

ADME NTP Study S0260 Indium phosphide

The contract laboratory abbreviation for the test article is InP.

Species: adult male F344 rats.

Vehicles: oral gavage, distilled deionized water; instillation, distilled deionized water.

CASRN 22398-80-7

No radionuclide was used. An electrothermal atomic absorption spectrophotometry method was developed to determine ppb concentration of indium in tissue matrices.

Indium phosphide Groups in Studies Performed:

1. Control group – Rats were administered vehicle by oral gavage; one control dose daily for 18 days. This is the control group for the entire study (termed 240 hour control).^a
2. 10 mg/kg indium (12.7 mg/kg indium phosphide) single oral gavage administration to rats with sacrifice at 24, 96 and 240 hours postdose. Rats received 15 daily doses of vehicle and then one dose of InP.^a
3. 10 mg/kg indium (12.7 mg/kg Indium phosphide) multiple dose oral gavage administration to rats with sacrifice at 24, 96, and 240 hours post last dose. Animals received daily oral doses of InP at the same time of day for 14 consecutive days.^a
4. 10 mg/kg indium phosphide single oral gavage administration to rats with sacrifice 96 hours postdose.
5. 100 mg/kg indium phosphide single oral gavage administration to rats with sacrifice 96 hours postdose.
6. 1000 mg/kg indium phosphide single oral gavage administration to rats with sacrifice 96 hours postdose.
7. 10 mg/kg indium phosphide single intratracheal instillation administration to rats with sacrifice 96 hours postdose.^b
8. 15 mg/kg indium phosphide single intratracheal instillation administration to rats with sacrifice 96 hours postdose.
9. 30 mg/kg indium phosphide single intratracheal instillation administration to rats with sacrifice 96 hours postdose.

^aCumulative excretion data are presented in a figure in the report and are not shown here.

^bExcretion time course data are presented in a figure in the report and are not shown here.

Indium phosphite was pulverized, milled, and then suspended in distilled, deionized water and administered by oral gavage or intratracheal instillation. Intratracheal instillation dosing solution for the 10, 15, or 30 mg/kg dose (0.31-0.44 mL/rat) was delivered to the lung through the trachea at the bronchial bifurcation.

Note on Accessibility: Persons with disabilities or using assistive technology may find some documents are not fully accessible. For assistance, contact [Central Data Management](#) or use our [contact form](#) and identify the documents/pages for which access is required. We will assist you in accessing the content of the files. NIEHS has helpful information on accessibility.

Table 1. Summary of Tissue Concentrations of Indium in Control Rats or Rats Receiving a Single or Multiple Oral Doses of InP (10 mg/kg In).

Tissues	Control		Single Dose		Multiple Dose		
	240 hr	24 hr	96 hr	240 hr	24 hr	96 hr	
(ng Indium/g or ml)							
Blood	-	-	13.1±4.8	-	10.8±2.0	11.4±4.6	-
Bone	-	65.6±4.2	10.0±4.5	-	-	-	-
Brain	-	-	-	-	-	-	-
Hair	42.4±23	862±322	22.7±1.2	16.3±5.2	155±34	109±48	16.6±4.3
Heart	-	-	-	-	-	19.4±13	-
Kidney	-	20.7±12	-	-	17.4±6.6	18.2±6.9	-
Liver	-	22.8±9.3	-	-	10.1±3.2	-	-
Lung	-	-	-	-	17.7±7.6	-	-
Muscle	-	14.6±12	-	-	11.7±4.6	-	-
Skin	-	59.2±27	12.2±8.9	-	20.1±6.8	14.0±4.8	-
Spleen	-	19.5±7.3	-	-	15.1±4.8	18.6±5.8	-
Testes	-	10.5±5.9	-	-	15.2±10	-	-
Stomach	-	131±24	30.9±13	-	53.1±14	28.0±7.2	23.7±16
Sm Int	-	45.8±31	12.1±8.9	-	26.8±9.3	-	11.4±8.2
Lg Int	-	771±456	-	-	364±119	-	-
Stm Ctn	-	44.9±21	-	-	67.5±23	-	-
Smlnt Ctn	-	56.1±32	-	-	241±185	16.7±12	-
LgInt Ctn	11.7±3.4	5318±1158	-	-	3200±624	-	-

Data represent mean ± SE, n=3-5.

Sm Int, small intestine; Lg Int, large intestine; Stm Ctn, stomach content; Smlnt Ctn, small intestinal content; LgInt Ctn, large intestinal content.

-: below the detection limit. Control represents untreated animals that were killed at 240 hr. This group served as the control for all other values.

Table 2. Indium Remaining in Tissues Following Oral Administration of InP (10 mg/kg as In or 12.7 mg/kg as InP).

Single Dose

Time (hours)	Total Tissue Indium (ng)*	% of Dose[#]
24	11468 ± 903	0.655 ± 0.076
96	2276 ± 1708	0.113 ± 0.085
240	98 ± 41	0.005 ± 0.002

Multiple Doses

Time (hours)	Total Tissue Indium (ng)*	% of Dose[#]
24	3547 ± 954	0.222 ± 0.063
96	1739 ± 718	0.097 ± 0.038
240	188 ± 101	0.009 ± 0.005

- Total tissue indium did not include indium in urine and gastrointestinal contents.
- # % of dose is expressed as % of indium in InP dose preparation. For multiple doses, the values represent % of indium in the last dose (10 mg/kg).

Table 3. The Effect of InP Dose on the Tissue Distribution of Indium in F-344 Rats at 96 hr Following Oral Administration.

	Control	InP Dose		
		10 mg/kg	100 mg/kg	1000 mg/kg
(ng Indium/g or ml)				
Brain	-	70±2	83±5	88±8
Hair	-	69±2	136±16	178±17
Heart	-	53±6	86±6	45±2
Kidney	-	125±13	93±2	106±9
Liver	63±5	121±6	129±3	153±7
Skin	39±3	64±2	134±19	104±7
Spleen	-	-	80±4	-
Stomach	-	-	-	88±3
Sm Int	-	-	-	59±5
Lg Int	-	-	52±12	158±7
Stm Ctn	-	95±7	105±21	120±9
Smlnt Ctn	-	-	-	57±9
Lglnt Ctn	-	57±3	65±4	128±9

Data represent mean ± SD, n=4. Sm Int, small intestine; Lg Int, large intestine; Stm Ctn, stomach content; Smlnt Ctn, small intestinal content; Lglnt Ctn, large intestinal content.

-: below the detection limit.

Data not available for lung, muscle, testes and bone.

Table 4. Total Recovery of Indium (Percentage of Dose) in Male Fischer 344 Rats at 96 hr Following Oral Administration of InP.

InP Dose	10 mg/kg	100 mg/kg	1000 mg/kg
Urine	0.29%	0.05%	0.01%
Feces	79.99%	79.27%	88.87%
Tissues	0.31%	0.07%	0.01%
Total	80.59%	79.39%	88.89%

Table 5. Total Recovery of Indium (Percentage of Dose) in Male Fischer 344 Rats at 96 hr Following Intratracheal Instillation of InP.

InP Dose	10 mg/kg	15 mg/kg	30 mg/kg
Urine	0.02%	0.02%	0.01%
Feces	73.16%	25.90%	29.02%
Tissues	0.36%	0.31%	0.21%
Lung	3.88%	50.72%	51.08%
Total	77.42%	76.95%	80.31%

Table 6. The Effect of InP Dose on the Tissue Distribution (at 96 hr) of Indium in F-344 Rats Following Intratracheal Instillation.

	Control	InP Dose		
		10 mg/kg	15 mg/kg	30 mg/kg
(ng Indium/g or ml)				
Blood	-	24±3	18±6	75±3
Brain	-	53±6	58±10	48±6
Hair	-	126±62	104±23	102±10
Heart	-	-	-	35±4
Kidney	-	-	289±6	230±16
Liver	58±11	94±28	124±13	160±23
Lung	-	54735±5744	1467728±57978	2279475±109312
Muscle	-	-	46±2	-
Skin	57±8	82±7	94±5	202±19
Spleen	-	-	-	95±8
Stomach	-	-	-	59±9
Sm Int	-	66±8	71±9	169±30
Lg Int	-	-	146±11	177±31
Stm Ctn	-	149±9	379±20	442±13
Smlnt Ctn	-	-	141±29	271±27
Lglnt Ctn	-	148±12	518±22	813±18

Data represent mean ± SD, n=4. Sm Int, small intestine; Lg Int, large intestine; Stm Ctn, stomach content; Smlnt Ctn, small intestinal content; Lglnt Ctn, large intestinal content.

-: below the detection limit.

Data not available for testes and bone.