2,4-ジクロロ-1-ニトロベンゼンのラットを用いた
経口投与によるがん原性試験(混餌試験)報告書

試験番号：０４２１

TABLES

TABLES

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TABLE 1 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Week on Study	Control		750 ppm			1500 ppm			3000 ppm		
	Av. Wt.	No. of Surviv. <50>	Av. Wt.	% of cont.	No. of Surviv. <50>	Av. Wt.	% of cont.	No. of Surviv. <50>	Av. Wt.	% of cont.	No. of Surviv. <50>
0	127 (50)	50 / 50	127 (50)	100	50 / 50	127 (50)	100	50 / 50	127 (50)	100	50 / 50
1	161 (50)	50 / 50	160 (50)	99	50 / 50	158 (50)	98	50 / 50	150 (50)	93	50 / 50
2	193 (50)	50 / 50	188 (50)	97	50 / 50	186 (50)	96	50 / 50	174 (50)	90	50 / 50
3	217 (50)	50 / 50	212 (50)	98	50 / 50	208 (50)	96	50 / 50	194 (50)	89	50 / 50
4	237 (50)	50 / 50	229 (50)	97	50 / 50	224 (50)	95	50 / 50	210 (50)	89	50 / 50
5	254 (50)	50 / 50	244 (50)	96	50 / 50	238 (50)	94	50 / 50	225 (50)	89	50 / 50
6	267 (50)	50 / 50	256 (50)	96	50 / 50	252 (50)	94	50 / 50	238 (50)	89	50 / 50
7	279 (50)	50 / 50	269 (50)	96	50 / 50	265 (50)	95	50 / 50	249 (50)	89	50 / 50
8	291 (50)	50 / 50	279 (50)	96	50 / 50	276 (50)	95	50 / 50	259 (50)	89	50 / 50
9	301 (50)	50 / 50	289 (50)	96	50 / 50	285 (50)	95	50 / 50	266 (50)	88	50 / 50
10	309 (50)	50 / 50	297 (50)	96	50 / 50	293 (50)	95	50 / 50	275 (50)	89	50 / 50
11	316 (50)	50 / 50	305 (50)	97	50 / 50	301 (50)	95	50 / 50	282 (50)	89	50 / 50
12	321 (50)	50 / 50	309 (50)	96	50 / 50	306 (50)	95	50 / 50	289 (50)	90	50 / 50
13	326 (50)	50 / 50	316 (50)	97	50 / 50	311 (50)	95	50 / 50	294 (50)	90	50 / 50
14	332 (50)	50 / 50	321 (50)	97	50 / 50	317 (50)	95	50 / 50	301 (50)	91	50 / 50
18	349 (50)	50 / 50	339 (50)	97	50 / 50	336 (50)	96	50 / 50	321 (50)	92	50 / 50
22	362 (50)	50 / 50	354 (50)	98	50 / 50	352 (50)	97	50 / 50	336 (50)	93	50 / 50
26	375 (50)	50 / 50	369 (50)	98	50 / 50	367 (50)	98	50 / 50	351 (50)	94	50 / 50
30	385 (50)	50 / 50	379 (50)	98	50 / 50	376 (50)	98	50 / 50	361 (50)	94	50 / 50
34	395 (50)	50 / 50	391 (50)	99	50 / 50	387 (50)	98	50 / 50	373 (50)	94	50 / 50
38	403 (50)	50 / 50	398 (50)	99	50 / 50	394 (50)	98	50 / 50	378 (50)	94	50 / 50
42	404 (50)	50 / 50	402 (50)	100	50 / 50	397 (50)	98	50 / 50	379 (50)	94	50 / 50
46	410 (50)	50 / 50	408 (50)	100	50 / 50	404 (50)	99	50 / 50	387 (50)	94	50 / 50
50	413 (50)	50 / 50	410 (49)	99	49 / 50	406 (50)	98	50 / 50	389 (50)	94	50 / 50
54	415 (50)	50 / 50	413 (49)	100	49 / 50	408 (50)	98	50 / 50	391 (50)	94	50 / 50
58	417 (50)	50 / 50	414 (49)	99	49 / 50	409 (50)	98	50 / 50	391 (50)	94	50 / 50
62	420 (50)	50 / 50	415 (49)	99	49 / 50	410 (50)	98	50 / 50	391 (50)	93	50 / 50
66	423 (50)	50 / 50	416 (49)	98	49 / 50	409 (50)	97	50 / 50	390 (49)	92	49 / 50
70	424 (50)	50 / 50	415 (49)	98	49 / 50	407 (50)	96	50 / 50	386 (47)	91	47 / 50
74	425 (50)	50 / 50	412 (49)	97	49 / 50	403 (50)	95	50 / 50	381 (47)	90	47 / 50
78	424 (50)	50 / 50	405 (49)	96	49 / 50	398 (50)	94	50 / 50	379 (46)	89	46 / 50
82	422 (50)	50 / 50	402 (47)	95	47 / 50	392 (49)	93	49 / 50	374 (45)	89	45 / 50
86	420 (48)	48 / 50	401 (45)	95	45 / 50	388 (49)	92	49 / 50	369 (45)	88	45 / 50
90	412 (47)	47 / 50	391 (45)	95	45 / 50	379 (48)	92	48 / 50	360 (45)	87	45 / 50
94	406 (47)	47 / 50	380 (45)	94	45 / 50	367 (47)	90	47 / 50	356 (44)	88	44 / 50
98	400 (42)	42 / 50	375 (44)	94	44 / 50	358 (44)	90	44 / 50	342 (43)	86	43 / 50
102	395 (42)	42 / 50	367 (43)	93	43 / 50	353 (40)	89	40 / 50	339 (41)	86	41 / 50
104	388 (39)	39 / 50	360 (42)	93	42 / 50	347 (40)	89	40 / 50	329 (40)	85	40 / 50

< > : No. of effective animals, ( ) : No. of measured animals, Av. Wt. : Averaged body weight (Unit : g).

TABLE 2 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Week on Study	Control		750 ppm			1500 ppm			3000 ppm		
	Av. Wt.	No. of Surviv. <50>	Av. Wt.	% of cont.	No. of Surviv. <50>	Av. Wt.	% of cont.	No. of Surviv. <50>	Av. Wt.	% of cont.	No. of Surviv. <50>
0	100 (50)	50 / 50	100 (50)	100	50 / 50	100 (50)	100	50 / 50	100 (50)	100	50 / 50
1	114 (50)	50 / 50	114 (50)	100	50 / 50	112 (50)	98	50 / 50	109 (50)	96	50 / 50
2	126 (50)	50 / 50	125 (50)	99	50 / 50	124 (50)	98	50 / 50	120 (50)	95	50 / 50
3	136 (50)	50 / 50	134 (50)	99	50 / 50	131 (50)	96	50 / 50	127 (50)	93	50 / 50
4	143 (50)	50 / 50	141 (50)	99	50 / 50	138 (50)	97	50 / 50	133 (50)	93	50 / 50
5	150 (50)	50 / 50	148 (50)	99	50 / 50	143 (50)	95	50 / 50	139 (50)	93	50 / 50
6	155 (50)	50 / 50	153 (50)	99	50 / 50	149 (50)	96	50 / 50	145 (50)	94	50 / 50
7	159 (50)	50 / 50	157 (50)	99	50 / 50	153 (50)	96	50 / 50	148 (50)	93	50 / 50
8	164 (50)	50 / 50	160 (50)	98	50 / 50	157 (50)	96	50 / 50	151 (50)	92	50 / 50
9	167 (50)	50 / 50	164 (50)	98	50 / 50	160 (50)	96	50 / 50	153 (50)	92	50 / 50
10	172 (50)	50 / 50	167 (50)	97	50 / 50	163 (50)	95	50 / 50	156 (50)	91	50 / 50
11	175 (50)	50 / 50	170 (50)	97	50 / 50	166 (50)	95	50 / 50	159 (50)	91	50 / 50
12	175 (50)	50 / 50	171 (50)	98	50 / 50	167 (50)	95	50 / 50	160 (50)	91	50 / 50
13	178 (50)	50 / 50	173 (50)	97	50 / 50	169 (50)	95	50 / 50	162 (50)	91	50 / 50
14	179 (50)	50 / 50	174 (50)	97	50 / 50	170 (50)	95	50 / 50	163 (50)	91	50 / 50
18	185 (50)	50 / 50	180 (50)	97	50 / 50	174 (50)	94	50 / 50	166 (50)	90	50 / 50
22	190 (50)	50 / 50	185 (50)	97	50 / 50	178 (50)	94	50 / 50	170 (50)	89	50 / 50
26	196 (50)	50 / 50	190 (50)	97	50 / 50	183 (50)	93	50 / 50	176 (50)	90	50 / 50
30	200 (50)	50 / 50	195 (50)	98	50 / 50	185 (50)	93	50 / 50	178 (50)	89	50 / 50
34	204 (50)	50 / 50	200 (50)	98	50 / 50	190 (50)	93	50 / 50	183 (50)	90	50 / 50
38	209 (50)	50 / 50	203 (50)	97	50 / 50	194 (50)	93	50 / 50	187 (50)	89	50 / 50
42	210 (50)	50 / 50	205 (50)	98	50 / 50	195 (49)	93	49 / 50	187 (50)	89	50 / 50
46	215 (50)	50 / 50	209 (50)	97	50 / 50	199 (49)	93	49 / 50	191 (50)	89	50 / 50
50	220 (50)	50 / 50	213 (50)	97	50 / 50	203 (49)	92	49 / 50	195 (50)	89	50 / 50
54	222 (50)	50 / 50	216 (50)	97	50 / 50	206 (49)	93	49 / 50	197 (50)	89	50 / 50
58	227 (50)	50 / 50	220 (50)	97	50 / 50	210 (49)	93	49 / 50	201 (50)	89	50 / 50
62	231 (50)	50 / 50	224 (50)	97	50 / 50	214 (48)	93	48 / 50	204 (50)	88	50 / 50
66	238 (49)	49 / 50	230 (50)	97	50 / 50	220 (47)	92	47 / 50	208 (50)	87	50 / 50
70	246 (49)	49 / 50	237 (50)	96	50 / 50	227 (46)	92	46 / 50	214 (50)	87	50 / 50
74	249 (49)	49 / 50	242 (50)	97	50 / 50	231 (45)	93	45 / 50	218 (50)	88	50 / 50
78	255 (48)	48 / 50	247 (49)	97	49 / 50	236 (45)	93	45 / 50	223 (49)	87	49 / 50
82	258 (46)	46 / 50	252 (48)	98	48 / 50	240 (44)	93	44 / 50	224 (48)	87	48 / 50
86	262 (45)	45 / 50	255 (48)	97	48 / 50	244 (42)	93	42 / 50	227 (48)	87	48 / 50
90	260 (44)	44 / 50	254 (47)	98	47 / 50	245 (42)	94	42 / 50	226 (47)	87	47 / 50
94	264 (41)	41 / 50	257 (46)	97	46 / 50	246 (42)	93	42 / 50	227 (46)	86	46 / 50
98	261 (39)	39 / 50	257 (46)	98	46 / 50	244 (40)	93	40 / 50	225 (45)	86	45 / 50
102	264 (36)	36 / 50	257 (45)	97	45 / 50	242 (39)	92	39 / 50	225 (44)	85	44 / 50
104	263 (35)	35 / 50	257 (44)	98	44 / 50	243 (38)	92	38 / 50	225 (43)	86	43 / 50

< > : No. of effective animals, ( ) : No. of measured animals, Av. Wt. : Averaged body weight (Unit : g).

TABLE 3 FOOD CONSUMPTION CHANGES OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Week on Study	Control		750 ppm			1500 ppm			3000 ppm		
	Av. FC.	No. of Surviv. <50>	Av. FC.	% of cont.	No. of Surviv. <50>	Av. FC.	% of cont.	No. of Surviv. <50>	Av. FC.	% of cont.	No. of Surviv. <50>
1	13.7 (50)	50 / 50	13.3 (50)	97	50 / 50	13.3 (50)	97	50 / 50	12.6 (50)	92	50 / 50
2	14.5 (50)	50 / 50	14.5 (50)	100	50 / 50	14.5 (50)	100	50 / 50	14.5 (50)	100	50 / 50
3	15.0 (50)	50 / 50	14.9 (50)	99	50 / 50	14.7 (50)	98	50 / 50	14.7 (50)	98	50 / 50
4	15.3 (50)	50 / 50	14.7 (50)	96	50 / 50	14.6 (50)	95	50 / 50	14.3 (50)	93	50 / 50
5	15.7 (50)	50 / 50	15.0 (50)	96	50 / 50	15.0 (50)	96	50 / 50	14.8 (50)	94	50 / 50
6	15.5 (50)	50 / 50	15.0 (50)	97	50 / 50	15.3 (50)	99	50 / 50	14.9 (50)	96	50 / 50
7	15.9 (50)	50 / 50	15.4 (50)	97	50 / 50	15.7 (50)	99	50 / 50	15.1 (50)	95	50 / 50
8	15.8 (50)	50 / 50	15.3 (50)	97	50 / 50	15.6 (50)	99	50 / 50	15.2 (50)	96	50 / 50
9	16.0 (50)	50 / 50	15.6 (50)	98	50 / 50	15.8 (50)	99	50 / 50	15.2 (49)	95	50 / 50
10	16.2 (50)	50 / 50	15.0 (50)	93	50 / 50	15.4 (50)	95	50 / 50	15.2 (50)	94	50 / 50
11	15.8 (50)	50 / 50	15.0 (50)	95	50 / 50	15.5 (50)	98	50 / 50	14.9 (50)	94	50 / 50
12	15.4 (50)	50 / 50	14.8 (50)	96	50 / 50	15.4 (50)	100	50 / 50	15.1 (50)	98	50 / 50
13	15.2 (50)	50 / 50	14.5 (50)	95	50 / 50	14.8 (50)	97	50 / 50	14.8 (50)	97	50 / 50
14	15.2 (50)	50 / 50	14.4 (50)	95	50 / 50	15.0 (50)	99	50 / 50	14.8 (49)	97	50 / 50
18	15.6 (50)	50 / 50	15.1 (50)	97	50 / 50	15.6 (50)	100	50 / 50	15.4 (49)	99	50 / 50
22	15.4 (50)	50 / 50	15.1 (50)	98	50 / 50	15.8 (50)	103	50 / 50	15.6 (49)	101	50 / 50
26	16.0 (50)	50 / 50	15.7 (50)	98	50 / 50	16.2 (50)	101	50 / 50	16.0 (49)	100	50 / 50
30	16.3 (49)	50 / 50	16.2 (49)	99	50 / 50	16.6 (49)	102	50 / 50	16.2 (47)	99	50 / 50
34	16.4 (49)	50 / 50	16.2 (49)	99	50 / 50	16.7 (49)	102	50 / 50	16.4 (47)	100	50 / 50
38	16.3 (50)	50 / 50	16.2 (50)	99	50 / 50	16.6 (49)	102	50 / 50	16.2 (47)	99	50 / 50
42	16.1 (50)	50 / 50	16.2 (49)	101	50 / 50	16.6 (48)	103	50 / 50	16.1 (48)	100	50 / 50
46	16.5 (50)	50 / 50	16.8 (49)	102	50 / 50	17.2 (49)	104	50 / 50	16.5 (49)	100	50 / 50
50	16.3 (50)	50 / 50	16.6 (49)	102	49 / 50	16.6 (49)	102	50 / 50	16.0 (48)	98	50 / 50
54	16.3 (49)	50 / 50	16.8 (49)	103	49 / 50	16.9 (50)	104	50 / 50	16.4 (49)	101	50 / 50
58	16.2 (48)	50 / 50	16.4 (47)	101	49 / 50	16.5 (44)	102	50 / 50	15.9 (46)	98	50 / 50
62	16.4 (49)	50 / 50	16.5 (49)	101	49 / 50	16.7 (48)	102	50 / 50	16.2 (48)	99	50 / 50
66	16.5 (48)	50 / 50	16.5 (49)	100	49 / 50	16.6 (49)	101	50 / 50	16.0 (47)	97	49 / 50
70	16.5 (49)	50 / 50	16.5 (48)	100	49 / 50	16.8 (49)	102	50 / 50	16.4 (45)	99	47 / 50
74	16.1 (49)	50 / 50	16.4 (48)	102	49 / 50	16.4 (48)	102	50 / 50	16.0 (44)	99	47 / 50
78	15.9 (48)	50 / 50	16.2 (47)	102	49 / 50	16.7 (48)	105	50 / 50	16.5 (44)	104	46 / 50
82	16.6 (50)	50 / 50	16.5 (44)	99	47 / 50	16.7 (44)	101	49 / 50	16.5 (42)	99	45 / 50
86	15.9 (47)	48 / 50	16.4 (45)	103	45 / 50	16.5 (47)	104	49 / 50	16.1 (43)	101	45 / 50
90	15.9 (47)	47 / 50	16.3 (42)	103	45 / 50	16.7 (43)	105	48 / 50	16.2 (42)	102	45 / 50
94	15.3 (42)	47 / 50	16.0 (41)	105	45 / 50	16.8 (41)	110	47 / 50	16.4 (38)	107	44 / 50
98	16.2 (38)	42 / 50	16.6 (40)	102	44 / 50	17.1 (33)	106	44 / 50	15.6 (34)	96	43 / 50
102	15.6 (38)	42 / 50	16.2 (39)	104	43 / 50	17.0 (31)	109	40 / 50	16.2 (35)	104	41 / 50
104	16.3 (37)	39 / 50	16.2 (38)	99	42 / 50	16.9 (30)	104	40 / 50	16.2 (35)	99	40 / 50

< > : No. of effective animals, ( ) : No. of measured animals, Av. FC. : Averaged food consumption (Unit : g).

TABLE 4 FOOD CONSUMPTION CHANGES OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Week on Study	Control		750 ppm			1500 ppm			3000 ppm		
	Av. FC.	No. of Surviv. <50>	Av. FC.	% of cont.	No. of Surviv. <50>	Av. FC.	% of cont.	No. of Surviv. <50>	Av. FC.	% of cont.	No. of Surviv. <50>
1	10.0 (50)	50 / 50	9.6 (50)	96	50 / 50	9.4 (50)	94	50 / 50	9.1 (50)	91	50 / 50
2	9.9 (50)	50 / 50	9.7 (50)	98	50 / 50	10.0 (50)	101	50 / 50	9.4 (50)	95	50 / 50
3	10.4 (50)	50 / 50	10.4 (50)	100	50 / 50	10.1 (50)	97	50 / 50	9.5 (50)	91	50 / 50
4	10.4 (50)	50 / 50	10.0 (50)	96	50 / 50	10.3 (50)	99	50 / 50	9.5 (50)	91	50 / 50
5	10.7 (50)	50 / 50	9.9 (50)	93	50 / 50	10.3 (50)	96	50 / 50	10.2 (50)	95	50 / 50
6	10.3 (50)	50 / 50	9.8 (50)	95	50 / 50	10.3 (50)	100	50 / 50	10.0 (50)	97	50 / 50
7	10.3 (50)	50 / 50	9.6 (50)	93	50 / 50	10.3 (50)	100	50 / 50	10.0 (50)	97	50 / 50
8	10.2 (50)	50 / 50	9.6 (50)	94	50 / 50	9.9 (50)	97	50 / 50	9.5 (50)	93	50 / 50
9	10.2 (50)	50 / 50	9.6 (50)	94	50 / 50	10.0 (50)	98	50 / 50	9.7 (50)	95	50 / 50
10	10.1 (50)	50 / 50	9.6 (50)	95	50 / 50	9.8 (50)	97	50 / 50	9.5 (50)	94	50 / 50
11	10.2 (50)	50 / 50	9.7 (50)	95	50 / 50	10.2 (50)	100	50 / 50	9.8 (49)	96	50 / 50
12	10.0 (50)	50 / 50	9.5 (50)	95	50 / 50	9.7 (50)	97	50 / 50	9.8 (50)	98	50 / 50
13	9.8 (50)	50 / 50	9.2 (49)	94	50 / 50	9.7 (50)	99	50 / 50	9.6 (50)	98	50 / 50
14	9.7 (50)	50 / 50	9.2 (50)	95	50 / 50	9.4 (50)	97	50 / 50	9.3 (50)	96	50 / 50
18	10.0 (50)	50 / 50	9.7 (50)	97	50 / 50	9.6 (50)	96	50 / 50	10.0 (50)	100	50 / 50
22	9.7 (50)	50 / 50	9.5 (50)	98	50 / 50	9.7 (50)	100	50 / 50	9.7 (50)	100	50 / 50
26	10.3 (50)	50 / 50	10.0 (50)	97	50 / 50	10.2 (50)	99	50 / 50	10.3 (50)	100	50 / 50
30	10.8 (50)	50 / 50	10.7 (50)	99	50 / 50	10.6 (50)	98	50 / 50	11.0 (50)	102	50 / 50
34	11.1 (50)	50 / 50	10.7 (50)	96	50 / 50	10.8 (50)	97	50 / 50	10.7 (50)	96	50 / 50
38	11.1 (50)	50 / 50	10.7 (50)	96	50 / 50	11.0 (50)	99	50 / 50	11.0 (50)	99	50 / 50
42	11.2 (49)	50 / 50	11.3 (50)	101	50 / 50	11.2 (49)	100	49 / 50	11.0 (50)	98	50 / 50
46	11.6 (50)	50 / 50	11.8 (50)	102	50 / 50	11.7 (49)	101	49 / 50	11.3 (50)	97	50 / 50
50	11.6 (50)	50 / 50	11.7 (50)	101	50 / 50	11.7 (49)	101	49 / 50	11.5 (50)	99	50 / 50
54	11.9 (50)	50 / 50	12.1 (50)	102	50 / 50	11.8 (49)	99	49 / 50	11.3 (50)	95	50 / 50
58	12.4 (50)	50 / 50	12.6 (50)	102	50 / 50	12.2 (49)	98	49 / 50	11.9 (50)	96	50 / 50
62	12.1 (50)	50 / 50	12.3 (50)	102	50 / 50	12.5 (48)	103	48 / 50	11.8 (50)	98	50 / 50
66	12.4 (48)	49 / 50	12.4 (50)	100	50 / 50	12.3 (47)	99	47 / 50	11.9 (50)	96	50 / 50
70	12.6 (49)	49 / 50	12.9 (50)	102	50 / 50	12.7 (46)	101	46 / 50	12.4 (50)	98	50 / 50
74	12.6 (49)	49 / 50	12.7 (50)	101	50 / 50	12.5 (45)	99	45 / 50	12.2 (50)	97	50 / 50
78	12.9 (48)	48 / 50	13.3 (49)	103	49 / 50	13.3 (45)	103	45 / 50	12.8 (49)	99	49 / 50
82	13.2 (46)	46 / 50	13.4 (48)	102	48 / 50	13.3 (44)	101	44 / 50	12.6 (48)	95	48 / 50
86	12.7 (44)	45 / 50	12.8 (48)	101	48 / 50	13.0 (42)	102	42 / 50	12.1 (48)	95	48 / 50
90	12.6 (43)	44 / 50	12.4 (47)	98	47 / 50	12.8 (42)	102	42 / 50	11.7 (47)	93	47 / 50
94	12.7 (41)	41 / 50	12.7 (46)	100	46 / 50	13.0 (42)	102	42 / 50	12.5 (46)	98	46 / 50
98	12.7 (39)	39 / 50	13.1 (46)	103	46 / 50	13.0 (40)	102	40 / 50	12.3 (45)	97	45 / 50
102	12.5 (36)	36 / 50	12.8 (45)	102	45 / 50	13.1 (39)	105	39 / 50	12.5 (44)	100	44 / 50
104	13.0 (35)	35 / 50	13.1 (44)	101	44 / 50	13.3 (38)	102	38 / 50	12.4 (43)	95	43 / 50

< > : No. of effective animals, ( ) : No. of measured animals, Av. FC. : Averaged food consumption (Unit : g).

TABLE 5 HEMATOLOGY OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm		1500 ppm		3000 ppm	
No. of examined animals	39	42		40		38	
MCV (fL)	47.8 ± 2.5	47.0 ± 1.7	*	46.9 ± 1.8	**	47.2 ± 4.0	**
MCH (pg)	16.0 ± 1.5	15.7 ± 0.8	*	15.7 ± 0.5	**	15.5 ± 1.2	**
MCHC (g/dL)	33.4 ± 2.0	33.5 ± 1.1		33.5 ± 0.7	*	32.9 ± 1.6	**

Mean ± S.D.
Significant difference: * : p<0.05 ** : p<0.01 Test of Dunnett

TABLE 6 HEMATOLOGY OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm		1500 ppm		3000 ppm	
No. of examined animals	35	44		38		42	
RED BLOOD CELL (10^6/μL)	7.81 ± 1.27	8.26 ± 1.19	**	8.10 ± 0.78		8.29 ± 1.15	**
MCV (fL)	52.1 ± 3.6	52.2 ± 9.6	**	50.2 ± 2.0	**	50.3 ± 3.1	**
MCH (pg)	17.9 ± 1.5	18.1 ± 3.6	**	17.2 ± 0.7	**	17.0 ± 0.7	**
MCHC (g/dL)	34.4 ± 2.4	34.6 ± 1.6		34.3 ± 1.0	**	33.9 ± 1.6	**
PLATELET (10^3/μL)	692 ± 192	706 ± 143		793 ± 142	*	804 ± 135	**
WBC (10^3/μL)	4.65 ± 11.26	12.74 ± 48.58		3.13 ± 1.65		4.07 ± 4.04	*
Differential WBC (%)							
N-BAND	1 ± 2	0 ± 1		0 ± 1		0 ± 1	**

Mean ± S.D.
Significant difference: * : p<0.05 ** : p<0.01 Test of Dunnett

TABLE 7 BIOCHEMISTRY OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm		1500 ppm		3000 ppm	
No. of examined animals	39	42		40		38	
TOTAL PROTEIN (g/dL)	6.7 ± 0.5	6.6 ± 0.6		6.6 ± 0.4		6.5 ± 0.3	*
ALBUMIN (g/dL)	3.1 ± 0.3	2.9 ± 0.4	**	2.9 ± 0.2	**	2.8 ± 0.3	**
A/G RATIO	0.9 ± 0.1	0.8 ± 0.1	**	0.8 ± 0.1	**	0.8 ± 0.1	**
T-CHOLESTEROL (mg/dL)	153 ± 50	188 ± 62	*	205 ± 52	**	183 ± 65	
TRIGLYCERIDE (mg/dL)	56 ± 53	80 ± 61		130 ± 89	**	115 ± 95	**
PHOSPHOLIPID (mg/dL)	220 ± 67	265 ± 89	*	294 ± 76	**	274 ± 97	*
GOT (IU/L)	119 ± 193	80 ± 52	*	77 ± 33	*	85 ± 75	*
GPT (IU/L)	44 ± 33	37 ± 27	*	35 ± 16	*	35 ± 21	**
ALP (IU/L)	210 ± 165	235 ± 420		157 ± 59	*	151 ± 63	**
G-GTP (IU/L)	5 ± 2	11 ± 7	**	14 ± 13	**	11 ± 8	**
UREA NITROGEN (mg/dL)	19.5 ± 9.9	25.9 ± 13.2	**	37.7 ± 24.1	**	33.4 ± 16.6	**
CREATININE (mg/dL)	0.6 ± 0.2	0.6 ± 0.1	**	0.9 ± 0.5	**	0.8 ± 0.3	**
POTASSIUM (mEq/L)	3.6 ± 0.3	3.8 ± 0.4	*	3.9 ± 0.3	**	3.9 ± 0.3	*
CHLORIDE (mEq/L)	105 ± 2	104 ± 2		103 ± 3	**	104 ± 2	
CALCIUM (mg/dL)	10.4 ± 0.3	10.5 ± 0.5		10.8 ± 0.7	**	10.6 ± 0.6	
INORGANIC PHOSPHORUS (mg/dL)	4.1 ± 0.8	4.5 ± 0.8		5.3 ± 2.6	**	5.1 ± 2.2	**

Mean ± S.D.

Significant difference: * : $p<0.05$ ** : $p<0.01$ Test of Dunnett

TABLE 8 BIOCHEMISTRY OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm		1500 ppm		3000 ppm	
No. of examined animals	35	44		38		42	
TOTAL PROTEIN (g/dL)	6.8 ± 0.5	7.0 ± 0.4		7.1 ± 0.5	**	7.1 ± 0.4	**
A/G RATIO	1.2 ± 0.1	1.2 ± 0.1		1.1 ± 0.1	**	1.1 ± 0.1	**
GLUCOSE (mg/dL)	160 ± 30	163 ± 17		161 ± 19		167 ± 15	**
T-CHOLESTEROL (mg/dL)	129 ± 34	149 ± 21	**	163 ± 39	**	150 ± 36	**
PHOSPHOLIPID (mg/dL)	227 ± 52	256 ± 38	*	272 ± 58	**	250 ± 51	
GOT (IU/L)	136 ± 63	131 ± 207	**	89 ± 33	**	85 ± 32	**
GPT (IU/L)	57 ± 27	50 ± 46		41 ± 14	**	39 ± 15	**
LDH (IU/L)	258 ± 203	205 ± 145	*	175 ± 58	**	168 ± 43	**
ALP (IU/L)	113 ± 36	120 ± 112		106 ± 69	**	98 ± 48	**
G-GTP (IU/L)	2 ± 1	3 ± 2	*	2 ± 1		3 ± 1	**
UREA NITROGEN (mg/dL)	23.8 ± 39.8	17.6 ± 2.6		19.4 ± 5.3	*	20.1 ± 3.4	**
POTASSIUM (mEq/L)	3.7 ± 1.0	3.4 ± 0.4	*	3.3 ± 0.3	*	3.5 ± 0.3	
CHLORIDE (mEq/L)	103 ± 5	102 ± 2	**	103 ± 2		102 ± 2	**

Mean ± S.D.

Significant difference: * : $p<0.05$ ** : $p<0.01$ Test of Dunnett

TABLE 9 URINALYSIS OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group name		Control	750 ppm	1500 ppm	3000 ppm
Number of examined animals		42	43	40	41
	Grade				
pH	5.0	0	0	0	0
	6.0	2	0	1	1
	6.5	1	0	3	3
	7.0	1	11	15	13
	7.5	17	15	12	14
	8.0	14	10	6	7
	8.5	7	7	3	3
	Chi square test		*	**	**

Significant difference: * : $p<0.05$ ** : $p<0.01$

TABLE 10 URINALYSIS OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group name		Control	750 ppm	1500 ppm	3000 ppm
Number of examined animals		36	45	39	44
	Grade				
Ketone body	−	16	34	34	37
	±	19	11	5	6
	+	1	0	0	1
	2+	0	0	0	0
	3+	0	0	0	0
	4+	0	0	0	0
	Chi square test		*	**	**

Significant difference: * : $p<0.05$ ** : $p<0.01$

TABLE 11 ORGAN WEIGHTS OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm		1500 ppm		3000 ppm	
No. of examined animals	39	42		40		40	
Body weight (g)	370 ± 30	342 ± 31	**	326 ± 29	**	308 ± 33	**
Adrenals (g)	0.067 ± 0.009	0.067 ± 0.014		0.075 ± 0.041		0.067 ± 0.017	
Adrenals (%)	0.018 ± 0.003	0.020 ± 0.005		0.023 ± 0.014	*	0.022 ± 0.007	**
Testes (g)	3.193 ± 1.242	4.361 ± 1.724	**	4.561 ± 1.337	**	5.407 ± 1.288	**
Testes (%)	0.863 ± 0.329	1.266 ± 0.489	**	1.415 ± 0.449	**	1.759 ± 0.403	**
Heart (g)	1.166 ± 0.090	1.111 ± 0.072	*	1.125 ± 0.094		1.123 ± 0.128	*
Heart (%)	0.316 ± 0.026	0.327 ± 0.033		0.346 ± 0.039	**	0.370 ± 0.075	**
Lungs (g)	1.355 ± 0.118	1.446 ± 0.422		1.395 ± 0.092		1.448 ± 0.012	*
Lungs (%)	0.368 ± 0.041	0.427 ± 0.149	**	0.430 ± 0.043	**	0.477 ± 0.112	**
Kidneys (g)	2.634 ± 0.153	2.802 ± 0.261	**	2.900 ± 0.281	**	2.965 ± 0.461	**
Kidneys (%)	0.715 ± 0.055	0.824 ± 0.094	**	0.898 ± 0.139	**	0.970 ± 0.167	**
Spleen (g)	1.071 ± 0.771	0.984 ± 0.250		0.975 ± 0.197		0.950 ± 0.291	
Spleen (%)	0.289 ± 0.204	0.285 ± 0.063	**	0.301 ± 0.063	**	0.305 ± 0.079	**
Liver (g)	10.023 ± 1.185	11.334 ± 1.593	**	12.366 ± 1.547	**	12.052 ± 1.760	**
Liver (%)	2.715 ± 0.297	3.307 ± 0.347	**	3.805 ± 0.469	**	3.945 ± 0.712	**
Brain (g)	2.021 ± 0.057	2.051 ± 0.070		2.045 ± 0.068		2.050 ± 0.081	
Brain (%)	0.549 ± 0.042	0.604 ± 0.068	**	0.631 ± 0.050	**	0.672 ± 0.069	**

Mean ± S.D.
Significant difference: * : $p<0.05$ ** : $p<0.01$ Test of Dunnett

TABLE 12 ORGAN WEIGHTS OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm		1500 ppm		3000 ppm	
No. of examined animals	35	44		38		43	
Body weight (g)	248 ± 36	242 ± 24		228 ± 26	**	210 ± 29	**
Adrenals (g)	0.074 ± 0.022	0.067 ± 0.007		0.066 ± 0.007		0.064 ± 0.009	**
Adrenals (%)	0.031 ± 0.013	0.028 ± 0.004		0.030 ± 0.006		0.031 ± 0.006	
Ovaries (g)	0.154 ± 0.127	0.134 ± 0.028		0.285 ± 0.827		0.125 ± 0.016	
Ovaries (%)	0.061 ± 0.040	0.056 ± 0.012		0.124 ± 0.348		0.060 ± 0.009	*
Heart (g)	0.834 ± 0.091	0.837 ± 0.071		0.832 ± 0.064		0.829 ± 0.103	
Heart (%)	0.344 ± 0.066	0.348 ± 0.037		0.370 ± 0.046	**	0.399 ± 0.057	**
Lungs (g)	0.971 ± 0.068	1.018 ± 0.286		0.973 ± 0.065		1.015 ± 0.189	
Lungs (%)	0.402 ± 0.079	0.428 ± 0.150		0.436 ± 0.092	*	0.492 ± 0.113	**
Kidneys (g)	1.757 ± 0.131	1.876 ± 0.162	**	1.933 ± 0.173	**	1.968 ± 0.253	**
Kidneys (%)	0.723 ± 0.109	0.782 ± 0.102		0.861 ± 0.133	**	0.944 ± 0.110	**
Spleen (g)	0.819 ± 0.786	0.910 ± 1.996		0.557 ± 0.274		0.569 ± 0.260	
Spleen (%)	0.336 ± 0.314	0.410 ± 0.975		0.246 ± 0.119		0.270 ± 0.110	**
Liver (g)	6.462 ± 1.032	7.040 ± 1.161		7.186 ± 0.713	**	7.151 ± 1.371	**
Liver (%)	2.629 ± 0.351	2.940 ± 0.650		3.189 ± 0.425	**	3.400 ± 0.406	**
Brain (g)	1.844 ± 0.070	1.860 ± 0.050		1.853 ± 0.049		1.854 ± 0.073	
Brain (%)	0.766 ± 0.129	0.777 ± 0.087		0.828 ± 0.134	*	0.898 ± 0.130	**

Mean ± S.D.
Significant difference: * : $p<0.05$ ** : $p<0.01$ Test of Dunnett

TABLE 13 INCIDENCES OF SELECTED NEOPLASTIC LESIONS OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm	1500 ppm	3000 ppm	Peto	Cochran-
Number of examined animals	50	50	50	50	test	Armitage test
kidney	<50>	<50>	<50>	<50>		
renal cell adenoma	0 (0 %)	0 (0 %)	3 (6 %)	26 (52 %) **	↑ ↑	↑ ↑
renal cell carcinoma	0 (0 %)	0 (0 %)	2 (4 %)	23 (46 %) **	↑ ↑	↑ ↑
preputial gland	<50>	<50>	<50>	<50>		
adenoma	1 (2 %)	4 (8 %)	2 (4 %)	7 (14 %) *	↑	↑
testis	<50>	<50>	<50>	<50>		
interstitial cell tumor	43 (86 %)	48 (96 %)	50 (100 %) **	49 (98 %) *	↑ ↑	↑
lung	<50>	<50>	<50>	<50>		
bronchiolar-alveolar adenoma	0 (0 %)	1 (2 %)	0 (0 %)	3 (6 %)	↑	↑
pituitary gland	<50>	<50>	<50>	<49>		
adenoma	16 (32 %)	11 (22 %)	6 (12 %) *	5 (10 %) **		↓ ↓
thyroid	<50>	<50>	<50>	<50>		
C-cell adenoma	9 (18 %)	7 (14 %)	4 (8 %)	0 (0 %) **		↓ ↓

Significant difference * : p<0.05 ** : p<0.01 Fisher's exact test for neoplastic lesion
↑(↓) : p<0.05 ↑ ↑(↓ ↓) : p<0.01 Peto or Cochran-Armitage test for neoplastic lesion
< > : Number of animals examined at the site

TABLE 14 INCIDENCES OF SELECTED NEOPLASTIC LESIONS OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control	750 ppm	1500 ppm	3000 ppm	Peto	Cochran-
Number of examined animals	50	50	50	50	test	Armitage test
kidney	<50>	<50>	<50>	<50>		
renal cell adenoma	0 (0 %)	0 (0 %)	3 (6 %)	26 (52 %) **	↑ ↑	↑ ↑
renal cell carcinoma	0 (0 %)	0 (0 %)	0 (0 %)	12 (24 %) **	↑ ↑	↑ ↑
spleen	<50>	<50>	<50>	<50>		
mononuclear cell leukemia	8 (16 %)	3 (6 %)	3 (6 %)	1 (2 %) *		↓

Significant difference * : p<0.05 ** : p<0.01 Fisher's exact test for neoplastic lesion
↑(↓) : p<0.05 ↑ ↑(↓ ↓) : p<0.01 Peto or Cochran-Armitage test for neoplastic lesion
< > : Number of animals examined at the site

TABLE 15 INCIDENCES OF SELECTED NON-NEOPLASTIC LESIONS OF MALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control				750 ppm					1500 ppm					3000 ppm				
Number of examined animals	50				50					50					50				
Grade of non-neoplastic lesion	1	2	3	4	1	2	3	4		1	2	3	4		1	2	3	4	
kidney	<50>				<50>					<50>					<50>				
atypical tubule hyperplasia	0	0	0	0	36	10	0	0	**	19	27	0	0	**	7	41	0	0	**
chronic nephropathy	30	15	2	1	5	15	27	3	**	1	10	33	6	**	4	19	26	1	**
eosinophilic droplet:proximal tubule	4	0	0	0	44	0	0	0	**	45	1	0	0	**	43	0	0	0	**
mineralization:papilla	0	0	0	0	10	0	0	0	**	32	9	0	0	**	11	32	5	0	**
urothelial hyperplasia:pelvis	0	0	0	0	8	12	3	0	**	3	23	15	0	**	2	27	13	0	**
spleen	<50>				<50>					<50>					<50>				
deposit of hemosiderin	27	0	0	0	39	0	1	0	*	39	2	0	0	**	34	3	0	0	*
liver	<50>				<50>					<50>					<50>				
bile duct hyperplasia	9	41	0	0	24	24	0	0	**	33	17	0	0	**	38	5	0	0	**
nasal cavity	<50>				<50>					<50>					<50>				
eosinophilic change:olfactory epithelium	15	13	5	0	17	10	1	0		7	9	6	0		8	3	0	0	**

Grade 1: Slight 2 : Moderate 3 : Marked 4 :Severe
< > : Number of animals examined at the site
Significant difference ; * : $p \leqq 0.05$ ** : $p \leqq 0.01$ Test of Chi Square

TABLE 16 INCIDENCES OF SELECTED NON-NEOPLASTIC LESIONS OF FEMALE RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

Group Name	Control				750 ppm					1500 ppm					3000 ppm				
Number of examined animals	50				50					50					50				
Grade of non-neoplastic lesion	1	2	3	4	1	2	3	4		1	2	3	4		1	2	3	4	
kidney	<50>				<50>					<50>					<50>				
atypical tubule hyperplasia	0	0	0	0	25	3	0	0	**	31	9	0	0	**	10	40	0	0	**
chronic nephropathy	25	3	1	0	38	4	1	0	*	31	8	4	0	**	27	8	3	0	
eosinophilic droplet:proximal tubule	19	0	0	0	45	0	1	0	**	45	1	0	0	**	46	2	0	0	**
mineralization:papilla	3	0	0	0	2	0	0	0		2	0	0	0		10	0	0	0	
urothelial hyperplasia:pelvis	0	0	0	0	0	0	0	0		1	0	0	0		0	1	0	0	
spleen	<50>				<50>					<50>					<50>				
deposit of hemosiderin	10	23	0	0	8	37	0	0	**	10	30	1	0		8	37	0	0	**
liver	<50>				<50>					<50>					<50>				
basophilic cell focus	19	17	1	0	22	2	0	0	**	12	2	0	0	**	11	1	0	0	**
nasal cavity	<50>				<50>					<50>					<50>				
eosinophilic change:olfactory epithelium	6	8	27	1	12	15	18	2		11	17	15	4	*	16	15	2	1	**

Grade 1: Slight 2 : Moderate 3 : Marked 4 :Severe
< > : Number of animals examined at the site
Significant difference ; * : $p \leqq 0.05$ ** : $p \leqq 0.01$ Test of Chi Square

TABLE 17 HISTORICAL CONTROL DATA OF SELECTED NEOPLASTIC LESIONS IN JAPAN BIOASSAY RESEARCH CENTER : F344/DuCrj MALE RATS

Organs Tumors	No. of animals examined	No. of animals bearing tumor	Incidence (%)	Min. - Max. (%)
Kidney	1749			
Renal cell adenoma		2	0.2	0 - 2
Renal cell carcinoma		4	0.2	0 - 4
Prepuputial gland	1749			
Adenoma		47	2.7	0 - 12
Testis	1748			
Interstitial cell tumor		1490	85.2	56 - 98
Lung	1749			
Bronchiolar-alveolar adenoma		62	3.5	0 - 10

35 carcinogenicity studies examined in Japan Bioassay Research Center were used.
Study No. : 0043, 0059, 0061, 0063, 0065, 0067, 0095, 0104, 0115, 0130, 0141, 0158, 0162, 0189, 0205, 0210, 0224, 0242, 0267, 0269, 0278, 0284, 0288, 0294, 0296, 0318, 0328, 0342, 0347, 0365, 0371, 0396, 0399, 0401, 0407

TABLE 18 HISTORICAL CONTROL DATA OF SELECTED NEOPLASTIC LESIONS IN JAPAN BIOASSAY RESEARCH CENTER : F344/DuCrj FEMALE RATS

Organs Tumors	No. of animals examined	No. of animals bearing tumor	Incidence (%)	Min. - Max. (%)
Kidney	1597			
Renal cell adenoma		2	0.1	0 - 2
Renal cell carcinoma		1	0.1	0 - 2
Spleen	1597			
Mononuclear cell leukemia		209	13.1	2 - 26
Mammary gland	1597			
Adenoma		51	3.2	0 - 18

32 carcinogenicity studies examined in Japan Bioassay Research Center were used.
Study No. : 0043, 0059, 0061, 0063, 0065, 0067, 0095, 0104, 0115, 0130, 0141, 0158, 0162, 0189, 0205, 0210, 0224, 0242, 0267, 0269, 0278, 0284, 0296, 0303, 0318, 0328, 0342, 0347, 0365, 0371, 0399, 0401

TABLE 19 CAUSE OF DEATH OF RATS IN THE 2-YEAR FEED STUDY OF 2,4-DICHLORO-1-NITROBENZENE

	Male				Female			
Group name	Control	750 ppm	1500 ppm	3000 ppm	Control	750 ppm	1500 ppm	3000 ppm
Number of dead or moribund animals	11	8	10	10	15	6	12	7
No microscopical confirmation	1	1	0	1	0	1	0	0
Nervous system disorders	0	1	0	0	0	0	0	0
Chronic nephropathy	0	0	2	2	0	0	0	0
Tumor death ：leukemia	2	1	3	0	4	1	2	0
subcutis	2	2	1	2	0	0	0	0
lung	0	0	0	0	1	0	0	0
bone marrow	0	0	0	1	0	0	0	0
spleen	0	1	0	0	0	0	0	0
small intestine	0	0	0	1	0	0	0	0
liver	1	0	0	0	0	0	0	1
kidney	0	0	0	0	0	0	1	0
pituitary gland	3	2	1	0	4	2	2	1
adrenal gland	0	0	0	0	1	0	0	0
ovary	—	—	—	—	1	0	0	0
uterus	—	—	—	—	3	2	4	5
mammary gland	0	0	1	1	0	0	1	0
preputial/clitoral gland	0	0	0	0	0	0	2	0
bone	0	0	0	2	1	0	0	0
peritoneum	1	0	2	0	0	0	0	0
retroperitoneum	1	0	0	0	0	0	0	0