

Experiment Number: 684432

Test Type: Genetic Toxicology - Bacterial
Mutagenicity

G06: Ames Summary Data

Test Compound: Cascara sagrada bark, powdered

CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

NTP Study Number:

684432

Study Result:

Negative

Experiment Number: 684432

Test Type: Genetic Toxicology - Bacterial
Mutagenicity

G06: Ames Summary Data

Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA100

Dose (ug/Plate)	Without S9	Without S9	Without S9	Without S9	With 10% Rat S9
Vehicle Control ¹	116 ± 6.7	95 ± 6.1			
Vehicle Control ²					
Vehicle Control ³			101 ± 11.3	136 ± 3.4	132 ± 5.6
3.0					
10.0					
16.0					
33.0					
66.0					
100.0	106 ± 7.4		98 ± 9.3	127 ± 11.1	148 ± 8.8
333.0	100 ± 7.8	108 ± 2.8	87 ± 3.6	131 ± 6.9	138 ± 6.4
666.0					
1000.0	115 ± 4.1	104 ± 11.4	95 ± 4.2 ^p	125 ± 8.4 ^p	155 ± 6.8 ^p
1666.0					
3333.0	115 ± 7.2	108 ± 8.0	71 ± 9.6 ^p	101 ± 14.4 ^p	165 ± 14.8 ^p
6666.0	117 ± 14.6	117 ± 11.9			
10000.0		118 ± 10.7	81 ± 11.3 ^p	45 ± 23.2 ^x	139 ± 18.0 ^p
16666.0					
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control ⁴					
Positive Control ⁵					474 ± 30.8
Positive Control ⁶					
Positive Control ⁷	1029 ± 19.8	695 ± 49.7	622 ± 40.1	1379 ± 29.5	

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Test Compound: Cascara sagrada bark, powdered
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Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA100

Dose (ug/Plate)	With 30% Rat S9	With 30% Rat S9	With 30% Rat S9	With 5% Hamster S9	With 5% Hamster S9
Vehicle Control ¹	171 ± 7.4	128 ± 9.7		95 ± 8.1	137 ± 6.4
Vehicle Control ²					
Vehicle Control ³			138 ± 3.8		
3.0					
10.0				92 ± 8.7	125 ± 10.0
16.0					132 ± 10.6
33.0				125 ± 5.0	129 ± 5.5
66.0				133 ± 13.9	134 ± 14.6
100.0	166 ± 11.0	110 ± 8.2	115 ± 12.5	144 ± 8.7	133 ± 4.4
333.0	171 ± 6.7	140 ± 22.9	132 ± 9.7	119 ± 12.8	130 ± 7.8
666.0				107 ± 11.4	
1000.0	169 ± 4.6	140 ± 1.5	126 ± 1.3 ^p	110 ± 10.7	130 ± 9.2
1666.0				121 ± 7.5	
3333.0	183 ± 4.4	129 ± 9.2	143 ± 9.4 ^p	129 ± 1.3	123 ± 4.1
6666.0	190 ± 2.9				
10000.0		142 ± 3.2	145 ± 14.1 ^p		
16666.0		133 ± 2.4			
Trial Summary	Negative	Negative	Negative	Equivocal	Negative
Positive Control ⁴				349 ± 14.5	957 ± 17.7
Positive Control ⁵					
Positive Control ⁶	470 ± 11.8	620 ± 25.8	491 ± 32.7		
Positive Control ⁷					

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Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA100

Dose (ug/Plate)	With 10% Hamster S9	With 30% Hamster S9	With 30% Hamster S9	With 30% Hamster S9
Vehicle Control ¹		113 ± 6.7	114 ± 11.5	
Vehicle Control ²				
Vehicle Control ³	146 ± 10.5			96 ± 9.1
3.0				
10.0				
16.0				
33.0				
66.0				
100.0	148 ± 8.4	124 ± 7.1	127 ± 7.6	98 ± 10.5
333.0	135 ± 13.5	143 ± 4.2	106 ± 2.2	126 ± 7.2
666.0				
1000.0	126 ± 12.1 ^P	128 ± 6.7	114 ± 4.2	119 ± 6.9 ^P
1666.0				
3333.0	144 ± 1.9 ^P	142 ± 0.7	110 ± 3.3	116 ± 2.3 ^P
6666.0		157 ± 14.7		
10000.0	109 ± 17.1 ^P		133 ± 1.5	134 ± 5.8 ^P
16666.0			131 ± 2.3	
Trial Summary	Negative	Equivocal	Negative	Negative
Positive Control ⁴	983 ± 17.6			
Positive Control ⁵		775 ± 25.2	723 ± 36.5	738 ± 100.5
Positive Control ⁶				
Positive Control ⁷				

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Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA1535

Dose (ug/Plate)	Without S9	Without S9	With 10% Rat S9	With 30% Rat S9	With 10% Hamster S9
Vehicle Control ³	5 ± 1.7	8 ± 1.2	15 ± 1.8	10 ± 2.0	10 ± 3.2
100.0	7 ± 1.2	8 ± 1.0	7 ± 2.1	11 ± 1.2	10 ± 0.9
333.0	4 ± 1.5	8 ± 1.9	12 ± 1.3	12 ± 1.7	6 ± 2.0
1000.0	6 ± 1.7 ^P	6 ± 1.2 ^P	11 ± 2.1 ^P	14 ± 2.3 ^P	7 ± 1.5 ^P
3333.0	5 ± 0.9 ^P	5 ± 0.3 ^P	15 ± 1.5 ^P	9 ± 0.3 ^P	11 ± 0.6 ^P
10000.0	7 ± 0.9 ^P	5 ± 0.7 ^P	12 ± 2.8 ^P	13 ± 2.3 ^P	8 ± 1.2 ^P
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control ⁵					83 ± 9.0
Positive Control ⁶			73 ± 3.3		
Positive Control ⁷	1281 ± 42.1	1521 ± 72.4			
Positive Control ⁸				80 ± 2.6	

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G06: Ames Summary Data

Test Compound: Cascara sagrada bark, powdered

CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA1535

Dose (ug/Plate)	With 30% Hamster S9
Vehicle Control ³	8 ± 2.1
100.0	8 ± 2.2
333.0	5 ± 0.6
1000.0	6 ± 1.2 ^p
3333.0	8 ± 1.9 ^p
10000.0	10 ± 0.6 ^p
Trial Summary	Negative
Positive Control ⁵	
Positive Control ⁶	180 ± 11.4
Positive Control ⁷	
Positive Control ⁸	

Experiment Number: 684432

Test Type: Genetic Toxicology - Bacterial
Mutagenicity

G06: Ames Summary Data

Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA1538

Dose (ug/Plate)	Without S9	Without S9	With 10% Rat S9	With 30% Rat S9	With 10% Hamster S9
Vehicle Control ³	6 ± 1.7	5 ± 0.6	17 ± 1.7	10 ± 1.2	11 ± 1.5
100.0	4 ± 1.2	3 ± 0.3	11 ± 1.5	10 ± 0.3	12 ± 1.0
333.0	6 ± 1.8	5 ± 1.5	10 ± 0.6	12 ± 2.1	13 ± 2.8
1000.0	6 ± 2.1 ^p	5 ± 0.0 ^p	13 ± 2.3 ^p	10 ± 1.9 ^p	11 ± 2.0 ^p
3333.0	7 ± 1.8 ^p	2 ± 1.2 ^p	15 ± 2.3 ^p	8 ± 2.3 ^p	10 ± 1.8 ^p
10000.0	4 ± 1.2 ^p	0 ± 0.0 ^x	12 ± 0.9 ^p	7 ± 0.9 ^p	11 ± 0.3 ^p
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control ⁴					662 ± 29.3
Positive Control ⁵			310 ± 17.5	149 ± 10.0	
Positive Control ⁹	868 ± 36.9	1152 ± 9.1			

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Test Compound: Cascara sagrada bark, powdered

CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA1538

Dose (ug/Plate)	With 30% Hamster S9
Vehicle Control ³	17 ± 1.3
100.0	7 ± 2.0
333.0	9 ± 3.1
1000.0	15 ± 3.5 ^P
3333.0	7 ± 0.6 ^P
10000.0	9 ± 3.1 ^P
Trial Summary	Negative
Positive Control ⁴	
Positive Control ⁵	512 ± 23.4
Positive Control ⁹	

Experiment Number: 684432

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Test Compound: Cascara sagrada bark, powdered

CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA97

Dose (ug/Plate)	Without S9	Without S9	With 5% Rat S9	With 10% Rat S9	With 10% Rat S9
Vehicle Control ³	158 ± 5.9	153 ± 15.6	150 ± 13.2	178 ± 5.6	192 ± 10.0
100.0	168 ± 4.6	177 ± 14.2	157 ± 7.8	197 ± 13.6	207 ± 6.7
333.0	159 ± 2.3	173 ± 1.8	171 ± 11.7	186 ± 12.5	186 ± 11.3
666.0			169 ± 7.2	212 ± 8.5	
1000.0	155 ± 6.0 ^P	176 ± 10.8 ^P	181 ± 7.4 ^P	180 ± 7.3 ^P	184 ± 6.0 ^P
1666.0			167 ± 8.5 ^P	209 ± 6.7 ^P	
3333.0	173 ± 5.5 ^P	165 ± 14.6 ^P	179 ± 16.8 ^P	226 ± 16.3 ^P	185 ± 2.7 ^P
10000.0	177 ± 4.4 ^P	177 ± 3.6 ^P	82 ± 41.0 ^P	102 ± 51.3 ^P	184 ± 6.0 ^P
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control ⁴					
Positive Control ⁵			582 ± 8.4	345 ± 6.7	352 ± 24.3
Positive Control ⁶					
Positive Control ¹⁰	431 ± 12.4	611 ± 56.4			

Experiment Number: 684432

Test Type: Genetic Toxicology - Bacterial
Mutagenicity

G06: Ames Summary Data

Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA97

Dose (ug/Plate)	With 30% Rat S9	With 30% Rat S9	With 10% Hamster S9	With 30% Hamster S9
Vehicle Control ³	195 ± 12.1	190 ± 15.2	174 ± 6.0	169 ± 15.0
100.0	208 ± 1.9	204 ± 12.2	192 ± 1.2	171 ± 5.4
333.0	188 ± 6.7	206 ± 2.5	202 ± 1.9	178 ± 9.5
666.0		202 ± 0.6		
1000.0	243 ± 7.3 ^P	177 ± 9.1 ^P	198 ± 10.1 ^P	147 ± 3.8 ^P
1666.0		152 ± 8.1 ^P		
3333.0	213 ± 16.2 ^P	194 ± 11.3 ^P	184 ± 12.9 ^P	186 ± 9.3 ^P
10000.0	237 ± 13.5 ^P	116 ± 60.0 ^P	158 ± 6.1 ^P	171 ± 3.5 ^P
Trial Summary	Equivocal	Negative	Negative	Negative
Positive Control ⁴			507 ± 9.4	
Positive Control ⁵				406 ± 35.8
Positive Control ⁶	371 ± 16.9	347 ± 5.5		
Positive Control ¹⁰				

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Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA98

Dose (ug/Plate)	Without S9	Without S9	Without S9	Without S9	With 10% Rat S9
Vehicle Control ¹	18 ± 2.1	18 ± 0.6			
Vehicle Control ³			23 ± 2.3	27 ± 2.5	31 ± 2.4
10.0					
16.0					
33.0					
66.0					
100.0	14 ± 2.8	18 ± 4.3	26 ± 4.1	29 ± 2.6	34 ± 0.9
333.0	20 ± 0.9	18 ± 3.9	19 ± 1.9	28 ± 1.5	23 ± 4.2
666.0					
1000.0	23 ± 2.1	16 ± 2.2	19 ± 5.0 ^p	28 ± 2.3 ^p	31 ± 4.6 ^p
1666.0		21 ± 1.5			
3333.0	25 ± 2.9	22 ± 4.9	24 ± 2.3 ^p	34 ± 5.2 ^p	32 ± 4.4 ^p
6666.0	28 ± 4.9	24 ± 4.6			
10000.0			0 ± 0.0 ^x	27 ± 3.7 ^p	18 ± 2.1 ^p
16666.0					
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control ⁴					
Positive Control ⁵					288 ± 16.2
Positive Control ⁹	622 ± 26.2	538 ± 14.1	440 ± 28.1	910 ± 41.7	

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Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

Date Report Requested: 09/13/2018

Time Report Requested: 01:12:00

Strain: TA98

Dose (ug/Plate)	With 30% Rat S9	With 30% Rat S9	With 30% Rat S9	With 5% Hamster S9	With 5% Hamster S9
Vehicle Control ¹	35 ± 1.7	38 ± 4.7		13 ± 2.0	20 ± 0.6
Vehicle Control ³			26 ± 3.1		
10.0					18 ± 2.2
16.0					
33.0					22 ± 5.4
66.0					24 ± 1.8
100.0	25 ± 3.2		23 ± 1.3	25 ± 2.8	23 ± 8.4
333.0	29 ± 1.9	32 ± 5.5	27 ± 3.7	29 ± 4.4	26 ± 0.9
666.0					29 ± 0.6
1000.0	26 ± 1.2	33 ± 2.0	28 ± 4.4 ^p	16 ± 1.3	25 ± 4.0
1666.0					24 ± 3.7
3333.0	36 ± 2.6	42 ± 4.1	24 ± 1.5 ^p	18 ± 1.5	17 ± 1.7
6666.0	45 ± 7.1	45 ± 4.5			
10000.0		40 ± 5.8	31 ± 3.7 ^p	19 ± 2.1	
16666.0				13 ± 2.2	
Trial Summary	Negative	Negative	Negative	Weakly Positive	Negative
Positive Control ⁴				970 ± 55.8	409 ± 34.5
Positive Control ⁵	133 ± 9.3	104 ± 10.1	135 ± 7.8		
Positive Control ⁹					

Experiment Number: 684432

Test Type: Genetic Toxicology - Bacterial
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Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

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Strain: TA98

Dose (ug/Plate)	With 5% Hamster S9	With 10% Hamster S9	With 10% Hamster S9	With 30% Hamster S9	With 30% Hamster S9
Vehicle Control ¹		24 ± 0.9		28 ± 6.7	20 ± 4.1
Vehicle Control ³	23 ± 1.5		30 ± 0.9		
10.0	29 ± 1.5				
16.0	25 ± 2.2				
33.0	30 ± 1.8				
66.0	23 ± 0.9				
100.0	22 ± 1.5	22 ± 1.7	30 ± 2.7	31 ± 4.0	23 ± 2.8
333.0	22 ± 4.8	22 ± 1.7	26 ± 4.2	25 ± 3.5	17 ± 0.3
666.0					
1000.0	28 ± 0.3	18 ± 2.3	25 ± 3.3 ^P	22 ± 2.0	23 ± 5.3
1666.0					
3333.0	25 ± 1.8	24 ± 4.5	21 ± 0.7 ^P	29 ± 5.2	19 ± 1.9
6666.0				32 ± 4.6	
10000.0		18 ± 2.9	21 ± 4.6 ^P		25 ± 2.3
16666.0		19 ± 2.3			22 ± 3.3
Trial Summary	Negative	Negative	Negative	Negative	Negative
Positive Control ⁴	825 ± 12.2	681 ± 13.5	656 ± 65.4		
Positive Control ⁵				417 ± 13.3	448 ± 13.4
Positive Control ⁹					

Experiment Number: 684432
Test Type: Genetic Toxicology - Bacterial
Mutagenicity

G06: Ames Summary Data
Test Compound: Cascara sagrada bark, powdered
CAS Number: EMTDP-78

Date Report Requested: 09/13/2018
Time Report Requested: 01:12:00

Strain: TA98

Dose (ug/Plate)	With 30% Hamster S9
Vehicle Control ¹	
Vehicle Control ³	20 ± 3.2
10.0	
16.0	
33.0	
66.0	
100.0	23 ± 3.0
333.0	21 ± 2.9
666.0	
1000.0	20 ± 2.8 ^p
1666.0	
3333.0	21 ± 1.8 ^p
6666.0	
10000.0	30 ± 4.8 ^p
16666.0	
Trial Summary	Negative
Positive Control ⁴	
Positive Control ⁵	508 ± 45.4
Positive Control ⁹	

Experiment Number: 684432

Test Type: **Genetic Toxicology - Bacterial
Mutagenicity**

G06: Ames Summary Data

Test Compound: **Cascara sagrada bark, powdered**

CAS Number: **EMTDP-78**

Date Report Requested: **09/13/2018**

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LEGEND

Values given as Mean or Mean \pm Standard Error Mean

The number of samples = 3, unless samples marked toxic or contaminated were excluded from mean and SEM calculations

CAS Number = Chemical Abstracts Service registry number

1: Vehicle Control: Dimethyl Sulfoxide

2: Vehicle Control: Water

3: Vehicle Control: Solvent

4: 0.5 ug/Plate 2-Aminoanthracene

5: 1.0 ug/Plate 2-Aminoanthracene

6: 2.5 ug/Plate 2-Aminoanthracene

7: 5.0 ug/Plate Sodium Azide

8: 5.0 ug/Plate 2-Aminoanthracene

9: 2.5 ug/Plate 4-Nitro-O-Phenylenediamine

10: 50.0 ug/Plate 9-Aminoacridine

p: Precipitate

x: Slight Toxicity and Precipitate

**** END OF REPORT ****