

ADME NTP Study S0182 Anthraquinone

The contract laboratory abbreviation for the test article is AQ.

Sex, Species: young adult male F344 rats.

Vehicles: intravenous, dimethyl sulfoxide (DMSO); oral, corn oil.

CASRN 84-65-1

Radiolabeled with carbon-14 in the ring; Anthraquinone, [ring-U-¹⁴C]-

Anthraquinone Studies Performed:

1. Single 0.35 mg/kg intravenous administration to rats with sacrifice 96 hours postdose.
2. Single 0.35 mg/kg oral gavage administration to rats with sacrifice 96 hours postdose.
3. Single 3.5 mg/kg oral gavage administration to rats with sacrifice 96 hours postdose.
4. Single 35 mg/kg oral gavage administration to rats with sacrifice 96 hours postdose.
5. Single 350 mg/kg oral gavage administration to rats with sacrifice 96 hours postdose.

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Table 1. Total Recovery of AQ-Derived Radioactivity (Percentage of Dose) in Male Fischer 344 Rats at 96 hr After Dose Administration.

Dose (mg/kg)	Urine	Feces	Tissues	Total Recovery
iv-Dose				
0.35 (n=4)	29.06±2.08	54.39±4.85	4.96±1.48	89.58±1.70
po-Dose				
0.35 (n=3)	28.63±1.47	60.15±1.22	3.56±0.39	92.34±0.41
3.5 (n=4)	39.81±2.55	52.44±6.63	2.46±0.18	94.71±4.88
35 (n=3)	41.07±0.92	58.12±0.53	2.11±0.15	101.30±1.03
350 (n=3)	26.03±2.22	62.85±1.47	1.51±0.76	90.70±3.38

Data represent means ± SD.

Table 2. Tissue Distribution of AQ-Derived Radioactivity (Percentage of Dose) in Male Fisher 344 Rats 96 hr After a Single Intravenous Dose of [14C]-AQ.

Tissues ^a	0.35 mg/kg (n=3)	
	% of Dose	T/B ^b
Blood	0.72±0.15	1.00
Brain	0.11±0.01	0.18
Heart	0.01±0.00	0.41
Kidney	0.17±0.02	2.70
Liver	1.14±0.11	3.93
Lung	0.02±0.00	0.53
Spleen	<0.01	0.50
Muscle	0.62±0.17	0.16
Testes	0.02±0.00	0.21
Skin	0.40±0.08	0.52
Lg Int	0.06±0.04	0.86
Sm Int	0.05±0.02	0.49
Stomach	0.01±0.00	0.29
Fat	0.81±1.11	0.95
LgInt. Cnt.	0.75±0.90	N.D. ^c
Smlnt. Cnt.	0.15±0.13	N.D.
Stm. Cnt.	<0.01	N.D.

^a Total tissue weight was calculated based on the estimation of the fraction of body weight for blood (8%), muscle (50%), skin (16%) and adipose (11%).

^b T/B: mean ratio of 14C in tissue to 14C in blood. ^c N.D.: Not determined.

Lg. Int., Large Intestine; Sm. Int., Small Intestine; LgInt. Cnt., Large Intestine Content; Smlnt. Cnt., Small Intestine Content; Stm. Cnt., Stomach Content.

Table 3. Tissue Distribution of AQ-Derived Radioactivity (Percentage of Dose) in Male Fisher 344 Rats 96 hr After a Single Oral Dose of [¹⁴C]-AQ (0.35 and 3.5 mg/kg).

Tissues ^a	0.35 mg/kg (n=3)		3.5 mg/kg (n=4)	
	% of Dose	T/B ^b	% of Dose	T/B
Blood	0.60±0.11	1.00	0.54±0.04	1.00
Brain	<0.01	0.14	<0.01	<0.09
Heart	<0.01	0.47	<0.01	0.38
Kidney	0.16±0.00	2.77	0.14±0.00	2.61
Liver	1.04±0.07	3.34	0.85±0.13	3.22
Lung	0.02±0.00	0.59	0.02±0.00	0.56
Spleen	<0.01	0.53	<0.01	0.57
Muscle	0.60±0.02	0.18	0.36±0.01	0.12
Testes	0.02±0.00	0.26	0.01±0.00	0.18
Skin	0.37±0.01	0.36	0.27±0.01	0.28
Lg Int	0.03±0.00	0.43	0.02±0.00	0.28
Sm Int	0.04±0.00	0.32	0.02±0.00	0.22
Stomach	<0.01	0.28	<0.01	0.22
Fat	0.51±0.33	0.74	0.10±0.10	0.17
LgInt Cnt	0.09±0.00	N.D. ^c	0.08±0.01	N.D.
Smlnt Cnt	0.04±0.00	N.D.	0.03±0.00	N.D.
Stm Cnt	<0.01	N.D.	<0.01	N.D.

^a Total tissue weight was calculated based on the estimation of the fraction of body weight for blood (8%), muscle (50%), skin (16%) and adipose (11%). ^b T/B: mean ratio of ¹⁴C in tissue to ¹⁴C in blood. ^c N.D.: Not determined. Lg. Int., Large Intestine; Sm. Int., Small Intestine; LgInt. Cnt., Large Intestine Content; Smlnt. Cnt., Small Intestine Content; Stm. Cnt., Stomach Content.

Table 4. Tissue Distribution of AQ-Derived Radioactivity (Percentage of Dose) in Male Fisher 344 Rats 96 hr After a Single Oral Dose of [¹⁴C]-AQ (35 and 350 mg/kg).

Tissues ^a	35 mg/kg (n=3)		350 mg/kg (n=3)	
	% of Dose	T/B ^b	% of Dose	T/B
Blood	0.33±0.03	1.00	0.24±0.04	1.00
Brain	<0.01	0.15	<0.01	0.17
Heart	<0.01	0.42	<0.01	0.44
Kidney	0.07±0.00	2.21	0.04±0.00	2.02
Liver	0.51±0.02	3.14	0.22±0.05	2.31
Lung	0.01±0.00	0.66	0.01±0.00	0.62
Spleen	<0.01	0.58	<0.01	0.44
Muscle	0.40±0.22	0.22	0.29±0.14	0.27
Testes	0.01±0.00	0.34	0.01±0.00	0.31
Skin	0.20±0.00	0.35	0.13±0.06	0.36
Lg Int	0.01±0.00	0.44	0.01±0.00	0.62
Sm Int	0.02±0.00	0.39	0.01±0.00	0.39
Stomach	<0.01	0.31	<0.01	0.32
Fat	0.34±0.11	0.21	0.34±0.22	1.34
LgInt. Cnt.	0.13±0.01	N.D. ^c	0.16±0.10	N.D.
SmInt. Cnt.	0.04±0.00	N.D.	0.04±0.00	N.D.
Stm. Cnt.	<0.01	N.D.	<0.01	N.D.

^a Total tissue weight was calculated based on the estimation of the fraction of body weight for blood (8%), muscle (50%), skin (16%) and adipose (11%).

^b T/B: mean ratio of ¹⁴C in tissue to ¹⁴C in blood. ^c N.D.: Not determined. Lg. Int., Large Intestine; Sm. Int., Small Intestine; LgInt. Cnt., Large Intestine Content; SmInt. Cnt., Small Intestine Content; Stm. Cnt., Stomach Content.