHANGE TGLs = 11-7

Fatty Change

Diffuse, Moderate

Lung  
Note: CONGESTION TGLs = 5-4

Congestion

Mild

Pituitary Gland  
Note: ADENOMA TGLs = 12-6

Pars Distalis  
Pars Distalis

Adenoma  
Angiectasis

Mild

Salivary Glands  
Spleen  
Note: PIGMENT TGLs = 13-7

Inflammation  
Depletion Lymphoid  
Pigmentation

Acute, Mild  
Mild  
Moderate

Stomach  
Note: NECROSIS TGLs = 14-5,15-5  
Note: INFLAMMATION TGLs = 16-5

Forestomach  
Forestomach  
Forestomach  
Forestomach  
Glandular

Acanthosis  
Hyperkeratosis  
Inflammation  
Necrosis  
Necrosis

Moderate  
Moderate  
Chronic Active, Mild  
Mild  
Mild

Uterus  
Note: POLYP STROMAL TGLs = 6-1

Polyp Stromal

Zymbal's Gland

Cyst

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 26

**TRT#:** 4

**SEX:** Female

**DAY ON TEST:** 673

**DOSE:** 0.62%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 26

TRT#: 5

SEX: Female

DAY ON TEST: 683

DOSE: 1.25%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Uterus		

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Mammary Gland		Fibroadenoma	
	Acinus	Hyperplasia	Mild
Note: FIBROADENOMA TGLs = 2-13+13.1 [ Fibroadenoma TGLS = 1-10 ]			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 3-8			
Spleen		Hematopoietic Cell Proliferation	Mild
Thyroid Gland	Follicular Cel	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 26

TRT#: 7

SEX: Female

DAY ON TEST: 710

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Brain	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Nose
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Glandular	Thyroid Gland	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
	Medulla	Pheochromocytoma Benign	
Bone Marrow		Leukemia Mononuclear	
Clitoral Gland		Hyperplasia	Mild
Kidney		Nephropathy	Minimal
Liver		Fatty Change	Diffuse, Moderate
	Bile Duct	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 6-3		
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-1+2		
Note: SEROUS EXUDATE IN LUMINA OF SOME BRONCHIOLES			
Lymph Node	Axillary	Leukemia Mononuclear	
	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 8-8		
Mammary Gland		Fibroadenoma	
		Galactocele	
		Leukemia Mononuclear	
Note: FIBROADENOMA	TGLs = 3-10.1		
Ovary		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

**ANIMAL ID:** 26

**TRT#:** 7  
**DOSE:** CONTROL

**SEX:** Female  
**DISP:** Moribund

**DAY ON TEST:** 710  
**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Hyperplasia	Mild
		Leukemia Mononuclear	
Note: ADENOMA	TGLs = 7-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 5-3.1 ]			
Stomach	Forestomach	Hyperkeratosis	Mild
Thymus		Leukemia Mononuclear	
Uterus			
Note: STROMAL POLYP OR PLANE OF SECTION			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 27

TRT#: 4

DOSE: 0.62%

SEX: Female

DISP: Dead

DAY ON TEST: 200

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Pituitary Gland  
Stomach - Glandular  
Uterus

Adrenal Gland - Medulla  
Heart  
Intestine Small - Duodenum  
Liver  
Ovary  
Salivary Glands  
Thymus  
Zymbal's Gland

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Pancreas  
Skin  
Thyroid Gland

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Parathyroid Gland  
Stomach - Forestomach  
Urinary Bladder

MISSING

Clitoral Gland                      Mammary Gland

OBSERVATIONS

Brain		Astrocytoma Malignant	
		Hydrocephalus	Moderate
Note: ASTROCYTO MAL	TGLs = 4-5+5.1		
Kidney	Cortex	Mineralization	Minimal
Note: MINERALIZATION	TGLs = 3-4		
Lung		Congestion	Moderate
Spleen		Pigmentation	Moderate
Note: CONGESTED			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 27

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	

MISSING

Thymus	Zymbal's Gland		
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OBSERVATIONS

Clitoral Gland		Adenoma	
		Necrosis	Moderate
Note: NECROSIS	TGLs = 2-10		
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-13		
Mesentery	Fat	Necrosis	Marked
Note: NECROSIS	TGLs = 3-6		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Cyst	
Note: ADENOMA	TGLs = 6-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Moderate
Uterus		Polyp Stromal	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 27

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 736

**DOSE:** 1.25%

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 27

TRT#: 7

SEX: Female

DAY ON TEST: 504

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Stomach - Forestomach  
Trachea

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Kidney  
Ovary  
Stomach - Glandular  
Urinary Bladder

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Thymus  
Zymbal's Gland

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Salivary Glands  
Thyroid Gland

**MISSING**

Clitoral Gland

Mammary Gland

Parathyroid Gland

**OBSERVATIONS**

Heart  
Liver  
Lung  
Pancreas  
Pituitary Gland  
  
Note: ADENOMA      TGLs = 3-8  
Skin  
Note: FIBROSARC      TGLs = 1-10  
Spleen  
Uterus  
Note: POLYP STROMAL      TGLs = 2-6

Acinus  
Pars Distalis  
Pars Distalis

Subcut Tiss

Cardiomyopathy  
Basophilic Focus  
Infiltration Cellular  
Atrophy  
Adenoma  
Angiectasis  
  
Fibrosarcoma  
  
Hematopoietic Cell Proliferation  
Polyp Stromal

Minimal  
  
Histiocyte, Minimal  
Minimal  
  
Mild  
  
  
  
Moderate

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 28

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus	Intestine Small - Duodenum	Islets, Pancreatic	Pancreas
Parathyroid Gland	Salivary Glands	Thyroid Gland	Trachea
Uterus	Zymbal's Gland		

**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Angiectasis	Minimal
		Basophilic Focus	
		Leukemia Mononuclear	
Note: CLUSTERS OF MONONUCLEAR CELLS			
Lung		Congestion	Mild
Lymph Node	Mandibular	Infiltration Cellular	Plasma Cell, Moderate
Note: INFILTRAT CELL TGLs = 3-5			
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA TGLs = 1-6			
Pituitary Gland	Pars Distalis	Cyst	
	Pars Intermed	Hyperplasia	Mild
[ Cyst TGLS = 6-5 ]			
Spleen		Leukemia Mononuclear	
		Pigmentation	Mild
Note: LEUKEMIA MONUC TGLs = 5-5			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 28

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Trachea	Urinary Bladder	Uterus	Zymbal's Gland

OBSERVATIONS

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-13,2-13		
Mesentery	Fat	Necrosis	Moderate
Note: NECROSIS	TGLs = 3-6		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Minimal
Note: ADENOMA	TGLs = 6-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	C Cell	Carcinoma	
Note: CARCINOMA	TGLs = 4-8		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 28

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

Adrenal Gland - Medulla  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Pancreas  
Stomach - Forestomach  
Trachea

Bone  
Heart  
Intestine Small - Duodenum  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Ovary  
Salivary Glands  
Thymus  
Uterus

MISSING

Lymph Node - Mandibular

OBSERVATIONS

Clitoral Gland  
Note: ADENOMA TGLs = 1-10

Ear  
Note: BASOSQU TM BGN TGLs = 4-6

Kidney  
Liver  
Lung  
[ Hemorrhage TGLS = 7-1 ]

Lymph Node  
Mammary Gland  
Note: FIBROADENOMA TGLs = 2-13,3-14

Pituitary Gland  
Note: ANGIOECTASIS TGLs = 5-8

Spleen

Mesenteric

Pars Distalis

Adenoma

Basosquamous Tumor Benign  
Hyperkeratosis

Nephropathy  
Basophilic Focus  
Alveolar/Bronchiolar Adenoma  
Hemorrhage  
Infiltration Cellular

Hemorrhage  
Fibroadenoma  
Galactocele

Angiectasis

Hematopoietic Cell Proliferation  
Pigmentation

Moderate

Mild

Minimal  
Histiocyte, Minimal

Mild

Multiple

Mild

Mild  
Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 28

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 738

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 29

TRT#: 4

SEX: Female

DAY ON TEST: 641

DOSE: 0.62%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Zymbal's Gland

**OBSERVATIONS**

Kidney		Nephropathy	Moderate
Liver		Basophilic Focus	
		Leukemia Mononuclear	
		Galactocele	
Mammary Gland		Adenoma	
Note: GALACTOCELE	TGLs = 1-10	Angiectasis	Mild
Pituitary Gland			
	Pars Distalis		
	Pars Distalis		
Note: ADENOMA	TGLs = 3-8		
Spleen		Hematopoietic Cell Proliferation	Minimal
		Leukemia Mononuclear	
		Pigmentation	Mild
Uterus		Polyp Stromal	
Note: POLYP STROMAL	TGLs = 2-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 29

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Nose  
Salivary Glands  
Thymus  
Uterus

Adrenal Gland - Medulla  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Ovary  
Skin  
Thyroid Gland

Bone  
Heart  
Intestine Small - Duodenum  
Lung  
Oviduct  
Stomach - Forestomach  
Trachea

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mesenteric  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

MISSING

Zymbal's Gland

OBSERVATIONS

Clitoral Gland  
Kidney  
Liver

Inflammation  
Nephropathy  
Basophilic Focus  
Leukemia Mononuclear  
Infiltration Cellular

Chronic Active, Minimal  
Minimal  
  
Plasma Cell, Mild

Lymph Node  
Note: INFILTRAT CELL TGLs = 1-9  
Mammary Gland  
Pancreas  
Note: LEUKEMIA MONUC TGLs = 2-9  
Pituitary Gland

Mandibular  
  
  
  
Pars Distalis  
Pars Distalis  
Pars Distalis

Galactocele  
Leukemia Mononuclear  
  
Adenoma  
Angiectasis  
Hyperplasia

Mild  
Minimal

Note: ADENOMA TGLs = 4-8  
Spleen

Leukemia Mononuclear  
Pigmentation

Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 29

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Pituitary Gland  
Thymus  
Uterus

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Salivary Glands  
Thyroid Gland  
Zymbal's Gland

**OBSERVATIONS**

Heart  
Kidney  
Liver  
Mammary Gland

Cardiomyopathy  
Nephropathy  
Hyperplasia  
Fibroadenoma  
Galactocele

Mild  
Mild  
Mild

Note: FIBROADENOMA TGLs = 2-13

Skin

Hyperkeratosis  
Keratoacanthoma

Marked

Note: KERATOACANTHOMA TGLs = 1-13

Spleen

Hematopoietic Cell Proliferation  
Pigmentation

Minimal  
Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:14  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 30	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Pituitary Gland	Uterus	Zymbal's Gland
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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Eosinophilic Focus	
		Hepatodiaphragmatic Nodule	

[ Hepatodiaphragmatic Nodule TGLS = 3-1 ]

Lung		Alveolar/Bronchiolar Adenoma	
		Congestion	Mild

Note: ALV BRON ADEN TGLs = 1-3

Mesentery	Fat	Necrosis	Moderate
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Note: NECROSIS TGLs = 2-2

Thyroid Gland	C Cell	Hyperplasia	Mild
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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 30

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Thyroid Gland	Trachea	Urinary Bladder
Uterus	Zymbal's Gland		

OBSERVATIONS

Adrenal Gland Note: PHEOCHROM BGN TGLs = 5-8 Note: ? MALIGNANT ?	Medulla	Pheochromocytoma Benign	
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lymph Node	Mediastinal	Congestion	Mild
Note: CONGESTION TGLs = 4-2	Mediastinal	Pigmentation	Mild
Mammary Gland		Galactocele	
	Acinus	Hyperplasia	Mild
Pituitary Gland	Pars Distalis	Adenoma	
Note: ADENOMA TGLs = 7-8	Pars Distalis	Angiectasis	Mild
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Moderate

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 30

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Cecum  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Thymus  
Uterus

Bone Marrow  
Heart  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

OBSERVATIONS

Intestine Large  
Kidney  
Liver

Colon

Parasite  
Nephropathy  
Basophilic Focus  
Leukemia Mononuclear  
Pigmentation

Minimal  
Mild

Lymph Node  
Note: PIGMENT TGLs = 4-2+3  
Mammary Gland

Mediastinal

Fibroadenoma  
Galactocele

Minimal

Note: EITHER BE A FIBROMA OR LIPOMA.  
Note: FIBROADENOMA TGLs = 1-13  
Note: MUCH OF THE TISSUE IS NECROTIC. THIS COULD

Pituitary Gland  
Note: HYPERPLASIA TGLs = 8-8  
Spleen

Pars Distalis

Hyperplasia  
Hematopoietic Cell Proliferation  
Hyperplasia  
Leukemia Mononuclear

Moderate  
Minimal  
Reticulum Cell, Moderate

Note: MIXED TYPE LYMPHOMA OR HYPERPLASIA  
Note: HYPERPLASIA TGLs = 5,6,7-3.1

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 31

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Thyroid Gland

Adrenal Gland - Medulla  
Trachea

Esophagus  
Uterus

Parathyroid Gland

MISSING

Zymbal's Gland

OBSERVATIONS

Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Minimal
Liver		Basophilic Focus	
		Fibrous Histiocytoma	Metastatic (Skin)
Note: FIB HISTIOCYT	TGLs = 7-1.2,8-1.2		
Lung		Congestion	Mild
		Fibrous Histiocytoma	Metastatic (Skin)
		Hemorrhage	Mild
Note: CONGESTION	TGLs = 6-3+4		
Mammary Gland		Fibroadenoma	Multiple
Note: FIBROADENOMA	TGLs = 1-5,2-6		
Ovary		Granulosa Cell Tumor Benign	
Note: GRANLSA TM BGN	TGLs = 4-1.1		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 9-4		
Skin	Subcut Tiss	Fibrous Histiocytoma	
Note: FIB HISTIOCYT	TGLs = 3-7		
Spleen		Hematopoietic Cell Proliferation	Moderate
		Pigmentation	Mild
Note: HEMA CELL PROL	TGLs = 5-4		

PRIMARY CAUSE OF DEATH

-

Animal Note: THE NEOPLASM IN THE OVARY COULD EITHER BE A

Animal Note: GRANULOSA CELL TUMOR OR METASTATIC SARCOMA

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 31

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	

MISSING

Zymbal's Gland

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Infiltration Cellular	Histiocyte, Minimal
Lymph Node	Mediastinal	Hemorrhage	Mild
	Mesenteric	Necrosis	Minimal
	Mediastinal	Pigmentation	Mild
Note: HEMORRHAGE TGLs = 6-2			
Mammary Gland		Adenocarcinoma	
		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 3-14			
Note: FIBROADENOMA TGLs = 2-13			
Note: ADENOCARC TGLs = 1-15			
Note: MASS ON #14 IS LIKE FIBROMA			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: ADENOMA TGLs = 7-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 31	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 736 <b>HISTO:</b>
<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
Thyroid Gland  Note: CARCINOMA      TGLs = 5-8	Follicular Cel	Carcinoma Necrosis	Mild
Uterus		Polyp Stromal	
<b>PRIMARY CAUSE OF DEATH</b>	-		

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 31

TRT#: 7

SEX: Female

DAY ON TEST: 628

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Islets, Pancreatic
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Pituitary Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Mammary Gland	Parathyroid Gland	Thymus	
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AUTO PRECLUDES DIAG.

Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum		

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
Lung		Edema	Minimal
[ Edema TGLS = 4-1+2 ]			
Mesentery	Fat	Hemorrhage	Mild
Note: HEMORRHAGE TGLs = 3-10			
Spleen		Fibrosis	Minimal
		Hemorrhage	Moderate
		Pigmentation	Minimal
Note: HEMORRHAGE TGLs = 5-3			
Uterus		Polyp Stromal	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 32

TRT#: 4

DOSE: 0.62%

SEX: Female

DISP: Moribund

DAY ON TEST: 443

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex

Brain

Intestine Small - Duodenum

Kidney

Pancreas

Skin

Thyroid Gland

Zymbal's Gland

Adrenal Gland - Medulla

Esophagus

Intestine Small - Ileum

Lymph Node - Mandibular

Parathyroid Gland

Stomach - Forestomach

Trachea

Bone

Intestine Large - Colon

Intestine Small - Jejunum

Lymph Node - Mesenteric

Pituitary Gland

Stomach - Glandular

Urinary Bladder

Bone Marrow

Intestine Large - Rectum

Islets, Pancreatic

Nose

Salivary Glands

Thymus

Uterus

**MISSING**

Clitoral Gland

Intestine Large - Cecum

**OBSERVATIONS**

Heart

Liver

Lung

Mammary Gland

Note: FIBROADENOMA TGLs = 1-13+13.1

Ovary

Note: CYST TGLs = 2-6

Spleen

Cardiomyopathy

Basophilic Focus

Necrosis

Congestion

Fibroadenoma

Cyst

Hematopoietic Cell Proliferation

Mild

Moderate

Mild

Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 32

TRT#: 5

SEX: Female

DAY ON TEST: 735

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Salivary Glands	Skin
Stomach - Forestomach	Thymus	Trachea	Urinary Bladder
Uterus	Zymbal's Gland		

OBSERVATIONS

Clitoral Gland		Adenoma	
Note: ADENOMA	TGLs = 1-10.1		
Heart		Cardiomyopathy	Mild
Intestine Small	Ileum, Lymphoid Nodul	Hyperplasia	Mild
	Jejunum, Lymphoid Nodul	Hyperplasia	Mild
Kidney		Nephropathy	Moderate
Note: NEPHROPATHY	TGLs = 3-4		
Liver		Basophilic Focus	
Mammary Gland		Galactocele	
Parathyroid Gland		Adenoma	
Pituitary Gland	Pars Distalis	Adenoma	Multiple
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 5-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Glandular	Hyperplasia	Minimal
Thyroid Gland	Follicular Cel	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 32

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Liver	Lymph Node - Mandibular	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Forestomach	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus

**MISSING**

Clitoral Gland	Lymph Node - Mesenteric	Zymbal's Gland
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**OBSERVATIONS**

Adrenal Gland	Bilateral, Medulla	Pheochromocytoma Benign	
Note: PROBABLY A MALIGNANT TUMOR IN ONE GLAND			
Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Mild
Lung		Congestion	Minimal
Mammary Gland		Fibroadenoma	
		Galactocele	
[ Galactocele TGLS = 1-13 ]			
Pituitary Gland	Pars Distalis	Adenoma	
Note: ADENOMA TGLs = 2-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 33

TRT#: 4

SEX: Female

DAY ON TEST: 547

DOSE: 0.62%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Esophagus	Eye
Harderian Gland	Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Jejunum	Islets, Pancreatic	Mammary Gland	Nose
Pancreas	Salivary Glands	Skin	Stomach - Glandular
Thyroid Gland	Trachea	Zymbal's Gland	

MISSING

Clitoral Gland	Parathyroid Gland
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OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Bone			
Note: PROBABLE OSTEOPETROSIS			
Brain		Leukemia Mononuclear	
Heart		Leukemia Mononuclear	
Intestine Large	Colon	Leukemia Mononuclear	
Intestine Small	Ileum	Leukemia Mononuclear	
Kidney	Transit Epithe	Hyperplasia	Mild
		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Fatty Change	Diffuse, Moderate
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 5-3			
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 4-9			
Ovary		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 6-8			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

**ANIMAL ID:** 33

**TRT#:** 4  
**DOSE:** 0.62%

**SEX:** Female  
**DISP:** Moribund

**DAY ON TEST:** 547  
**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

Spinal Cord		Leukemia Mononuclear	
Spleen		Leukemia Mononuclear	
		Necrosis	Moderate
Note: LEUKEMIA MONUC	TGLs = 3-3		
Stomach	Forestomach	Inflammation	Chronic Active, Minimal
Thymus		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 1-2		
Urinary Bladder		Hemorrhage	Mild
		Inflammation	Chronic Active, Mild
		Leukemia Mononuclear	
Note: HEMORRHAGE	TGLs = 2-9		
Uterus		Leukemia Mononuclear	
PRIMARY CAUSE OF DEATH	-		

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 33

TRT#: 5

SEX: Female

DAY ON TEST: 506

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Clitoral Gland	Esophagus
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Mammary Gland	Nose
Oviduct	Pancreas	Parathyroid Gland	Pituitary Gland
Salivary Glands	Skin	Stomach - Forestomach	Stomach - Glandular
Thyroid Gland	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

MISSING

Intestine Large - Cecum

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Brain		Leukemia Mononuclear	
Heart		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
Liver		Fatty Change	Focal, Minimal
		Leukemia Mononuclear	
Note: FATTY CHANGE	TGLs = 2-3		
Lung		Leukemia Mononuclear	
		Necrosis	Minimal
Note: LEUKEMIA MONUC	TGLs = 3-1+1.1+2		
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Ovary		Leukemia Mononuclear	
Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 1-3		
Thymus		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 33

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 506

**DOSE:** 1.25%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Animal Note: LEUKEMIA MORE LIKE LYMPHOCYTIC.

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 33

TRT#: 7

SEX: Female

DAY ON TEST: 644

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Clitoral Gland	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Nose
Oviduct	Pancreas	Parathyroid Gland	Pituitary Gland
Salivary Glands	Skin	Trachea	Urinary Bladder
Vagina			

MISSING

Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Brain		Hemorrhage	Moderate
		Leukemia Mononuclear	
Note: HEMORRHAGE	TGLs = 4-5		
Heart		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Basophilic Focus	
		Fatty Change	Diffuse, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-3		
Lung		Hemorrhage	Minimal
		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Mammary Gland		Galactocele	
Ovary		Leukemia Mononuclear	
Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 1-3.1 ]			
Stomach	Forestomach	Acanthosis	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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**ANIMAL ID:** 33

**TRT#:** 7  
**DOSE:** CONTROL

**SEX:** Female  
**DISP:** Moribund

**DAY ON TEST:** 644  
**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Forestomach  
Glandular

Hyperkeratosis  
Necrosis  
Leukemia Mononuclear  
Adenoma  
Leukemia Mononuclear

Minimal  
Mild

Thymus  
Thyroid Gland  
Uterus  
Vagina

C Cell

Note: MUCIFIED EPITHELIUM. DESQUAMATED MATERIAL  
Note: AND INFLAMMATORY CELLS

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**PRIMARY CAUSE OF DEATH**

-

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 34

TRT#: 4

DOSE: 0.62%

SEX: Female

DISP: Moribund

DAY ON TEST: 585

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Salivary Glands  
Thymus  
Zymbal's Gland

Adrenal Gland - Medulla  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Skin  
Thyroid Gland

Bone  
Heart  
Intestine Small - Duodenum  
Lung  
Ovary  
Stomach - Forestomach  
Trachea

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Pancreas  
Stomach - Glandular  
Urinary Bladder

MISSING

Parathyroid Gland

OBSERVATIONS

Clitoral Gland  
Note: ADENOMA TGLs = 1-10  
Kidney  
Liver

Bilateral

Adenoma

Nephropathy  
Basophilic Focus  
Hepatodiaphragmatic Nodule

Minimal

Note: ANOM HEPAT LOB TGLs = 2-3.1  
Mammary Gland  
Pituitary Gland

Pars Distalis  
Pars Distalis

Galactocele  
Adenoma  
Angiectasis

Moderate

Note: ADENOMA TGLs = 3-8  
Spleen  
Uterus

Hematopoietic Cell Proliferation  
Polyp Stromal

Moderate

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 34

TRT#: 5

SEX: Female

DAY ON TEST: 596

DOSE: 1.25%

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Clitoral Gland	Intestine Large - Colon
Intestine Small - Duodenum	Islets, Pancreatic	Lymph Node - Mandibular	Nose
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Glandular	Thyroid Gland	Trachea
Urinary Bladder	Vagina		

MISSING

Esophagus

AUTO PRECLUDES DIAG.

Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Ileum	Intestine Small - Jejunum
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OBSERVATIONS

Adrenal Gland	Cortex	Necrosis	Marked
	Medulla	Necrosis	Marked
Note: IS MORE AN INFARCTION.			
Note: NECROSIS OR INFARCTION OF BOTH CORTEX AND MEDULLA.			
Brain		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Hepatodiaphragmatic Nodule	
		Leukemia Mononuclear	
Note: ANOM HEPAT LOB TGLs = 5-3			
Lung		Edema	Mild
		Leukemia Mononuclear	
Lymph Node	Mesenteric	Leukemia Mononuclear	
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA TGLs = 1-13			
Ovary		Leukemia Mononuclear	
Pituitary Gland	Pars Distalis	Hemorrhage	Mild

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 34	<b>TRT#:</b> 5 <b>DOSE:</b> 1.25%	<b>SEX:</b> Female <b>DISP:</b> Dead	<b>DAY ON TEST:</b> 596 <b>HISTO:</b>
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<b>ORGAN AND ACCOUNTABLE SITE STATUS</b>			
		Hyperplasia	Focal, Minimal
		Leukemia Mononuclear	
Note: HYPERPLASIA TGLs = 6-8			
Spleen		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-3			
Stomach	Forestomach	Hyperkeratosis	Mild
Thymus		Leukemia Mononuclear	
Uterus		Necrosis	Mild
		Polyp Stromal	
Note: PROBABLY A POLYP ON ONE HORN. NECROSIS/AUTOLYSIS.			
Note: POLYP STROMAL TGLs = 2-6			
Vagina			
Note: MUCINOUS EPITHELIUM, SECRETORY MATERIAL, AND			
Note: NEUTROPHILS.			
Zymbal's Gland		Cyst	

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<b>PRIMARY CAUSE OF DEATH</b>	-
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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 34

TRT#: 7

SEX: Female

DAY ON TEST: 441

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Pituitary Gland  
Stomach - Glandular  
Urinary Bladder

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Kidney  
Ovary  
Salivary Glands  
Thymus  
Uterus

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Thyroid Gland

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea

**MISSING**

Clitoral Gland

Parathyroid Gland

Zymbal's Gland

**OBSERVATIONS**

Heart  
Liver  
Lung

Cardiomyopathy  
Basophilic Focus  
Hemorrhage  
Infiltration Cellular

Mild  
Minimal  
Histiocyte, Minimal

Note: HEMORRHAGE TGLs = 2-1+2

Mammary Gland

Note: FIBROADENOMA TGLs = 1-13+14

Fibroadenoma

Spleen

Hematopoietic Cell Proliferation

Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 35

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Lymph Node - Mandibular

Parathyroid Gland

Zymbal's Gland

OBSERVATIONS

Clitoral Gland

Adenoma

Note: ADENOMA TGLs = 4-5

Kidney

Nephropathy

Mild

Liver

Basophilic Focus

Lung

Congestion

Moderate

Lymph Node

Mediastinal

Angiectasis

Moderate

Note: ANGIECTASIS TGLs = 8-4

Mammary Gland

Fibroadenoma

Multiple

Note: GALACTOCELE TGLs = 3-5

Note: FIBROADENOMA TGLs = 1-7,2-6

Pituitary Gland

Pars Distalis

Angiectasis

Moderate

Pars Distalis

Hyperplasia

Mild

Note: ANGIECTASIS TGLs = 7-4

Thyroid Gland

C Cell

Hyperplasia

Minimal

Uterus

Polyp Stromal

[ Polyp Stromal TGLS = 6-1 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 35

TRT#: 5

SEX: Female

DAY ON TEST: 667

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Medulla	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Mammary Gland	Nose	Ovary
Oviduct	Pancreas	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Zymbal's Gland	

MISSING

Parathyroid Gland

OBSERVATIONS

Adrenal Gland	Cortex	Hyperplasia	Mild
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
		Fatty Change	Focal, Minimal
Pituitary Gland	Pars Distalis	Angiectasis	Minimal
	Pars Distalis	Cyst	
	Pars Distalis	Hyperplasia	Mild
Note: CYST	TGLs = 2-8		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Uterus		Polyp Stromal	
Note: POLYP STROMAL	TGLs = 1-6		

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 35

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea  
Zymbal's Gland

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Thymus  
Uterus

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Thyroid Gland  
Vagina

**OBSERVATIONS**

Heart  
Kidney  
Liver  
Mammary Gland

Cardiomyopathy  
Nephropathy  
Basophilic Focus  
Fibroadenoma  
Galactocele

Mild  
Mild

Note: FIBROADENOMA TGLs = 1-13+13.1

Pituitary Gland

Pars Distalis  
Pars Distalis

Angiectasis  
Hyperplasia

Mild  
Mild

Note: ANGIECTASIS TGLs = 4-8

Spleen

Hematopoietic Cell Proliferation  
Pigmentation

Minimal  
Mild

Uterus

Note: ACELLULAR BLOODY MASS

Vagina

Note: MUCIFIED EPITHLIUM IN VAGINA AND VULVA IN #7A

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:14  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 36	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Mammary Gland	Parathyroid Gland	Thyroid Gland
Trachea	Zymbal's Gland		

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**OBSERVATIONS**

Clitoral Gland		Adenoma Inflammation	Chronic Active, Minimal
[ Adenoma TGLS = 1-5 ]			
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Congestion	Mild
Note: CONGESTION    TGLs = 2-3+4			
Pituitary Gland	Pars Distalis Pars Distalis	Adenoma Angiectasis	Mild
Note: ADENOMA        TGLs = 3-4			

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 36

TRT#: 5

SEX: Female

DAY ON TEST: 701

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Esophagus	Eye	Harderian Gland
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Nose
Oviduct	Pancreas	Parathyroid Gland	Salivary Glands
Skin	Stomach - Glandular	Thyroid Gland	Trachea
Urinary Bladder			

MISSING

Clitoral Gland	Zymbal's Gland
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OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Bone Marrow		Leukemia Mononuclear	
Brain		Leukemia Mononuclear	
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Minimal
Liver		Fatty Change	Diffuse, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-3		
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 8-2		
Note: LEUKEMIA MONUC	TGLs = 7-8		
Mammary Gland		Galactocele	
Nose			
Note: BLOOD IN NASAL TURBINATES			
Ovary		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 36

TRT#: 5

SEX: Female

DAY ON TEST: 701

DOSE: 1.25%

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

Pituitary Gland Note: LEUKEMIA MONUC TGLs = 6-8	Pars Distalis	Leukemia Mononuclear	
Spinal Cord Note: DEGENERATION OF A FEW NUCLEI		Leukemia Mononuclear	
Spleen [ Leukemia Mononuclear TGLS = 3-3 ]		Leukemia Mononuclear	
Stomach	Forestomach	Acanthosis	Minimal
	Forestomach	Hyperkeratosis	Minimal
Thymus		Leukemia Mononuclear	
Uterus		Leukemia Mononuclear	
		Polyp Stromal	
Note: POLYP STROMAL TGLs = 4-6			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 36

TRT#: 7

SEX: Female

DAY ON TEST: 739

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Zymbal's Gland

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Ovary  
Salivary Glands  
Thymus

Bone  
Esophagus  
Intestine Small - Duodenum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Trachea

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Urinary Bladder

**OBSERVATIONS**

Heart  
Kidney  
Liver  
  
Lung  
Mammary Gland

Cardiomyopathy  
Nephropathy  
Basophilic Focus  
Leukemia Mononuclear  
Infiltration Cellular  
Fibroadenoma  
Galactocele

Mild  
Mild  
  
Histiocyte, Minimal  
Multiple

[ Galactocele TGLS = 1-13,2-14+14.1 ]

Pituitary Gland  
Spleen

Pars Distalis

Hyperplasia  
Hematopoietic Cell Proliferation  
Leukemia Mononuclear

Mild  
Mild

Thyroid Gland  
Uterus

C Cell

Hyperplasia  
Polyp Stromal

Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 37	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Parathyroid Gland	Pituitary Gland	Thyroid Gland
Uterus			

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**MISSING**

Zymbal's Gland

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**OBSERVATIONS**

Islets, Pancreatic	Adenoma	
Kidney	Nephropathy	Minimal
Liver	Basophilic Focus	
Lung	Congestion	Moderate

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**PRIMARY CAUSE OF DEATH** -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 37

TRT#: 5

SEX: Female

DAY ON TEST: 680

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Parathyroid Gland	Salivary Glands	Skin
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder
Uterus	Zymbal's Gland		

MISSING

Islets, Pancreatic	Pancreas
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OBSERVATIONS

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Heart		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
		Nephropathy	Mild
Liver		Leukemia Mononuclear	
Note: LEUKEMIA MONUC TGLs = 3-3			
Lung		Leukemia Mononuclear	
Lymph Node	Mediastinal	Leukemia Mononuclear	
Mammary Gland		Galactocele	
Pituitary Gland	Pars Distalis	Angiectasis	Minimal
	Pars Distalis	Hyperplasia	Mild
Spleen		Angiectasis	Mild
		Leukemia Mononuclear	
		Necrosis	Mild
Note: NECROSIS TGLs = 2-3 [ Angiectasis TGLS = 1-3 ]			
Stomach	Forestomach	Hyperkeratosis	Minimal
Thymus		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 37

TRT#: 7

SEX: Female

DAY ON TEST: 610

DOSE: CONTROL

DISP: Dead

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Clitoral Gland	Esophagus
Intestine Small - Duodenum	Mammary Gland	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thyroid Gland	Trachea	Uterus
Zymbal's Gland			

MISSING

Islets, Pancreatic

AUTO PRECLUDES DIAG.

Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Ileum
Intestine Small - Jejunum	Urinary Bladder		

OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-8		
Brain		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLS = 6-5 ]			
Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
Liver		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-3		
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 1-1+2		
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mediastinal	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-8		
Note: LEUKEMIA MONUC	TGLs = 7-9		
Nose		Leukemia Mononuclear	
Ovary		Leukemia Mononuclear	

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 37

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 610

**DOSE:** CONTROL

**DISP:** Dead

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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Pituitary Gland

Pars Distalis

Hyperplasia

Mild

Spleen

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 2-3

Thymus

Leukemia Mononuclear

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**PRIMARY CAUSE OF DEATH**

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:14  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 38	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Kidney	Skin	Trachea
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MISSING

Zymbal's Gland

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OBSERVATIONS

Clitoral Gland Note: ADENOMA TGLs = 4-5.3		Adenoma	
Liver		Angiectasis Basophilic Focus	Mild
	Bile Duct	Hyperplasia	Mild
Lung Note: CONGESTION TGLs = 3-3+4		Congestion	Mild
Mammary Gland Note: FIBROADENOMA TGLs = 1-5.1+5.2,2-5.1+5.2		Fibroadenoma	Multiple

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PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 38

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Parathyroid Gland
Salivary Glands	Skin	Stomach - Glandular	Thymus
Trachea	Urinary Bladder		

MISSING

Pituitary Gland	Stomach - Forestomach	Zymbal's Gland	
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OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney	Papilla	Mineralization	Minimal
		Nephropathy	Mild
	Renal Tubule	Pigmentation	Minimal
Liver		Basophilic Focus	
Lung		Congestion	Mild
		Hemorrhage	Minimal
		Infiltration Cellular	Histiocyte, Mild
Note: CONGESTION	TGLs = 3-1+2		
Mammary Gland		Galactocele	
Pancreas	Acinus	Atrophy	Minimal
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	C Cell	Hyperplasia	Mild
Uterus		Polyp Stromal	

Note: POLYP STROMAL TGLs = 4-6

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 38

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

OBSERVATIONS

Clitoral Gland		Adenoma	
Note: ADENOMA	TGLs = 3-10		
Ear		Acanthosis	Moderate
		Hyperkeratosis	Marked
Note: PROBABLY A PAPILLOMA WITH THE STALK CUTOFF			
Note: ACANTHOSIS	TGLs = 1-13		
Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Mild
Liver		Basophilic Focus	
		Fatty Change	Focal, Minimal
		Leukemia Mononuclear	
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 2-14		
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 6-8		
Spleen		Leukemia Mononuclear	
		Pigmentation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:14  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 39	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Esophagus Zymbal's Gland	Parathyroid Gland	Trachea	Uterus
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OBSERVATIONS

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Note: BASOPH FOCUS TGLs = 3-1			
Lung		Congestion	Mild
Mammary Gland		Fibroadenoma Galactocele	
[ Galactocele TGLS = 1-5 ]			
Pituitary Gland	Pars Distalis Pars Distalis	Adenoma Angiectasis	Mild
Note: ADENOMA TGLs = 2-4			
Thyroid Gland	C Cell	Hyperplasia	Minimal

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

**ANIMAL ID:** 39

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 736

**DOSE:** 1.25%

**DISP:** Terminal Sacrifice

**HISTO:**

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Mammary Gland  
Pancreas  
Stomach - Forestomach  
Trachea

Bone  
Esophagus  
Intestine Small - Duodenum  
Lung  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Ovary  
Salivary Glands  
Thymus  
Uterus

**OBSERVATIONS**

Heart  
Kidney  
Liver  
Pituitary Gland

Pars Distalis  
Pars Distalis  
Pars Distalis

Cardiomyopathy  
Nephropathy  
Basophilic Focus  
Adenoma  
Angiectasis  
Pigmentation

Mild  
Mild  
  
Mild  
Minimal

Note: ADENOMA TGLs = 2-8

Spleen  
Hematopoietic Cell Proliferation  
Pigmentation

Mild  
Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 39

TRT#: 7

SEX: Female

DAY ON TEST: 639

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Pituitary Gland	Salivary Glands
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	

MISSING

Zymbal's Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Intestine Large	Colon	Parasite	Mild
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
		Clear Cell Focus	
		Hepatodiaphragmatic Nodule	
Note: ANOM HEPAT LOB TGLs = 4-6			
Skin	Subcut Tiss	Fibroma	
Note: FIBROMA TGLs = 1-13			
Spleen		Hematopoietic Cell Proliferation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 40

TRT#: 4

SEX: Female

DAY ON TEST: 568

DOSE: 0.62%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Clitoral Gland	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Mammary Gland	Nose
Pancreas	Pituitary Gland	Salivary Glands	Skin
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder

MISSING

Parathyroid Gland	Thymus	Zymbal's Gland
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OBSERVATIONS

Adrenal Gland	Cortex	Leukemia Mononuclear	
	Medulla	Leukemia Mononuclear	
Brain		Leukemia Mononuclear	
Heart		Leukemia Mononuclear	
Intestine Small	Duodenum	Leukemia Mononuclear	
Kidney		Leukemia Mononuclear	
Liver		Fatty Change	Diffuse, Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 5-3		
Lung		Leukemia Mononuclear	
Lymph Node	Mandibular	Leukemia Mononuclear	
	Mesenteric	Leukemia Mononuclear	
Ovary		Cyst	
Note: CYST	TGLs = 2-6		
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 3-3,4-3		
Stomach	Forestomach	Necrosis	Mild
Note: NECROSIS	TGLs = 6-8		
Uterus		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 40

TRT#: 5

SEX: Female

DAY ON TEST: 689

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Heart	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Pituitary Gland	Thymus	Trachea
Urinary Bladder	Uterus		

MISSING

Clitoral Gland

OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Kidney		Nephropathy	Mild
Note: NEPHROPATHY TGLs = 5-4			
Liver		Basophilic Focus	
		Hepatodiaphragmatic Nodule	
Note: ANOM HEPAT LOB TGLs = 4-3			
Mammary Gland		Fibroadenoma	
Note: FIBROADENOMA TGLs = 2-13			
Salivary Glands		Sarcoma	Metastatic (Skin)
Skin	Subcut Tiss	Sarcoma	
Note: SARCOMA TGLs = 3-9			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Forestomach	Acanthosis	Minimal
	Forestomach	Hyperkeratosis	Mild
	Glandular	Mineralization	Minimal
Thyroid Gland	C Cell	Adenoma	
		Sarcoma	Metastatic (Skin)
Zymbal's Gland		Adenoma	
Note: ADENOMA TGLs = 7-6			

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 40

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 689

**DOSE:** 1.25%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 40

TRT#: 7

SEX: Female

DAY ON TEST: 638

DOSE: CONTROL

DISP: Natural Death

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Mammary Gland  
Pancreas  
Stomach - Glandular  
Urinary Bladder

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Thymus  
Uterus

Bone  
Esophagus  
Intestine Small - Duodenum  
Lymph Node - Mandibular  
Ovary  
Salivary Glands  
Thyroid Gland  
Zymbal's Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mesenteric  
Oviduct  
Stomach - Forestomach  
Trachea

**OBSERVATIONS**

Heart  
Kidney  
Liver  
Lung  
  
Note: LEUKEMIA MONUC TGLs = 2-1+2  
Lymph Node  
Pituitary Gland  
  
Note: ANGIECTASIS TGLs = 7-8  
Skin  
[ Fibroma TGLS = 1-13 ]  
Spleen  
[ Leukemia Mononuclear TGLS = 5-3 ]

Cardiomyopathy  
Leukemia Mononuclear  
Leukemia Mononuclear  
Hemorrhage  
Leukemia Mononuclear  
  
Leukemia Mononuclear  
Angiectasis  
Hyperplasia  
  
Fibroma  
  
Leukemia Mononuclear

Mild  
  
  
Mild  
  
Moderate  
Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 41

TRT#: 4

SEX: Female

DAY ON TEST: 699

DOSE: 0.62%

DISP: Dead

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus

Parathyroid Gland

Thyroid Gland

Trachea

Uterus

Zymbal's Gland

**OBSERVATIONS**

Kidney

Leukemia Mononuclear

Nephropathy

Mild

Liver

Leukemia Mononuclear

Lung

Leukemia Mononuclear

Mammary Gland

Fibroadenoma

Multiple

Galactocele

Note: FIBROADENOMA TGLs = 4-7,5-8

Ovary

Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 2-6

Pituitary Gland

Pars Distalis

Angiectasis

Moderate

Pars Distalis

Hyperplasia

Mild

Note: ANGIECTASIS TGLs = 3-6

Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLS = 1-5 ]

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 41

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Pituitary Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thyroid Gland	Trachea	Urinary Bladder
Uterus	Zymbal's Gland		

**MISSING**

Clitoral Gland	Thymus
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**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Minimal
Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Minimal
Liver		Basophilic Focus	
Lymph Node	Mediastinal	Pigmentation	Mild
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 2-13,3-10		
Pharynx	Epithelium, Palate	Hyperplasia	Moderate
Spleen		Pigmentation	Moderate

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 41

TRT#: 7

SEX: Female

DAY ON TEST: 739

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex

Adrenal Gland - Medulla

Bone

Bone Marrow

Brain

Clitoral Gland

Esophagus

Eye

Harderian Gland

Intestine Large - Cecum

Intestine Large - Colon

Intestine Large - Rectum

Intestine Small - Duodenum

Intestine Small - Ileum

Intestine Small - Jejunum

Islets, Pancreatic

Lung

Lymph Node - Mandibular

Lymph Node - Mesenteric

Mammary Gland

Nose

Ovary

Oviduct

Pancreas

Parathyroid Gland

Pituitary Gland

Salivary Glands

Skin

Stomach - Forestomach

Stomach - Glandular

Thyroid Gland

Trachea

Urinary Bladder

Uterus

**MISSING**

Thymus

Zymbal's Gland

**OBSERVATIONS**

Heart

Cardiomyopathy

Mild

Kidney

Nephropathy

Mild

Liver

Basophilic Focus

Focal Cellular Change

Note: SLIGHT COMPRESSION. ? NEOPLASTIC NODULE ?

Lymph Node

Note: NUMEROUS MAST CELLS

Spleen

Pigmentation

Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 42

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus	Eye	Islets, Pancreatic	Pancreas
Parathyroid Gland	Thyroid Gland		

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
		Hepatodiaphragmatic Nodule	
[ Hepatodiaphragmatic Nodule TGLs = 9-1 ]			
Lung		Congestion	Mild
Note: CONGESTION TGLs = 6-3+4			
Lymph Node	Mesenteric	Infiltration Cellular	Histiocyte, Mild
	Pancreatic	Infiltration Cellular	Histiocyte, Mild
Note: INFILTRAT CELL TGLs = 7-5,8-5			
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 2-6,3-7,4-8			
Uterus		Pigmentation	Moderate
		Polyp Stromal	
Note: POLYP STROMAL TGLs = 5-1			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 42

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Uterus	Zymbal's Gland	

MISSING

Urinary Bladder

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Kidney		Fibrosis	Mild
	Cortex	Mineralization	Minimal
	Papilla	Mineralization	Minimal
		Nephropathy	Minimal
Note: HYALINIZATION OF RENAL TUBULES			
Note: FIBROSIS TGLs = 3-4			
Liver		Basophilic Focus	
Note: A LARGE BASOPHILIC FOCUS			
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA TGLs = 1-13			
Pituitary Gland	Pars Distalis	Hyperplasia	Mild
Spleen		Hematopoietic Cell Proliferation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 42

TRT#: 7

SEX: Female

DAY ON TEST: 682

DOSE: CONTROL

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Thymus  
Uterus

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Thyroid Gland  
Zymbal's Gland

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea

OBSERVATIONS

Clitoral Gland  
  
Note: NECROSIS TGLs = 2-10  
Note: ADENOMA TGLs = 3-10

Heart  
Kidney  
Liver  
Mammary Gland

Note: FIBROADENOMA TGLs = 1-13  
Pituitary Gland

Note: ADENOMA TGLs = 4-8  
Spleen

Pars Distalis  
Pars Distalis

Adenoma  
Necrosis Moderate  
  
Cardiomyopathy Mild  
Nephropathy Mild  
Basophilic Focus  
Fibroadenoma  
Galactocele  
  
Adenoma  
Angiectasis Mild  
  
Hematopoietic Cell Proliferation Mild  
Pigmentation Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 43

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Esophagus  
Zymbal's Gland

Parathyroid Gland

Thyroid Gland

Trachea

OBSERVATIONS

Kidney  
Liver

Nephropathy  
Basophilic Focus  
Leukemia Mononuclear  
Leukemia Mononuclear

Minimal

Lung

Note: LEUKEMIA MONUC TGLs = 5-3+4

Lymph Node

Mediastinal  
Mesenteric

Leukemia Mononuclear  
Leukemia Mononuclear

Note: LEUKEMIA MONUC TGLs = 4-5,6-5

Mammary Gland

Note: FIBROADENOMA TGLs = 1-7

Fibroadenoma

Mesentery

Fat

Pigmentation

Moderate

Note: PIGMENT TGLs = 2-8

Pituitary Gland

Pars Distalis

Angiectasis

Minimal

Note: ANGIECTASIS TGLs = 7-8

Spleen

Leukemia Mononuclear

Note: CONGESTED

[ Leukemia Mononuclear TGLs = 3-6 ]

Uterus

Polyp Stromal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 43

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose	Ovary
Oviduct	Pancreas	Parathyroid Gland	Pituitary Gland
Salivary Glands	Skin	Stomach - Glandular	Thymus
Thyroid Gland	Trachea	Urinary Bladder	Uterus

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Kidney	Renal Tubule	Hyperplasia	Minimal
		Nephropathy	Mild
Liver		Basophilic Focus	
		Inflammation	Chronic Active, Mild
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
	Acinus	Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 1-10		
Note: FIBROADENOMA	TGLs = 2-13,3-14		
Spleen		Hematopoietic Cell Proliferation	Mild
Stomach	Forestomach	Acanthosis	Minimal
	Forestomach	Hyperkeratosis	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 43

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

OBSERVATIONS

Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Leukemia Mononuclear	
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA TGLs = 2-13,3-14			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Moderate
Note: ADENOMA TGLs = 5-8			
Spleen		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:14  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 44	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Esophagus	Thyroid Gland	Uterus	Zymbal's Gland
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OBSERVATIONS

Clitoral Gland		Inflammation	Acute, Mild
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Note: INFLAMMATION TGLs = 4-1.1

Kidney		Nephropathy	Minimal
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Liver		Basophilic Focus	
		Clear Cell Focus	
		Hepatodiaphragmatic Nodule	

[ Hepatodiaphragmatic Nodule TGLS = 7-1.1 ]

Lung		Hemorrhage	Minimal
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Mammary Gland		Fibroadenoma	Multiple
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Note: FIBROADENOMA TGLs = 1-5,2-6,3-6

Galactocele

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PRIMARY CAUSE OF DEATH

-

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 44

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Mammary Gland  
Pancreas  
Stomach - Forestomach  
Urinary Bladder

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Lung  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Uterus

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Ovary  
Salivary Glands  
Thymus  
Zymbal's Gland

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Oviduct  
Skin  
Trachea

**MISSING**

Clitoral Gland

**OBSERVATIONS**

Heart		Cardiomyopathy	Mild
Kidney		Nephropathy	Minimal
	Renal Tubule	Pigmentation	Minimal
Liver		Angiectasis	Mild
		Basophilic Focus	
Pituitary Gland	Pars Distalis	Hyperplasia	Minimal
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Thyroid Gland	C Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 44

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Uterus

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Thymus

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Trachea

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Urinary Bladder

**MISSING**

Clitoral Gland                      Zymbal's Gland

**OBSERVATIONS**

Heart  
Kidney  
Liver  
Mammary Gland

Cardiomyopathy  
Nephropathy  
Basophilic Focus  
Fibroadenoma  
Galactocele

Mild  
Mild

Note: FIBROADENOMA    TGLs = 2-13+13.1

Pituitary Gland                      Pars Distalis  
   Pars Distalis

Adenoma  
Angiectasis

Multiple  
Mild

Note: ADENOMA            TGLs = 4-8

Spleen    Hematopoietic Cell Proliferation  
   Pigmentation  
Thyroid Gland                      Bilateral, C Cell                      Adenoma

Mild  
Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:14  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 45	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

Esophagus	Lung	Parathyroid Gland	Thyroid Gland
Trachea	Zymbal's Gland		

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OBSERVATIONS

Eye [ Cataract TGLS = 1-5 ]	Lens	Cataract	Mild
Kidney Note: NEPHROPATHY TGLs = 7-2		Nephropathy	Moderate
Liver		Basophilic Focus	
Mammary Gland  Note: FIBROADENOMA TGLs = 2-6		Fibroadenoma	
		Galactocele	
Ovary Note: CYST TGLs = 3-7		Cyst	
Spleen  [ Hematopoietic Cell Proliferation TGLS = 6-5 ]		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Uterus Note: POLYP STROMAL TGLs = 5-1		Polyp Stromal	

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PRIMARY CAUSE OF DEATH -

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 45

TRT#: 5

SEX: Female

DAY ON TEST: 639

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Eye	Heart
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lung
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Uterus

MISSING

Lymph Node - Mandibular	Zymbal's Gland
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OBSERVATIONS

Brain			
Note: DISTENDED VENTRICLES			
Esophagus		Hyperkeratosis	Minimal
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Fatty Change	Diffuse, Mild
Lymph Node	Mesenteric	Congestion	Mild
Note: CONGESTION TGLs = 3-8			
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA TGLs = 1-13			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 2-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Forestomach	Hyperkeratosis	Mild
	Forestomach	Necrosis	Mild
Thyroid Gland	C Cell	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 45

**TRT#:** 5

**SEX:** Female

**DAY ON TEST:** 639

**DOSE:** 1.25%

**DISP:** Moribund

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 45

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Esophagus	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Nose	Ovary	Oviduct	Pancreas
Parathyroid Gland	Salivary Glands	Skin	Stomach - Forestomach
Stomach - Glandular	Thymus	Thyroid Gland	Trachea
Urinary Bladder	Zymbal's Gland		

MISSING

Mammary Gland

OBSERVATIONS

Clitoral Gland		Necrosis	Mild
Heart		Cardiomyopathy	Mild
Kidney	Cortex	Mineralization	Minimal
		Nephropathy	Mild
Liver		Angiectasis	Minimal
		Basophilic Focus	
		Focal Cellular Change	
		Leukemia Mononuclear	
		Necrosis	Minimal
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
	Pars Distalis	Cyst	
Note: CYST	TGLs = 2-8		
Spleen		Leukemia Mononuclear	
		Pigmentation	Mild
Uterus		Polyp Stromal	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 46	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Islets, Pancreatic	Pancreas	Parathyroid Gland
Thyroid Gland	Trachea	Uterus	Zymbal's Gland

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**OBSERVATIONS**

Kidney	Nephropathy	Minimal
Liver	Basophilic Focus	
Lung	Congestion	Mild
Mammary Gland	Fibroadenoma	

Note: FIBROADENOMA TGLs = 2-5+5.1

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PRIMARY CAUSE OF DEATH

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 46

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Clitoral Gland
Esophagus	Intestine Large - Cecum	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Trachea
Urinary Bladder	Uterus	Zymbal's Gland	

MISSING

Adrenal Gland - Cortex	Adrenal Gland - Medulla
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OBSERVATIONS

Heart		Cardiomyopathy	Mild
		Leukemia Mononuclear	
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 4-3		
Lung		Leukemia Mononuclear	
Note: LEUKEMIA MONUC	TGLs = 2-1+2		
Mammary Gland		Galactocele	
Pituitary Gland	Pars Distalis	Angiectasis	Minimal
	Pars Distalis	Hyperplasia	Mild
Note: ANGIECTASIS	TGLs = 5-4		
Spleen		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
[ Hematopoietic Cell Proliferation TGLS = 3-3 ]			
Thyroid Gland	C Cell	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 46

TRT#: 7

SEX: Female

DAY ON TEST: 647

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Brain  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Salivary Glands  
Thymus

Adrenal Gland - Medulla  
Clitoral Gland  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Skin  
Trachea

Bone  
Esophagus  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Forestomach  
Urinary Bladder

Bone Marrow  
Heart  
Intestine Small - Duodenum  
Lung  
Ovary  
Pituitary Gland  
Stomach - Glandular

**MISSING**

Zymbal's Gland

**OBSERVATIONS**

Kidney  
Liver  
Mammary Gland  
    Note: FIBROADENOMA   TGLs = 1-13  
Spleen  
Thyroid Gland  
    Note: CARCINOMA       TGLs = 4-8  
Uterus  
    Note: POLYP STROMAL   TGLs = 6-6

C Cell

Nephropathy  
Basophilic Focus  
Fibroadenoma  
Hematopoietic Cell Proliferation  
Carcinoma  
Polyp Stromal

Minimal  
  
  
Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 47

TRT#: 4

SEX: Female

DAY ON TEST: 737

DOSE: 0.62%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Esophagus	Intestine Small - Ileum	Parathyroid Gland	Trachea
Uterus	Zymbal's Gland		

**OBSERVATIONS**

Intest Small			
Note: THICKENING AND INCREASED CELLULARITY IN MUSCULARIS			
Kidney	Renal Tubule	Hyperplasia	Mild
		Nephropathy	Mild
Liver		Basophilic Focus	
Lung		Congestion	Mild
	Alveolar Epith	Hyperplasia	Mild
Note: CONGESTION TGLs = 5-3+4			
Pituitary Gland	Pars Distalis	Adenoma	Multiple
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 7-5			
Skin	Subcut Tiss	Hemangioma	
Note: HEMANGIOMA TGLs = 1-5,2-5			
Thyroid Gland	C Cell	Adenoma	
Note: ADENOMA TGLs = 4-4			

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 47

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex  
Clitoral Gland  
Intestine Large - Rectum  
Islets, Pancreatic  
Ovary  
Pituitary Gland  
Thymus  
Uterus

Bone  
Esophagus  
Intestine Small - Duodenum  
Lymph Node - Mandibular  
Oviduct  
Salivary Glands  
Thyroid Gland  
Zymbal's Gland

Bone Marrow  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mesenteric  
Pancreas  
Skin  
Trachea

Brain  
Intestine Large - Colon  
Intestine Small - Jejunum  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

**MISSING**

Stomach - Forestomach

**OBSERVATIONS**

Adrenal Gland  
Heart  
Kidney  
Liver

Medulla

Hyperplasia  
Cardiomyopathy  
Nephropathy  
Basophilic Focus  
Developmental Malformation  
Leukemia Mononuclear

Minimal  
Moderate  
Mild

Note: LEUKEMIA MONUC TGLs = 2-3

Lung  
Mammary Gland

Note: FIBROADENOMA TGLs = 1-13

Spleen

Leukemia Mononuclear  
Fibroadenoma

Leukemia Mononuclear

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 47

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Stomach - Glandular  
Urinary Bladder

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Thymus  
Zymbal's Gland

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Thyroid Gland

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Forestomach  
Trachea

OBSERVATIONS

Clitoral Gland  
Note: NECROSIS TGLs = 1-10

Heart  
Kidney  
Liver

Note: MIXED CL FOCUS TGLs = 4-3

Mammary Gland  
Pituitary Gland  
Spleen

Pars Distalis

Uterus  
Note: POLYP STROMAL TGLs = 3-6

Necrosis

Cardiomyopathy  
Nephropathy  
Basophilic Focus  
Mixed Cell Focus

Galactocele  
Cyst  
Hematopoietic Cell Proliferation  
Pigmentation  
Polyp Stromal

Mild

Mild  
Minimal

Mild  
Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 48	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Lung	Parathyroid Gland	Trachea
Uterus	Zymbal's Gland		

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**OBSERVATIONS**

Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
		Necrosis	Minimal
Thyroid Gland	C Cell	Adenoma	

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**PRIMARY CAUSE OF DEATH**

-

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\* PROTOCOL REQUIRED TISSUE



Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 48

TRT#: 5

SEX: Female

DAY ON TEST: 736

DOSE: 1.25%

DISP: Terminal Sacrifice

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Clitoral Gland	Esophagus	Heart	Intestine Large - Cecum
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric
Mammary Gland	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thyroid Gland	Trachea
Urinary Bladder	Uterus		

**MISSING**

Thymus	Zymbal's Gland
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**OBSERVATIONS**

Adrenal Gland	Medulla	Pheochromocytoma Benign	
Intestine Large	Colon	Parasite	Minimal
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Note: A LARGE BASOPHILIC FOCUS			
Pituitary Gland	Pars Nervosa	Cyst	Multiple
	Pars Distalis	Hyperplasia	Mild
Spleen		Pigmentation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 48

TRT#: 7

SEX: Female

DAY ON TEST: 563

DOSE: CONTROL

DISP: Moribund

HISTO:

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Eye	Intestine Large - Cecum	Intestine Large - Rectum
Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Skin	Spinal Cord	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

**OBSERVATIONS**

Adrenal Gland	Medulla	Hyperplasia	Minimal
Brain			
Note: DISTENDED VENTRICLES			
Clitoral Gland		Hyperplasia	Minimal
Note: HYPERPLASIA TGLs = 2-10			
Heart		Cardiomyopathy	Mild
Intestine Large	Colon	Parasite	Mild
Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
Mammary Gland		Galactocele	
Note: GALACTOCELE TGLs = 1-10			
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA TGLs = 4-8			
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Stomach	Forestomach	Acanthosis	Minimal
Thyroid Gland	C Cell	Hyperplasia	Minimal

PRIMARY CAUSE OF DEATH

-

Animal Note: C.O.D.: PITUITARY TUMOR.

\* PROTOCOL REQUIRED TISSUE

**Experiment Number:** 05023-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**  
**Test Compound:** Pentaerythritol tetranitrate  
**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014  
**Time Report Requested:** 18:40:14  
**First Dose M/F:** NA / NA  
**Lab:** TSI MASON

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<b>ANIMAL ID:</b> 49	<b>TRT#:</b> 4 <b>DOSE:</b> 0.62%	<b>SEX:</b> Female <b>DISP:</b> Terminal Sacrifice	<b>DAY ON TEST:</b> 737 <b>HISTO:</b>
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Lung	Parathyroid Gland	Trachea
Uterus	Zymbal's Gland		

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**OBSERVATIONS**

Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
Mammary Gland		Fibroadenoma	
		Galactocele	
[ Galactocele TGLS = 1-5 ]			
Thyroid Gland	C Cell	Hyperplasia	Minimal

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**PRIMARY CAUSE OF DEATH**

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\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 49

TRT#: 5

SEX: Female

DAY ON TEST: 667

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex  
Brain  
Intestine Large - Rectum  
Islets, Pancreatic  
Nose  
Parathyroid Gland  
Thyroid Gland  
Zymbal's Gland

Adrenal Gland - Medulla  
Esophagus  
Intestine Small - Duodenum  
Lung  
Ovary  
Salivary Glands  
Trachea

Bone  
Intestine Large - Cecum  
Intestine Small - Ileum  
Lymph Node - Mandibular  
Oviduct  
Skin  
Urinary Bladder

Bone Marrow  
Intestine Large - Colon  
Intestine Small - Jejunum  
Lymph Node - Mesenteric  
Pancreas  
Stomach - Glandular  
Uterus

MISSING

Thymus

OBSERVATIONS

Clitoral Gland

Hyperplasia  
Necrosis

Mild  
Mild

Note: HYPERPLASIA TGLs = 2-10

Heart  
Kidney  
Liver

Cardiomyopathy  
Nephropathy  
Basophilic Focus  
Fatty Change  
Fibroadenoma  
Galactocele

Mild  
Mild  
Focal, Mild  
Multiple

Note: FIBROADENOMA TGLs = 1-13,2-10

Pituitary Gland  
Spleen  
Stomach

Pars Distalis  
Forestomach

Hyperplasia  
Hematopoietic Cell Proliferation  
Acanthosis

Mild  
Moderate  
Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 49

TRT#: 7

SEX: Female

DAY ON TEST: 739

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Bone	Bone Marrow	Brain	Esophagus
Intestine Large - Cecum	Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum
Intestine Small - Ileum	Intestine Small - Jejunum	Islets, Pancreatic	Liver
Lung	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Oviduct	Pancreas	Parathyroid Gland	Pituitary Gland
Salivary Glands	Skin	Stomach - Forestomach	Stomach - Glandular
Thymus	Trachea	Urinary Bladder	Uterus
Zymbal's Gland			

MISSING

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Clitoral Gland
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OBSERVATIONS

Heart		Cardiomyopathy	Mild
	Artery	Necrosis	Fibrinoid, Moderate
Kidney		Nephropathy	Mild
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA	TGLs = 1-13		
Ovary		Cyst	
Pharynx	Palate	Squamous Cell Carcinoma	
Spleen		Hematopoietic Cell Proliferation	Minimal
		Pigmentation	Mild
Thyroid Gland	C Cell	Adenoma	

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01  
Test Type: CHRONIC  
Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
Test Compound: Pentaerythritol tetranitrate  
CAS Number: 78-11-5

Date Report Requested: 10/19/2014  
Time Report Requested: 18:40:14  
First Dose M/F: NA / NA  
Lab: TSI MASON

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ANIMAL ID: 50	TRT#: 4 DOSE: 0.62%	SEX: Female DISP: Terminal Sacrifice	DAY ON TEST: 737 HISTO:
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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**NORMAL**

Esophagus	Lung	Parathyroid Gland	Thyroid Gland
Trachea	Uterus	Zymbal's Gland	

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**OBSERVATIONS**

Kidney		Nephropathy	Mild
Liver		Basophilic Focus	
		Eosinophilic Focus	
Pituitary Gland	Pars Distalis	Adenoma	
	Pars Distalis	Angiectasis	Mild
Note: ADENOMA	TGLs = 2-5		
Spleen		Hematopoietic Cell Proliferation	Mild
		Pigmentation	Mild
Note: PIGMENT	TGLs = 1-5		

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PRIMARY CAUSE OF DEATH

-

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Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 50

TRT#: 5

SEX: Female

DAY ON TEST: 589

DOSE: 1.25%

DISP: Moribund

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Adrenal Gland - Medulla	Bone	Bone Marrow
Brain	Clitoral Gland	Esophagus	Intestine Large - Cecum
Intestine Large - Colon	Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum
Intestine Small - Jejunum	Islets, Pancreatic	Lung	Lymph Node - Mandibular
Lymph Node - Mesenteric	Nose	Ovary	Oviduct
Pancreas	Parathyroid Gland	Salivary Glands	Skin
Stomach - Forestomach	Stomach - Glandular	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	Zymbal's Gland

OBSERVATIONS

Brain			
Note: DISTENDED VENTRICLES			
Esophagus			
Note: BLOOD IN THE ESOPHAGUS.			
Heart		Cardiomyopathy	Mild
Kidney	Pelvis	Mineralization	Minimal
		Nephropathy	Moderate
Liver		Basophilic Focus	
		Focal Cellular Change	
Mammary Gland		Fibroadenoma	
		Galactocele	
Note: FIBROADENOMA TGLs = 1-13			
Note: TGL #1 IS MAMMARY GLAND AND NOT SKIN			
Pituitary Gland	Pars Distalis	Angiectasis	Moderate
	Pars Distalis	Carcinoma	
Note: CARCINOMA TGLs = 3-8.1			
Note: PART OF THE PITUITARY IS ADHERENT TO THE BRAIN.			
Spleen		Hematopoietic Cell Proliferation	Minimal
		Pigmentation	Mild

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE

Experiment Number: 05023-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Test Compound: Pentaerythritol tetranitrate

CAS Number: 78-11-5

Date Report Requested: 10/19/2014

Time Report Requested: 18:40:14

First Dose M/F: NA / NA

Lab: TSI MASON

ANIMAL ID: 50

TRT#: 7

SEX: Female

DAY ON TEST: 738

DOSE: CONTROL

DISP: Terminal Sacrifice

HISTO:

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

Adrenal Gland - Cortex	Bone	Bone Marrow	Brain
Esophagus	Heart	Intestine Large - Cecum	Intestine Large - Colon
Intestine Large - Rectum	Intestine Small - Duodenum	Intestine Small - Ileum	Intestine Small - Jejunum
Islets, Pancreatic	Lymph Node - Mandibular	Lymph Node - Mesenteric	Nose
Ovary	Oviduct	Pancreas	Parathyroid Gland
Salivary Glands	Stomach - Forestomach	Thymus	Thyroid Gland
Trachea	Urinary Bladder	Uterus	

MISSING

Clitoral Gland	Zymbal's Gland
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OBSERVATIONS

Adrenal Gland	Medulla	Hyperplasia	Minimal
Kidney		Nephropathy	Minimal
Liver		Basophilic Focus	
		Leukemia Mononuclear	
Lung		Congestion	Mild
Note: CONGESTION	TGLs = 5-1+2		
Mammary Gland		Fibroadenoma	Multiple
		Galactocele	
Note: FIBROADENOMA	TGLs = 3-14,1-13		
Pituitary Gland	Pars Distalis	Angiectasis	Mild
		Hyperplasia	Mild
Note: HYPERPLASIA	TGLs = 7-8		
Skin	Subcut Tiss	Fibroma	
Note: FIBROMA	TGLs = 4-10		
Spleen		Depletion Lymphoid	Minimal
		Hematopoietic Cell Proliferation	Mild
		Leukemia Mononuclear	
Stomach	Glandular	Infiltration Cellular	Lymphocyte, Mild
	Glandular	Mineralization	Minimal

PRIMARY CAUSE OF DEATH

-

\* PROTOCOL REQUIRED TISSUE



**Experiment Number:** 05023-01

**Test Type:** CHRONIC

**Species/Strain:** Rat/F 344/N

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Test Compound:** Pentaerythritol tetranitrate

**CAS Number:** 78-11-5

**Date Report Requested:** 10/19/2014

**Time Report Requested:** 18:40:14

**First Dose M/F:** NA / NA

**Lab:** TSI MASON

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**ANIMAL ID:** 50

**TRT#:** 7

**SEX:** Female

**DAY ON TEST:** 738

**DOSE:** CONTROL

**DISP:** Terminal Sacrifice

**HISTO:**

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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**\*\* END OF REPORT \*\***

\* PROTOCOL REQUIRED TISSUE