

Distribution of [¹⁴C]Choline Derived Radioactivity 24 Hours Following Oral Administration of 160 mg/kg [¹⁴C]Choline to Male Wistar Han Rats (Choline Study A)^a

Dose Recovered in Excreta (%)

End of Collection Period (h)	Urine CPDE ^b	Feces CPDE	Volatile Organics ^c CPDE	CO ₂ ^c CPDE	Total
1	d	e	0.0117 ± 0.0077	0.322 ± 0.127	0.334 ± 0.129
2	d	e	0.0263 ± 0.0158	1.45 ± 0.22	1.48 ± 0.23
3	d	e	0.0441 ± 0.0178	3.21 ± 0.56	3.25 ± 0.56
4	2.82 ± 1.00	e	0.0709 ± 0.0234	4.80 ± 0.93	7.70 ± 1.52
6	d	e	0.0932 ± 0.0307	6.73 ± 1.16	9.64 ± 1.76
8	9.49 ± 2.77	0.0109 ± 0.0208	0.0996 ± 0.0321	8.18 ± 1.65	17.8 ± 2.7
24 ^f	32.6 ± 2.3	21.5 ± 5.1	0.123 ± 0.034	12.5 ± 2.2	66.8 ± 5.3

Distribution in Tissues (24 hours)

Tissue	nmol-eq Choline/g Mean	nmol-eq Choline/g SD	TBR ^k Mean	TBR SD	Dose in Total Tissue (%) Mean	Dose in Total Tissue (%) SD
Adipose ^g	62.2	26.1	0.337	0.178	0.391	0.184
Urinary Bladder	368	101	1.93	0.48	0.0300	0.0287
Blood ^g	190	22	Unity	—	1.24	0.18
Brain	110	15	0.578	0.032	0.0687	0.0081
Heart	292	34	1.54	0.09	0.0911	0.0177
Kidney	970	53	5.15	0.39	0.654	0.039
Liver	1881	91	10.0	1.0	6.06	0.61
Lung	713	55	3.78	0.30	0.290	0.023
Muscle ^g	135	20	0.714	0.062	4.83	0.76
Skin ^g	235	45	1.24	0.16	3.94	0.74
Spleen	526	51	2.79	0.26	0.120	0.030
Thyroid	795	223	4.32	1.64	0.0031	0.0012
Testes	200	29	1.05	0.09	0.204	0.043
Stomach ^h	NA ⁱ	—	NA	—	0.597	0.576
Small Intestine ^h	NA	—	NA	—	1.59	0.75
Cecum ^h	NA	—	NA	—	0.369	0.071
Large Intestine ^h	NA	—	NA	—	0.389	0.104
Carcass ^j	NA	—	NA	—	0.518	0.800

Disposition Summary [Dose Recovered (%)]

Tissues and GI Tract	Excreted	Total
21.4 ± 2.8	66.8 ± 5.3	88.2 ± 5.5

^aAll values expressed as mean ± standard deviation (SD) (N = 5). The target dose was 160 mg choline/kg. The actual dose delivered was 155 ± 7 mg/kg (15.1 ± 0.7 µCi/kg). Animals received a single oral dose of DMAE vehicle (water, 0 mg DMAE/kg) approximately 1 hour (h) prior to [¹⁴C]choline administration.

^bCPDE = Cumulative percent dose excreted.

^cVolatile organics (trapped by isopropanol) and CO₂ (trapped by 1 N NaOH in H₂O) in exhaled breath. \$

^dUrine was collected at 4, 8, and 24 h after [¹⁴C]choline administration. \$

^eFeces were collected at 8 and 24 h after [¹⁴C]choline administration. \$

^f24 h urine collection includes urine present in the urinary bladder at study termination. \$

^gPercent of dose in these tissues calculated using the following percentages of body weight: adipose 7.0%, blood 7.4%, muscle 40.4%, and skin 19.0%. \$

^hIncludes contents. \$

ⁱNA = Not applicable.

^jCarcass values are based on the residual digested carcass after the removal of the listed tissues (i.e., percent \$ dose measured in skin, adipose, blood, and muscle was subtracted from the total percent dose measured in the carcass). \$

^kTBR = Tissue to blood ratio.