

Distribution of [¹⁴C]Choline Derived Radioactivity 24 Hours Following Oral Administration of [¹⁴C]Choline (160 mg/kg) to Male Wistar Han Rats Pretreated with Three Successive DMAE Doses (100 mg/kg at 48 Hours, 24 Hours, and 1 Hour Before Choline Administration; Choline Study I)^a

Dose Recovered in Excreta (%)

End of Collection Period (h)	Urine CPDE ^b	Feces CPDE	CO ₂ ^c CPDE	Total CPDE
1	d	e	0.296 ± 0.055	0.296 ± 0.055
2	d	e	1.20 ± 0.24	1.20 ± 0.24
3	d	e	2.45 ± 0.53	2.45 ± 0.53
4	1.64 ± 0.73	e	3.96 ± 0.82	5.60 ± 0.67
6	d	e	6.37 ± 0.95	8.01 ± 0.81
8	7.50 ± 0.70	1.91 ± 3.31	8.49 ± 1.10	17.1 ± 2.7
12	24.9 ± 5.1	e	12.3 ± 1.3	38.3 ± 6.7
24 ^f	39.9 ± 3.8	10.2 ± 10.2	17.0 ± 1.7	67.1 ± 3.9

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	115	58	0.480	0.278	0.746	0.380
Urinary Bladder	476	111	1.92	0.35	0.0122	0.0064
Blood ^g	249	53	Unity	—	1.70	0.34
Brain	130	54	0.506	0.093	0.0756	0.0232
Heart	377	62	1.53	0.11	0.0970	0.0211
Kidney	1300	257	5.24	0.34	0.747	0.161
Liver	2120	515	8.47	0.60	6.82	1.43
Lung	831	176	3.35	0.346	0.309	0.067
Muscle ^g	167	43	0.671	0.084	6.24	1.52
Skin ^g	292	62	1.18	0.10	5.12	1.01
Spleen	708	165	2.85	0.42	0.152	0.041
Thyroid	967	193	3.96	0.81	0.00492	0.00085
Testes	251	65	1.01	0.12	0.271	0.094
Stomach ^h	NA ⁱ	—	NA	—	0.231	0.043
Small Intestine ^h	NA	—	NA	—	2.24	0.30
Cecum ^h	NA	—	NA	—	0.530	0.417
Large Intestine ^h	NA	—	NA	—	0.330	0.076
Carcass ^j	NA	—	NA	—	0.997	0.661

Disposition Summary [Dose Recovered (%)]

Tissues and GI Tract	Excreted	Total
26.6 ± 5.3	67.1 ± 3.9	93.7 ± 2.7

^aAll values expressed as mean ± standard deviation (SD) (N = 5). The target dose was 160 mg choline/kg. The actual dose delivered was 159 ± 1 mg/kg (52.3 ± 0.3 µCi/kg). Animals received three oral doses of DMAE (target 100 mg DMAE/kg) approximately 48 hours (h), 24 h, and 1 h prior to [¹⁴C]choline administration. The actual DMAE doses delivered were 103 ± 1 mg DMAE /kg (48 h pretreatment), 106 ± 0 mg DMAE/kg (24 h pretreatment), and 102 ± 0 mg DMAE/kg (1 h pretreatment).

^bCPDE = Cumulative percent dose excreted.

^cCO₂ (trapped by 1 N NaOH in H₂O) in exhaled breath.

^dUrine was collected at 4, 8, 12, 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.