

o-フェニレンジアミン二塩酸塩のラットを用いた
経口投与による 13 週間毒性試験(混水試験)報告書

試験番号：0351

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TABLE 1 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF MALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Week on Study	Control		250ppm			500ppm			1000ppm			2000ppm			3000ppm		
	Av. Wt. <10>	No. of Surviv. / 10	Av. Wt. <10>	% of cont.	No. of Surviv. / 10	Av. Wt. <10>	% of cont.	No. of Surviv. / 10	Av. Wt. <10>	% of cont.	No. of Surviv. / 10	Av. Wt. <10>	% of cont.	No. of Surviv. / 10	Av. Wt. <10>	% of cont.	No. of Surviv. / 10
0	122 (10)	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10
1	151 (10)	10 / 10	152 (10)	101	10 / 10	151 (10)	100	10 / 10	146 (10)	97	10 / 10	138 (10)	91	10 / 10	124 (10)	82	10 / 10
2	182 (10)	10 / 10	185 (10)	102	10 / 10	182 (10)	100	10 / 10	174 (10)	96	10 / 10	167 (10)	92	10 / 10	147 (10)	81	10 / 10
3	207 (10)	10 / 10	211 (10)	102	10 / 10	205 (10)	99	10 / 10	198 (10)	96	10 / 10	189 (10)	91	10 / 10	166 (10)	80	10 / 10
4	226 (10)	10 / 10	232 (10)	103	10 / 10	226 (10)	100	10 / 10	217 (10)	96	10 / 10	206 (10)	91	10 / 10	182 (10)	81	10 / 10
5	244 (10)	10 / 10	247 (10)	101	10 / 10	241 (10)	99	10 / 10	232 (10)	95	10 / 10	219 (10)	90	10 / 10	196 (10)	80	10 / 10
6	257 (10)	10 / 10	260 (10)	101	10 / 10	254 (10)	99	10 / 10	242 (10)	94	10 / 10	230 (10)	89	10 / 10	205 (10)	80	10 / 10
7	269 (10)	10 / 10	272 (10)	101	10 / 10	266 (10)	99	10 / 10	253 (10)	94	10 / 10	237 (10)	88	10 / 10	214 (10)	80	10 / 10
8	281 (10)	10 / 10	284 (10)	101	10 / 10	277 (10)	99	10 / 10	263 (10)	94	10 / 10	246 (10)	88	10 / 10	222 (10)	79	10 / 10
9	290 (10)	10 / 10	293 (10)	101	10 / 10	287 (10)	99	10 / 10	271 (10)	93	10 / 10	254 (10)	88	10 / 10	229 (10)	79	10 / 10
10	299 (10)	10 / 10	301 (10)	101	10 / 10	294 (10)	98	10 / 10	277 (10)	93	10 / 10	260 (10)	87	10 / 10	236 (10)	79	10 / 10
11	306 (10)	10 / 10	308 (10)	101	10 / 10	301 (10)	98	10 / 10	282 (10)	92	10 / 10	265 (10)	87	10 / 10	239 (10)	78	10 / 10
12	313 (10)	10 / 10	313 (10)	100	10 / 10	307 (10)	98	10 / 10	287 (10)	92	10 / 10	268 (10)	86	10 / 10	243 (10)	78	10 / 10
13	316 (10)	10 / 10	317 (10)	100	10 / 10	310 (10)	98	10 / 10	291 (10)	92	10 / 10	271 (10)	86	10 / 10	246 (10)	78	10 / 10

< > : No.of effective animals, () : No.of measured animals Av.Wt.:g

TABLE 2 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF FEMALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Week on Study	Control			250ppm			500ppm			1000ppm			2000ppm			3000ppm		
	Av. Wt. <10>	No. of Surviv.	No. of Surviv.	Av. Wt. <10>	% of cont.	No. of Surviv.	Av. Wt. <10>	% of cont.	No. of Surviv.	Av. Wt. <10>	% of cont.	No. of Surviv.	Av. Wt. <10>	% of cont.	No. of Surviv.	Av. Wt. <10>	% of cont.	No. of Surviv.
0	99 (10)	10 / 10	10 / 10	99 (10)	100	10 / 10	99 (10)	100	10 / 10	99 (10)	100	10 / 10	99 (10)	100	10 / 10	99 (10)	100	10 / 10
1	115 (10)	10 / 10	10 / 10	115 (10)	100	10 / 10	112 (10)	97	10 / 10	108 (10)	94	10 / 10	103 (10)	90	10 / 10	76 (9)	66	9 / 10
2	129 (10)	10 / 10	10 / 10	126 (10)	98	10 / 10	123 (10)	95	10 / 10	120 (10)	93	10 / 10	113 (10)	88	10 / 10	87 (8)	67	8 / 10
3	137 (10)	10 / 10	10 / 10	135 (10)	99	10 / 10	133 (10)	97	10 / 10	128 (10)	93	10 / 10	121 (10)	88	10 / 10	100 (8)	73	8 / 10
4	146 (10)	10 / 10	10 / 10	143 (10)	98	10 / 10	140 (10)	96	10 / 10	136 (10)	93	10 / 10	125 (10)	86	10 / 10	106 (8)	73	8 / 10
5	153 (10)	10 / 10	10 / 10	149 (10)	97	10 / 10	145 (10)	95	10 / 10	141 (10)	92	10 / 10	130 (10)	85	10 / 10	108 (8)	71	8 / 10
6	158 (10)	10 / 10	10 / 10	154 (10)	97	10 / 10	150 (10)	95	10 / 10	145 (10)	92	10 / 10	131 (10)	83	10 / 10	108 (8)	68	8 / 10
7	163 (10)	10 / 10	10 / 10	157 (10)	96	10 / 10	156 (10)	96	10 / 10	149 (10)	91	10 / 10	135 (10)	83	10 / 10	109 (8)	67	8 / 10
8	168 (10)	10 / 10	10 / 10	161 (10)	96	10 / 10	158 (10)	94	10 / 10	151 (10)	90	10 / 10	135 (10)	80	10 / 10	112 (8)	67	8 / 10
9	172 (10)	10 / 10	10 / 10	164 (10)	95	10 / 10	162 (10)	94	10 / 10	156 (10)	91	10 / 10	139 (10)	81	10 / 10	113 (8)	66	8 / 10
10	178 (10)	10 / 10	10 / 10	168 (10)	94	10 / 10	166 (10)	93	10 / 10	158 (10)	89	10 / 10	142 (10)	80	10 / 10	114 (8)	64	8 / 10
11	179 (10)	10 / 10	10 / 10	171 (10)	96	10 / 10	168 (10)	94	10 / 10	160 (10)	89	10 / 10	145 (10)	81	10 / 10	120 (8)	67	8 / 10
12	182 (10)	10 / 10	10 / 10	172 (10)	95	10 / 10	170 (10)	93	10 / 10	163 (10)	90	10 / 10	146 (10)	80	10 / 10	121 (8)	66	8 / 10
13	183 (10)	10 / 10	10 / 10	175 (10)	96	10 / 10	170 (10)	93	10 / 10	163 (10)	89	10 / 10	148 (10)	81	10 / 10	122 (8)	67	8 / 10

< > : No.of effective animals, () : No.of measured animals Av.Wt.:g

TABLE 3 WATER CONSUMPTION CHANGES OF MALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Week on Study	Control		250ppm			500ppm			1000ppm			2000ppm			3000ppm		
	Av. Wc. <10>	No. of Surviv. <10>	Av. Wc. <10>	% of cont. <10>	No. of Surviv. <10>	Av. Wc. <10>	% of cont. <10>	No. of Surviv. <10>	Av. Wc. <10>	% of cont. <10>	No. of Surviv. <10>	Av. Wc. <10>	% of cont. <10>	No. of Surviv. <10>	Av. Wc. <10>	% of cont. <10>	No. of Surviv. <10>
1	17.2 (10)	10 / 10	17.0 (10)	99	10 / 10	14.9 (10)	87	10 / 10	14.4 (10)	84	10 / 10	12.4 (10)	72	10 / 10	9.8 (10)	57	10 / 10
2	19.2 (10)	10 / 10	19.7 (10)	103	10 / 10	16.1 (10)	84	10 / 10	15.7 (10)	82	10 / 10	13.4 (10)	70	10 / 10	11.6 (10)	60	10 / 10
3	19.7 (10)	10 / 10	19.0 (10)	96	10 / 10	16.6 (10)	84	10 / 10	16.1 (10)	82	10 / 10	14.3 (10)	73	10 / 10	12.4 (10)	63	10 / 10
4	20.0 (10)	10 / 10	19.8 (10)	99	10 / 10	17.4 (10)	87	10 / 10	15.9 (9)	80	10 / 10	14.9 (10)	74	10 / 10	13.2 (10)	66	10 / 10
5	19.0 (10)	10 / 10	19.2 (10)	101	10 / 10	17.1 (10)	90	10 / 10	16.4 (10)	86	10 / 10	13.7 (10)	72	10 / 10	12.8 (10)	67	10 / 10
6	19.2 (10)	10 / 10	19.2 (10)	100	10 / 10	17.1 (10)	89	10 / 10	16.1 (10)	84	10 / 10	13.8 (10)	72	10 / 10	12.6 (10)	66	10 / 10
7	18.0 (10)	10 / 10	17.8 (10)	99	10 / 10	16.5 (10)	92	10 / 10	15.5 (10)	86	10 / 10	13.5 (10)	75	10 / 10	12.3 (10)	68	10 / 10
8	18.4 (10)	10 / 10	18.1 (10)	98	10 / 10	16.0 (10)	87	10 / 10	15.7 (10)	85	10 / 10	12.9 (10)	70	10 / 10	11.8 (10)	64	10 / 10
9	18.2 (10)	10 / 10	17.9 (10)	98	10 / 10	16.0 (10)	88	10 / 10	15.6 (10)	86	10 / 10	12.8 (10)	70	10 / 10	13.3 (10)	73	10 / 10
10	18.4 (10)	10 / 10	17.7 (10)	96	10 / 10	15.8 (10)	86	10 / 10	15.4 (10)	84	10 / 10	12.7 (10)	69	10 / 10	14.5 (10)	79	10 / 10
11	17.7 (10)	10 / 10	17.7 (10)	100	10 / 10	15.4 (10)	87	10 / 10	14.6 (10)	82	10 / 10	12.2 (10)	69	10 / 10	11.5 (10)	65	10 / 10
12	17.5 (10)	10 / 10	17.1 (10)	98	10 / 10	15.6 (10)	89	10 / 10	14.3 (10)	82	10 / 10	12.2 (10)	70	10 / 10	11.6 (10)	66	10 / 10
13	17.2 (10)	10 / 10	17.6 (10)	102	10 / 10	15.4 (10)	90	10 / 10	15.0 (10)	87	10 / 10	12.6 (10)	73	10 / 10	11.8 (10)	69	10 / 10

< > : No.of effective animals, () : No.of measured animals Av.Wc.:g

TABLE 4 WATER CONSUMPTION CHANGES OF FEMALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF O-PHENYLENEDIAMINE DIHYDROCHLORIDE

Week on Study	Control		250ppm			500ppm			1000ppm			2000ppm			3000ppm		
	Av. Wc. <10>	No. of Surviv.	Av. Wc. <10>	% of cont.	No. of Surviv.	Av. Wc. <10>	% of cont.	No. of Surviv.	Av. Wc. <10>	% of cont.	No. of Surviv.	Av. Wc. <10>	% of cont.	No. of Surviv.	Av. Wc. <10>	% of cont.	No. of Surviv.
1	14.9 (10)	10 / 10	15.2 (10)	102	10 / 10	14.2 (10)	95	10 / 10	11.0 (10)	74	10 / 10	9.8 (10)	66	10 / 10	3.8 (9)	26	9 / 10
2	16.0 (10)	10 / 10	15.3 (10)	96	10 / 10	13.4 (10)	84	10 / 10	11.3 (10)	71	10 / 10	9.7 (10)	61	10 / 10	8.0 (8)	50	8 / 10
3	16.2 (10)	10 / 10	15.8 (9)	98	10 / 10	13.4 (10)	83	10 / 10	11.2 (10)	69	10 / 10	9.7 (10)	60	10 / 10	7.8 (8)	48	8 / 10
4	15.7 (9)	10 / 10	16.1 (10)	103	10 / 10	14.1 (10)	90	10 / 10	11.4 (10)	73	10 / 10	9.7 (10)	62	10 / 10	7.9 (8)	50	8 / 10
5	17.8 (10)	10 / 10	16.6 (10)	93	10 / 10	16.4 (10)	92	10 / 10	11.1 (10)	62	10 / 10	9.5 (10)	53	10 / 10	6.9 (8)	39	8 / 10
6	17.0 (10)	10 / 10	15.1 (9)	89	10 / 10	13.7 (10)	81	10 / 10	10.7 (10)	63	10 / 10	9.1 (10)	54	10 / 10	7.0 (8)	41	8 / 10
7	17.1 (10)	10 / 10	16.9 (10)	99	10 / 10	13.3 (10)	78	10 / 10	10.6 (10)	62	10 / 10	9.0 (10)	53	10 / 10	6.5 (8)	38	8 / 10
8	19.1 (10)	10 / 10	18.3 (10)	96	10 / 10	12.4 (10)	65	10 / 10	9.8 (10)	51	10 / 10	8.2 (10)	43	10 / 10	6.2 (8)	32	8 / 10
9	18.7 (10)	10 / 10	16.8 (10)	90	10 / 10	12.1 (10)	65	10 / 10	10.1 (10)	54	10 / 10	9.8 (10)	52	10 / 10	6.3 (8)	34	8 / 10
10	23.3 (10)	10 / 10	17.5 (10)	75	10 / 10	12.7 (10)	55	10 / 10	10.1 (10)	43	10 / 10	8.9 (10)	38	10 / 10	6.3 (8)	27	8 / 10
11	16.9 (8)	10 / 10	18.9 (10)	112	10 / 10	12.4 (10)	73	10 / 10	9.9 (10)	59	10 / 10	8.4 (10)	50	10 / 10	7.1 (8)	42	8 / 10
12	19.9 (10)	10 / 10	15.4 (9)	77	10 / 10	12.4 (10)	62	10 / 10	10.2 (10)	51	10 / 10	8.6 (10)	43	10 / 10	6.8 (8)	34	8 / 10
13	18.7 (10)	10 / 10	16.1 (10)	86	10 / 10	12.0 (10)	64	10 / 10	10.3 (10)	55	10 / 10	8.7 (10)	47	10 / 10	6.8 (8)	36	8 / 10

< > : No. of effective animals, () : No. of measured animals Av. Wc.:g

TABLE 5 FOOD CONSUMPTION CHANGES OF MALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Week on Study	Control		250ppm			500ppm			1000ppm			2000ppm			3000ppm		
	Av. Fc. <10>	No. of Surviv.	Av. Fc.	% of cont.	No. of Surviv.	Av. Fc.	% of cont.	No. of Surviv.	Av. Fc.	% of cont.	No. of Surviv.	Av. Fc.	% of cont.	No. of Surviv.	Av. Fc.	% of cont.	No. of Surviv.
1	13.8 (10)	10 / 10	13.4 (10)	97	10 / 10	13.0 (10)	94	10 / 10	12.4 (10)	90	10 / 10	11.0 (10)	80	10 / 10	9.1 (10)	66	10 / 10
2	15.7 (10)	10 / 10	15.4 (10)	98	10 / 10	14.7 (10)	94	10 / 10	14.1 (10)	90	10 / 10	13.3 (10)	85	10 / 10	11.7 (10)	75	10 / 10
3	15.5 (10)	10 / 10	15.4 (10)	99	10 / 10	14.9 (10)	96	10 / 10	14.8 (10)	95	10 / 10	14.2 (10)	92	10 / 10	12.8 (10)	83	10 / 10
4	16.3 (10)	10 / 10	16.4 (10)	101	10 / 10	15.6 (10)	96	10 / 10	15.6 (10)	96	10 / 10	14.7 (10)	90	10 / 10	13.6 (10)	83	10 / 10
5	16.0 (10)	10 / 10	15.7 (10)	98	10 / 10	15.4 (10)	96	10 / 10	15.2 (10)	95	10 / 10	14.6 (10)	91	10 / 10	14.0 (10)	88	10 / 10
6	15.6 (10)	10 / 10	15.7 (10)	101	10 / 10	15.2 (10)	97	10 / 10	14.8 (10)	95	10 / 10	14.4 (10)	92	10 / 10	13.9 (10)	89	10 / 10
7	15.7 (10)	10 / 10	15.7 (10)	100	10 / 10	15.6 (10)	99	10 / 10	15.0 (10)	96	10 / 10	14.3 (10)	91	10 / 10	14.2 (10)	90	10 / 10
8	15.8 (10)	10 / 10	16.0 (10)	101	10 / 10	15.6 (10)	99	10 / 10	15.0 (10)	95	10 / 10	14.7 (10)	93	10 / 10	14.2 (10)	90	10 / 10
9	15.9 (10)	10 / 10	15.7 (10)	99	10 / 10	15.5 (10)	97	10 / 10	15.2 (10)	96	10 / 10	14.4 (10)	91	10 / 10	14.3 (10)	90	10 / 10
10	15.9 (10)	10 / 10	15.6 (10)	98	10 / 10	15.2 (10)	96	10 / 10	15.1 (10)	95	10 / 10	14.3 (10)	90	10 / 10	14.6 (10)	92	10 / 10
11	15.8 (10)	10 / 10	15.7 (10)	99	10 / 10	15.3 (10)	97	10 / 10	14.8 (10)	94	10 / 10	14.3 (10)	91	10 / 10	14.1 (10)	89	10 / 10
12	15.5 (10)	10 / 10	15.0 (10)	97	10 / 10	15.0 (10)	97	10 / 10	14.4 (10)	93	10 / 10	14.2 (10)	92	10 / 10	14.3 (10)	92	10 / 10
13	15.4 (10)	10 / 10	15.0 (10)	97	10 / 10	14.7 (10)	95	10 / 10	14.6 (10)	95	10 / 10	14.1 (10)	92	10 / 10	14.5 (10)	94	10 / 10

< > : No.of effective animals, () : No.of measured animals Av.Fc.:g

TABLE 6 FOOD CONSUMPTION CHANGES OF FEMALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Week on Study	Control		250ppm			500ppm			1000ppm			2000ppm			3000ppm		
	Av. Fc. <10>	No. of Surviv.	Av. Fc. <10>	% of cont.	No. of Surviv.	Av. Fc. <10>	% of cont.	No. of Surviv.	Av. Fc. <10>	% of cont.	No. of Surviv.	Av. Fc. <10>	% of cont.	No. of Surviv.	Av. Fc. <10>	% of cont.	No. of Surviv.
1	11.2 (10)	10 / 10	11.2 (10)	100	10 / 10	10.5 (10)	94	10 / 10	9.8 (10)	88	10 / 10	8.3 (10)	74	10 / 10	4.5 (9)	40	9 / 10
2	11.6 (10)	10 / 10	11.0 (10)	95	10 / 10	10.8 (10)	93	10 / 10	10.3 (10)	89	10 / 10	9.3 (10)	80	10 / 10	7.1 (8)	61	8 / 10
3	10.8 (10)	10 / 10	11.1 (10)	103	10 / 10	10.8 (10)	100	10 / 10	10.4 (10)	96	10 / 10	9.6 (10)	89	10 / 10	8.5 (8)	79	8 / 10
4	11.2 (10)	10 / 10	11.0 (10)	98	10 / 10	10.8 (10)	96	10 / 10	10.2 (10)	91	10 / 10	9.3 (10)	83	10 / 10	8.4 (8)	75	8 / 10
5	11.1 (10)	10 / 10	10.6 (10)	95	10 / 10	10.5 (10)	95	10 / 10	10.2 (10)	92	10 / 10	9.5 (10)	86	10 / 10	7.7 (8)	69	8 / 10
6	10.9 (10)	10 / 10	10.3 (10)	94	10 / 10	10.5 (10)	96	10 / 10	9.8 (10)	90	10 / 10	8.8 (10)	81	10 / 10	7.5 (8)	69	8 / 10
7	11.1 (10)	10 / 10	10.5 (10)	95	10 / 10	10.3 (10)	93	10 / 10	9.9 (10)	89	10 / 10	9.1 (10)	82	10 / 10	7.8 (8)	70	8 / 10
8	11.0 (10)	10 / 10	10.4 (10)	95	10 / 10	10.4 (10)	95	10 / 10	9.9 (10)	90	10 / 10	8.9 (10)	81	10 / 10	8.2 (8)	75	8 / 10
9	11.1 (10)	10 / 10	10.5 (10)	95	10 / 10	10.4 (10)	94	10 / 10	10.0 (10)	90	10 / 10	9.4 (10)	85	10 / 10	8.4 (8)	76	8 / 10
10	11.4 (10)	10 / 10	10.5 (10)	92	10 / 10	10.4 (10)	91	10 / 10	9.8 (10)	86	10 / 10	9.3 (10)	82	10 / 10	8.1 (8)	71	8 / 10
11	11.0 (10)	10 / 10	10.6 (10)	96	10 / 10	10.3 (10)	94	10 / 10	9.8 (10)	89	10 / 10	9.4 (10)	85	10 / 10	8.9 (8)	81	8 / 10
12	11.0 (10)	10 / 10	10.2 (10)	93	10 / 10	10.1 (10)	92	10 / 10	9.7 (10)	88	10 / 10	9.4 (10)	85	10 / 10	8.7 (8)	79	8 / 10
13	10.9 (10)	10 / 10	10.4 (10)	95	10 / 10	9.9 (10)	91	10 / 10	9.7 (10)	89	10 / 10	9.6 (10)	88	10 / 10	8.6 (8)	79	8 / 10

< > : No.of effective animals, () : No.of measured animals Av.Fc.:g

TABLE 7 HEMATOLOGY OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY
OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group Name	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
No. of examined animals	10	10	10	10	10	10
Red blood cell ($10^6/\mu\text{L}$)	9.42 \pm 0.29	9.34 \pm 0.25	9.16 \pm 0.22	9.14 \pm 0.25	8.83 \pm 0.28 **	8.75 \pm 0.28 **
Hemoglobin (g/dL)	15.8 \pm 0.5	15.7 \pm 0.3	15.5 \pm 0.4	15.4 \pm 0.6	15.2 \pm 0.5	15.3 \pm 0.4
Hematocrit (%)	46.9 \pm 1.4	46.4 \pm 0.9	45.7 \pm 1.2	45.7 \pm 1.2	44.9 \pm 1.4 **	45.1 \pm 1.0 **
MCV (fL)	49.8 \pm 0.7	49.6 \pm 0.8	49.9 \pm 0.7	50.0 \pm 0.9	50.8 \pm 0.8 *	51.6 \pm 1.0 **
MCH (pg)	16.7 \pm 0.2	16.8 \pm 0.1	16.9 \pm 0.3	16.9 \pm 0.3	17.3 \pm 0.4 **	17.5 \pm 0.3 **
MCHC (g/dL)	33.6 \pm 0.5	33.8 \pm 0.5	33.9 \pm 0.7	33.7 \pm 0.6	34.0 \pm 0.4	33.9 \pm 0.4
Platelet ($10^3/\mu\text{L}$)	687 \pm 41	661 \pm 38	660 \pm 39	650 \pm 65	647 \pm 52	644 \pm 64
Reticulocyte(%)	28 \pm 7	28 \pm 5	27 \pm 6	29 \pm 6	26 \pm 7	27 \pm 5
Prothrombin time (sec)	12.1 \pm 0.8	12.4 \pm 0.9	12.0 \pm 0.6	12.0 \pm 0.8	12.0 \pm 0.6	11.8 \pm 0.7
APTT (sec)	23.5 \pm 1.5	23.5 \pm 2.7	22.6 \pm 3.1	23.1 \pm 2.0	23.0 \pm 2.4	22.5 \pm 1.2
WBC ($10^3/\mu\text{L}$)	4.15 \pm 2.25	4.15 \pm 2.39	3.28 \pm 1.91	3.68 \pm 2.52	4.39 \pm 2.06	5.28 \pm 3.26
Differential WBC (%)						
N-BAND	0 \pm 0	0 \pm 0				
N-SEG	33 \pm 10	32 \pm 10	30 \pm 9	36 \pm 12	29 \pm 7	29 \pm 7
EOSINO	1 \pm 1	1 \pm 1				
BASO	0 \pm 0	0 \pm 0				
MONO	3 \pm 2	4 \pm 1	4 \pm 2	3 \pm 1	4 \pm 1	5 \pm 1
LYMPHO	62 \pm 10	62 \pm 10	63 \pm 9	59 \pm 12	64 \pm 7	64 \pm 8
OTHER	1 \pm 1	1 \pm 1				

Mean \pm S.D.

^{*)} Significant difference, $p < 0.05$ (Test of Dunnett)

^{**)} Significant difference, $p < 0.01$ (Test of Dunnett)

TABLE 8 HEMATOLOGY OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group Name	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
No. of examined animals	10	10	10	10	10	8
Red blood cell ($10^6/\mu\text{L}$)	8.52 \pm 0.30	8.69 \pm 0.26	8.56 \pm 0.26	8.42 \pm 0.25	8.22 \pm 0.23	8.14 \pm 0.37 *
Hemoglobin (g/dL)	15.6 \pm 0.5	15.7 \pm 0.4	15.5 \pm 0.5	15.4 \pm 0.5	15.4 \pm 0.5	15.4 \pm 0.6
Hematocrit (%)	44.8 \pm 1.4	45.5 \pm 1.3	44.6 \pm 1.5	44.3 \pm 1.5	44.4 \pm 1.0	44.5 \pm 1.7
MCV (fL)	52.6 \pm 0.5	52.3 \pm 0.8	52.1 \pm 0.5	52.6 \pm 0.6	54.1 \pm 0.9 **	54.7 \pm 0.7 **
MCH (pg)	18.3 \pm 0.2	18.1 \pm 0.2	18.1 \pm 0.1	18.3 \pm 0.1	18.7 \pm 0.2 **	18.9 \pm 0.3 **
MCHC (g/dL)	34.8 \pm 0.6	34.5 \pm 0.7	34.7 \pm 0.6	34.8 \pm 0.4	34.6 \pm 0.6	34.6 \pm 0.6
Platlet ($10^3/\mu\text{L}$)	716 \pm 83	714 \pm 54	711 \pm 81	682 \pm 80	630 \pm 78 *	505 \pm 62 **
Reticulocyte(‰)	21 \pm 7	24 \pm 4	22 \pm 5	24 \pm 6	24 \pm 6	19 \pm 4
Prothrombin time (sec)	10.7 \pm 0.2	10.9 \pm 0.3	10.8 \pm 0.4	11.1 \pm 0.4	11.4 \pm 0.4 **	11.6 \pm 0.3 **
APTT (sec)	18.3 \pm 1.5	18.0 \pm 1.0	18.7 \pm 1.1	19.6 \pm 1.5	19.3 \pm 1.4	19.4 \pm 1.6
WBC ($10^3/\mu\text{L}$)	2.28 \pm 1.49	1.91 \pm 1.25	1.96 \pm 1.02	2.56 \pm 1.80	2.66 \pm 1.84	2.07 \pm 1.34
Differential WBC (%)						
N-BAND	0 \pm 0	0 \pm 1	0 \pm 0	1 \pm 1	0 \pm 0	1 \pm 1
N-SEG	33 \pm 12	31 \pm 11	29 \pm 9	27 \pm 9	29 \pm 9	33 \pm 9
EOSINO	1 \pm 1	2 \pm 1	1 \pm 1	2 \pm 1	2 \pm 1	1 \pm 1
BASO	0 \pm 0	0 \pm 0				
MONO	3 \pm 2	3 \pm 2	5 \pm 2	4 \pm 2	4 \pm 2	4 \pm 2
LYMPHO	63 \pm 12	64 \pm 11	64 \pm 12	66 \pm 12	65 \pm 11	59 \pm 10
OTHER	0 \pm 0	1 \pm 1	1 \pm 2	1 \pm 1	1 \pm 1	2 \pm 1 **

Mean \pm S.D.

* Significant difference, $p < 0.05$ (Test of Dunnett)

** Significant difference, $p < 0.01$ (Test of Dunnett)

TABLE 9 BIOCHEMISTRY OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group Name	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
No. of examined animals	10	10	10	10	10	10
Total protein (g/dL)	6.3 ± 0.2	6.4 ± 0.1	6.3 ± 0.2	6.2 ± 0.1	6.2 ± 0.2	6.1 ± 0.3 **
Albumin (g/dL)	3.9 ± 0.1	3.9 ± 0.1	3.8 ± 0.1	3.8 ± 0.1	3.8 ± 0.1 **	3.7 ± 0.1 **
A/G ratio	1.6 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	1.6 ± 0.1
T-Bilirubin (mg/dL)	0.13 ± 0.01	0.12 ± 0.01	0.13 ± 0.01	0.13 ± 0.01	0.13 ± 0.01	0.13 ± 0.01
Glucose (mg/dL)	170 ± 12	171 ± 12	174 ± 9	171 ± 8	165 ± 7	159 ± 11
T-Cholesterol (mg/dL)	64 ± 5	66 ± 5	64 ± 3	68 ± 2	70 ± 5 *	69 ± 5
Triglyceride (mg/dL)	65 ± 32	72 ± 33	68 ± 20	87 ± 33	82 ± 33	82 ± 17
Phospholipid (mg/dL)	115 ± 10	121 ± 10	118 ± 5	126 ± 7 *	129 ± 8 **	128 ± 8 **
GOT (IU/L)	76 ± 13	92 ± 34	75 ± 10	74 ± 10	63 ± 9	64 ± 5
GPT (IU/L)	43 ± 5	50 ± 14	42 ± 3	41 ± 6	34 ± 3 **	33 ± 3 **
LDH (IU/L)	176 ± 32	203 ± 70	176 ± 28	178 ± 27	160 ± 38	157 ± 36
ALP (IU/L)	238 ± 17	237 ± 19	229 ± 15	228 ± 15	221 ± 16	226 ± 17
γ-GTP(IU/L)	1 ± 1	1 ± 1	1 ± 1	2 ± 1	2 ± 1	1 ± 1
CPK (IU/L)	101 ± 9	95 ± 8	101 ± 13	96 ± 7	98 ± 18	106 ± 13
Urea Nitrogen(mg/L)	18.2 ± 1.4	18.2 ± 1.0	19.2 ± 1.8	19.7 ± 3.7	21.7 ± 3.0 *	24.4 ± 3.9 **
Creatinine(mg/dL)	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.1	0.5 ± 0.1	0.5 ± 0.1
Sodium (mEq/L)	142 ± 1	142 ± 1	141 ± 1	140 ± 1 **	140 ± 1 **	140 ± 1 **
Potassium (mEq/L)	4.3 ± 0.5	4.3 ± 0.4	4.3 ± 0.3	4.5 ± 0.3	4.5 ± 0.3	4.6 ± 0.4
Chloride (mEq/L)	107 ± 1	107 ± 1	107 ± 1	105 ± 1	106 ± 1	106 ± 1
Calcium(mg/dL)	10.3 ± 0.2	10.3 ± 0.2	10.2 ± 0.2	10.2 ± 10.2	10.2 ± 0.2	10.1 ± 0.2
Inorganic phosphorus (mg/dL)	6.1 ± 0.7	6.0 ± 0.6	5.9 ± 0.6	6.0 ± 0.5	6.0 ± 0.6	6.1 ± 0.5

Mean ± S.D.

*) Significant difference, p<0.05 (Test of Dunnett)

**) Significant difference, p<0.01 (Test of Dunnett)

TABLE 10 BIOCHEMISTRY OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group Name	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
No. of examined animals	10	10	10	10	10	8
Total protein (g/dL)	6.1 ± 0.2	6.1 ± 0.1	5.9 ± 0.1 **	5.8 ± 0.2 **	5.6 ± 0.2 **	5.5 ± 0.1 **
Albumin (g/dL)	3.8 ± 0.1	3.8 ± 0.1	3.6 ± 0.2	3.6 ± 0.1	3.5 ± 0.1 **	3.4 ± 0.1 **
A/G ratio	1.6 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	1.7 ± 0.1	1.6 ± 0.1	1.7 ± 0.1
T-Bilirubin (mg/dL)	0.14 ± 0.01	0.14 ± 0.02	0.14 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.15 ± 0.01
Glucose (mg/dL)	135 ± 10	133 ± 12	137 ± 11	133 ± 9	134 ± 8	139 ± 12
T-Cholesterol (mg/dL)	71 ± 5	68 ± 5	65 ± 5 *	63 ± 5 **	55 ± 5 **	54 ± 6 **
Triglyceride (mg/dL)	18 ± 3	16 ± 3	18 ± 3	19 ± 4	21 ± 5	16 ± 2
Phospholipid (mg/dL)	132 ± 7	128 ± 9	121 ± 8 *	120 ± 11 *	108 ± 7 **	103 ± 12 **
GOT (IU/L)	67 ± 16	72 ± 15	71 ± 9	64 ± 7	72 ± 12	88 ± 5 **
GPT (IU/L)	36 ± 14	38 ± 11	34 ± 11	31 ± 3	30 ± 4	36 ± 3
LDH (IU/L)	221 ± 77	285 ± 154	289 ± 77	230 ± 74	273 ± 116	299 ± 59
ALP (IU/L)	163 ± 10	172 ± 16	160 ± 10	165 ± 18	179 ± 24	242 ± 30 **
γ-GTP(IU/L)	2 ± 1	2 ± 1	2 ± 1	1 ± 1	2 ± 1	3 ± 1
CPK (IU/L)	111 ± 23	124 ± 40	121 ± 19	118 ± 28	141 ± 40	147 ± 19
Urea Nitrogen(mg/L)	18.5 ± 1.6	19.1 ± 1.8	18.5 ± 2.5	19.8 ± 3.3	26.5 ± 7.4 **	31.5 ± 4.0 **
Creatinine(mg/dL)	0.5 ± 0.0	0.5 ± 0.1	0.5 ± 0.1	0.5 ± 0.0	0.5 ± 0.1	0.5 ± 0.0
Sodium (mEq/L)	141 ± 1	140 ± 1	140 ± 1	139 ± 1 *	139 ± 1 **	140 ± 1
Potassium (mEq/L)	4.2 ± 0.4	4.4 ± 0.3	4.4 ± 0.4	4.5 ± 0.4	4.6 ± 0.5	4.4 ± 0.5
Chloride (mEq/L)	107 ± 1	108 ± 2	108 ± 1	108 ± 1	108 ± 2	110 ± 1 **
Calcium(mg/dL)	10.0 ± 0.1	10.0 ± 0.2	9.8 ± 0.2	9.8 ± 0.2	9.7 ± 0.2	9.5 ± 0.3 **
Inorganic phosphorus (mg/dL)	5.5 ± 1.2	5.6 ± 1.2	5.4 ± 1.0	5.7 ± 0.8	5.7 ± 0.5	5.8 ± 0.5

Mean ± S.D.

*) Significant difference, p<0.05 (Test of Dunnett)

**) Significant difference, p<0.01 (Test of Dunnett)

TABLE 11 URINALYSIS OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
Number of examined animals		10	10	10	10	10	10
	Grade						
pH	6.0	0	0	0	0	0	0
	6.5	0	0	0	0	0	0
	7.0	0	0	0	0	0	0
	7.5	0	0	0	0	0	1
	8.0	6	7	9	8	6	7
	8.5	4	3	1	2	4	2
Protein	—	0	0	0	0	0	0
	±	0	0	0	0	0	0
	+	4	7	4	4	1	4
	2+	6	3	6	6	9	5
	3+	0	0	0	0	0	1
	4+	0	0	0	0	0	0
Glucose	—	10	10	10	10	10	10
	±	0	0	0	0	0	0
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0
	4+	0	0	0	0	0	0
Ketone body	—	0	0	0	1	0	0
	±	5	7	9	6	6	9
	+	5	3	1	3	4	1
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0
	4+	0	0	0	0	0	0
Bilirubin	—	10	10	10	10	10	10
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0
Occult blood	—	10	10	10	9	10	9
	±	0	0	0	0	0	0
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	1	0	1
Urobilinogen	—	10	10	10	10	10	10
	±	0	0	0	0	0	0
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0

Significant difference : * : p<0.05 ** : p<0.01 Chi square test

TABLE 12 URINALYSIS OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
Number of examined animals		10	10	10	10	10	8
	Grade						
pH	6.0	0	0	0	0	0	0 **
	6.5	0	0	0	0	0	2
	7.0	0	0	0	0	2	0
	7.5	0	0	2	0	2	4
	8.0	7	6	6	9	5	2
	8.5	3	4	2	1	1	0
Protein	—	0	0	0	0	0	0
	±	1	1	0	0	0	0
	+	7	8	7	7	3	2
	2+	2	1	3	3	7	6
	3+	0	0	0	0	0	0
	4+	0	0	0	0	0	0
Glucose	—	10	10	10	10	10	8
	±	0	0	0	0	0	0
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0
	4+	0	0	0	0	0	0
Ketone body	—	10	9	9	7	5 **	2 **
	±	0	1	1	3	5	6
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0
	4+	0	0	0	0	0	0
Bilirubin	—	10	10	10	10	10	8
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0
Occult blood	—	10	10	10	10	10	8
	±	0	0	0	0	0	0
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0
Urobilinogen	—	10	10	10	10	10	8
	±	0	0	0	0	0	0
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0
	3+	0	0	0	0	0	0

Significant difference : * : p<0.05 ** : p<0.01 Chi square test

TABLE 13 ORGAN WEIGHTS OF MALE RATS THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group Name	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
No. of examined animals	10	10	10	10	10	10
Body weight (g)	294 ± 13	296 ± 15	290 ± 10	276 ± 14 *	256 ± 14 **	232 ± 17 **
Thymus (g)	0.251 ± 0.038	0.266 ± 0.032	0.259 ± 0.042	0.238 ± 0.032	0.204 ± 0.022 **	0.178 ± 0.021 **
Thymus (%)	0.085 ± 0.011	0.090 ± 0.010	0.089 ± 0.014	0.086 ± 0.008	0.080 ± 0.007	0.077 ± 0.009
Adrenals (g)	0.053 ± 0.007	0.060 ± 0.011	0.052 ± 0.008	0.054 ± 0.011	0.052 ± 0.006	0.048 ± 0.007
Adrenals (%)	0.018 ± 0.003	0.020 ± 0.004	0.018 ± 0.002	0.020 ± 0.004	0.021 ± 0.002	0.021 ± 0.002
Testes (g)	3.129 ± 0.111	3.139 ± 0.103	3.020 ± 0.218	3.035 ± 0.071	3.021 ± 0.114	2.951 ± 0.151 *
Testes (%)	1.064 ± 0.033	1.060 ± 0.038	1.042 ± 0.079	1.103 ± 0.046	1.184 ± 0.070 **	1.273 ± 0.061 **
Heart (g)	0.917 ± 0.056	0.911 ± 0.064	0.911 ± 0.062	0.890 ± 0.066	0.818 ± 0.074 **	0.772 ± 0.078 **
Heart (%)	0.311 ± 0.013	0.307 ± 0.015	0.314 ± 0.017	0.323 ± 0.014	0.319 ± 0.017	0.332 ± 0.020 *
Lungs (g)	1.043 ± 0.029	1.019 ± 0.044	1.026 ± 0.046	0.984 ± 0.022 **	0.956 ± 0.035 **	0.925 ± 0.057 **
Lungs (%)	0.355 ± 0.016	0.344 ± 0.018	0.354 ± 0.013	0.358 ± 0.016	0.375 ± 0.015 *	0.399 ± 0.016 **
Kidneys (g)	1.827 ± 0.090	1.805 ± 0.112	1.782 ± 0.066	2.176 ± 1.188	1.754 ± 0.071	1.673 ± 0.114 **
Kidneys (%)	0.621 ± 0.018	0.609 ± 0.021	0.615 ± 0.025	0.797 ± 0.464 **	0.686 ± 0.029 **	0.720 ± 0.019 **
Spleen (g)	0.567 ± 0.024	0.571 ± 0.032	0.579 ± 0.035	0.549 ± 0.025	0.509 ± 0.037 **	0.475 ± 0.032 **
Spleen (%)	0.193 ± 0.009	0.193 ± 0.011	0.199 ± 0.009	0.199 ± 0.007	0.199 ± 0.010	0.205 ± 0.006 *
Liver (g)	7.468 ± 0.389	7.617 ± 0.490	7.503 ± 0.356	7.554 ± 0.534	7.386 ± 0.736	7.035 ± 0.670
Liver (%)	2.537 ± 0.053	2.569 ± 0.070	2.585 ± 0.060	2.740 ± 0.106 **	2.882 ± 0.155 **	3.023 ± 0.118 **
Brain (g)	1.881 ± 0.056	1.883 ± 0.040	1.894 ± 0.043	1.855 ± 0.047	1.824 ± 0.054 *	1.766 ± 0.050 **
Brain (%)	0.640 ± 0.029	0.636 ± 0.025	0.653 ± 0.031	0.675 ± 0.032	0.715 ± 0.050 **	0.763 ± 0.041 **

Mean ± S.D.

*) Significant difference, $p < 0.05$ (Test of Dunnett)

***) Significant difference, $p < 0.01$ (Test of Dunnett)

TABLE 14 ORGAN WEIGHTS OF FEMALE RATS THE 13-WEEK DRINKING WATER STUDY
OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group Name	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
No. of examined animals	10	10	10	10	10	8
Body weight (g)	169 ± 8	161 ± 5	158 ± 9 **	153 ± 7 **	139 ± 8 **	114 ± 9 **
Thymus (g)	0.213 ± 0.022	0.202 ± 0.029	0.187 ± 0.018 *	0.187 ± 0.020 *	0.162 ± 0.013 **	0.108 ± 0.015 **
Thymus (%)	0.126 ± 0.013	0.125 ± 0.017	0.118 ± 0.010	0.123 ± 0.012	0.117 ± 0.012	0.095 ± 0.010 **
Adrenals (g)	0.059 ± 0.008	0.059 ± 0.007	0.057 ± 0.005	0.055 ± 0.006	0.051 ± 0.004 *	0.047 ± 0.006 **
Adrenals (%)	0.035 ± 0.004	0.036 ± 0.004	0.036 ± 0.003	0.036 ± 0.004	0.037 ± 0.004	0.041 ± 0.003 **
Ovaries (g)	0.116 ± 0.019	0.109 ± 0.010	0.109 ± 0.016	0.102 ± 0.011	0.090 ± 0.007 **	0.064 ± 0.009 **
Ovaries (%)	0.068 ± 0.012	0.068 ± 0.005	0.069 ± 0.010	0.067 ± 0.009	0.065 ± 0.004	0.057 ± 0.007 *
Heart (g)	0.628 ± 0.052	0.609 ± 0.037	0.593 ± 0.044	0.568 ± 0.035 **	0.533 ± 0.033 **	0.452 ± 0.043 **
Heart (%)	0.371 ± 0.029	0.377 ± 0.024	0.376 ± 0.023	0.372 ± 0.029	0.385 ± 0.024	0.398 ± 0.016
Lungs (g)	0.776 ± 0.049	0.763 ± 0.032	0.731 ± 0.034 *	0.730 ± 0.024 *	0.690 ± 0.029 **	0.603 ± 0.028 **
Lungs (%)	0.459 ± 0.016	0.473 ± 0.013	0.464 ± 0.024	0.478 ± 0.016	0.500 ± 0.039 *	0.533 ± 0.033 **
Kidneys (g)	1.215 ± 0.129	1.134 ± 0.038	1.148 ± 0.067	1.162 ± 0.029	1.181 ± 0.039	1.075 ± 0.055 **
Kidneys (%)	0.718 ± 0.067	0.702 ± 0.018	0.727 ± 0.022	0.761 ± 0.030 **	0.854 ± 0.030 **	0.948 ± 0.048 **
Spleen (g)	0.392 ± 0.031	0.376 ± 0.020	0.372 ± 0.020	0.361 ± 0.015 *	0.324 ± 0.020 **	0.225 ± 0.029 **
Spleen (%)	0.231 ± 0.012	0.233 ± 0.007	0.236 ± 0.010	0.236 ± 0.009	0.234 ± 0.010	0.224 ± 0.011
Liver (g)	4.118 ± 0.230	3.893 ± 0.145	3.832 ± 0.143	3.756 ± 0.123 *	3.589 ± 0.175 **	3.062 ± 0.377 **
Liver (%)	2.433 ± 0.051	2.412 ± 0.042	2.428 ± 0.065	2.459 ± 0.084	2.593 ± 0.067 **	2.690 ± 0.169 **
Brain (g)	1.765 ± 0.050	1.718 ± 0.051	1.723 ± 0.033	1.708 ± 0.066	1.656 ± 0.035 **	1.612 ± 0.053 **
Brain (%)	1.045 ± 0.044	1.065 ± 0.043	1.093 ± 0.059	1.118 ± 0.038 **	1.199 ± 0.057 **	1.426 ± 0.110 **

Mean ± S.D.
*) Significant difference, p<0.05 (Test of Dunnett)
(**) Significant difference, p<0.01 (Test of Dunnett)

TABLE 15 INCIDENCES OF SELECTED LESIONS OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
Number of examined animals		10	10	10	10	10	10
Organ	Grade of Nonneoplastic finding						
Findings							
Nasal cavity							
Duct ectasia:olfactory gland	1+	0	0	0	0	1	7 **
Necrosis:olfactory epithelium	1+	0	0	0	0	0	1
Kidney							
Eosinophilic body	1+	2	1	7	4	8	8
	2+	8	9	3	5	2 *	1 **
Degeneration papilla	1+	0	0	0	0	1	2
Urinary bladder							
Simple hyperplasia :transitional epithelium	1+	0	0	0	0	1	1
	2+	0	0	0	0	1	2
Nodular hyperplasia :transitional epithelium	1+	0	0	0	0	0	2
Harder gl.							
Inflamation	1+	1	0	1	4	3	3
	2+	0	0	0	0	1	2
Grade	1+: Slight	2+: Moderate	3+: Marked	4+: Severe			
Significant difference	* : p<0.05	** : p<0.01	Chi square test for non-neoplastic lesion				

TABLE 16 INCIDENCES OF SELECTED LESIONS OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF *o*-PHENYLENEDIAMINE DIHYDROCHLORIDE

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	3000 ppm
Number of examined animals		10	10	10	10	10	10
Organ	Grade of Nonneoplastic finding						
Findings							
Nasal cavity							
Duct ectasia:olfactory gland	1+	0	0	0	0	0	3
Necrosis:olfactory epithelium	1+	0	0	0	0	1	6 *
Kidney							
Degeneration : papilla	1+	0	0	0	0	5 *	6 *
Nephroblastoma,benign		1	0	0	0	0	0
Bone marrow							
Congestion	1+	0	0	0	0	0	0
	2+	0	0	0	0	0	2
Thymus							
Atrophy	1+	0	0	0	0 ^{a)}	0	0
	2+	0	0	0	0	0	1
	3+	0	0	0	0	0	1
Harder gl.							
Inflamation	1+	3	1	1	2	3	3
	2+	1	2	1	1	3	5
	3+	0	0	1	1	1	0
Grade	1+: Slight 2+: Moderate 3+: Marked 4+: Severe						
Significant difference	* : p<0.05 ** : p<0.01 Chi square test for non-neoplastic lesion						
a) :	Number of animals examined is 9.						