1,3,5,7-テトラアザトリシクロ〔3.3.1.1 ^{3,7}〕デカンの
ラット及びマウスを用いた経口投与による
がん原性予備試験（混水試験）報告書

APPENDIXES

（B1-1～C2）
13 週間試験：ラット/0201；マウス/0202

APPENDIXES (CONTINUED)

APPENDIX B 1-1 CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 1-2 CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 1-3 CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 1-4 CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

APPENDIX B 2-1 BODY WEIGHT CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 2-2 BODY WEIGHT CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 2-3 BODY WEIGHT CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 2-4 BODY WEIGHT CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

APPENDIX B 3-1 WATER CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 3-2 WATER CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 3-3 WATER CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 3-4 WATER CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

APPENDIX B 4-1 FOOD CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 4-2 FOOD CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 4-3 FOOD CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 4-4 FOOD CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

APPENDIXES (CONTINUED)

APPENDIX B 5-1 CHEMICAL INTAKE CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 5-2 CHEMICAL INTAKE CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 5-3 CHEMICAL INTAKE CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 5-4 CHEMICAL INTAKE CHANGES (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

APPENDIX B 6-1 HEMATOLOGY (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 6-2 HEMATOLOGY (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 6-3 HEMATOLOGY (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 6-4 HEMATOLOGY (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

APPENDIX B 7-1 BIOCHEMISTRY (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 7-2 BIOCHEMISTRY (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 7-3 BIOCHEMISTRY (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 7-4 BIOCHEMISTRY (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

APPENDIX B 8-1 URINALYSIS (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE

APPENDIX B 8-2 URINALYSIS (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE

APPENDIX B 8-3 URINALYSIS (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE

APPENDIX B 8-4 URINALYSIS (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE

A P P E N D I X E S (CONTINUED)

APPENDIX B 9-1 GROSS FINDINGS (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : MALE : SACRIFICED ANIMALS

APPENDIX B 9-2 GROSS FINDINGS (THIRTEEN-WEEK STUDY : SUMMARY)
RAT : FEMALE : SACRIFICED ANIMALS

APPENDIX B 9-3 GROSS FINDINGS (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE : DEAD AND MORIBUND ANIMALS

APPENDIX B 9-4 GROSS FINDINGS (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE : DEAD AND MORIBUND ANIMALS

APPENDIX B 9-5 GROSS FINDINGS (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : MALE : SACRIFICED ANIMALS

APPENDIX B 9-6 GROSS FINDINGS (THIRTEEN-WEEK STUDY : SUMMARY)
MOUSE : FEMALE : SACRIFICED ANIMALS

APPENDIX B 10-1 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),ABSOLUTE
RAT : MALE

APPENDIX B 10-2 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),ABSOLUTE
RAT : FEMALE

APPENDIX B 10-3 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),ABSOLUTE
MOUSE : MALE

APPENDIX B 10-4 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),ABSOLUTE
MOUSE : FEMALE

APPENDIX B 11-1 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),RELATIVE
RAT : MALE

APPENDIX B 11-2 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),RELATIVE
RAT : FEMALE

APPENDIX B 11-3 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),RELATIVE
MOUSE : MALE

APPENDIX B 11-4 ORGAN WEIGHT (THIRTEEN-WEEK STUDY : SUMMARY),RELATIVE
MOUSE : FEMALE

APPENDIXES (CONTINUED)

APPENDIX B 12-1 HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (THIRTEEN-WEEK STUDY : SUMMARY) RAT : MALE SACRIFICED ANIMALS

APPENDIX B 12-2 HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (THIRTEEN-WEEK STUDY : SUMMARY) RAT : FEMALE SACRIFICED ANIMALS

APPENDIX B 12-3 HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (THIRTEEN-WEEK STUDY : SUMMARY) MOUSE : MALE DEAD AND MORIBUND ANIMALS

APPENDIX B 12-4 HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (THIRTEEN-WEEK STUDY : SUMMARY) MOUSE : FEMALE DEAD AND MORIBUND ANIMALS

APPENDIX B 12-5 HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (THIRTEEN-WEEK STUDY : SUMMARY) MOUSE : MALE SACRIFICED ANIMALS

APPENDIX B 12-6 HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (THIRTEEN-WEEK STUDY : SUMMARY) MOUSE : FEMALE SACRIFICED ANIMALS

APPENDIX B 13-1 IDENTITY AND PURITY OF TATCD PERFORMED AT THE JAPAN BIOASSAY LABORATORY (THIRTEEN-WEEK STUDIES)

APPENDIX B 13-2 STABILITY OF TATCD AT THE JAPAN BIOASSAY LABORATORY (THIRTEEN-WEEK STUDIES)

APPENDIX B 13-3-1 ANALYSIS OF TATCD CONCENTRATION IN DRINKING WATER OF THE THIRTEEN-WEEK STUDIES

APPENDIX B 13-3-2 STABILITY OF TATCD CONCENTRATION IN DRINKING WATER OF THE THIRTEEN-WEEK STUDIES

APPENDIX C 1 METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

APPENDIX C 2 UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

APPENDIX B 1-1

CLINICAL OBSERVATION (THIRTEEN−WEEK STUDY: SUMMARY)

RAT: MALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 1-7 1	2-7 1	3-7 1	4-7 1	5-7 1	6-7 1	7-7 1	8-7 1	9-7 1	10-7 1	11-7 1	12-7 1	13-7 1
COLORED	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	2500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000 ppm	0	0	0	0	0	1	1	1	4	4	4	4	6
	40000 ppm	0	0	0	0	0	8	8	8	10	10	10	10	10

APPENDIX B 1-2

CLINICAL OBSERVATION (THIRTEEN−WEEK STUDY: SUMMARY)

RAT: FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day 1-7 1	2-7 1	3-7 1	4-7 1	5-7 1	6-7 1	7-7 1	8-7 1	9-7 1	10-7 1	11-7 1	12-7 1	13-7 1
COLORED	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	2500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000 ppm	0	0	0	0	0	3	3	3	3	4	5	6	7
	40000 ppm	0	0	0	0	0	6	6	6	9	9	9	9	10
SOILED PERI GENITALIA	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	2500 ppm	0	0	0	0	0	0	0	0	1	0	0	0	0
	5000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000 ppm	0	0	0	0	0	0	0	0	0	0	1	0	0
	40000 ppm	0	0	0	0	0	0	0	0	0	1	1	1	0
SMALL STOOL	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	2500 ppm	0	0	0	0	0	0	0	0	1	0	0	0	0
	5000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000 ppm	0	0	0	0	0	0	0	0	0	0	1	0	0
	40000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
OLIGO-STOOL	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	2500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000 ppm	0	0	0	0	0	0	0	0	0	0	1	0	0
	40000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX B 1-3

CLINICAL OBSERVATION (THIRTEEN−WEEK STUDY: SUMMARY)

MOUSE: MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1
MORIBUND SACRIFICE	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	0	0	1	1	1	1	1	1
HUNCHBACK POSITION	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	0	1	0	0	0	0	0	0
PILOERECTION	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	0	1	0	0	0	0	0	0
IRREGULAR BREATHING	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	0	1	0	0	0	0	0	0
ABNORMAL RESPIRATION	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	0	1	0	0	0	0	0	0

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1
OLIGO-STOOL	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	1	1	0	0	0	0	0	0

APPENDIX B 1-4

CLINICAL OBSERVATION (THIRTEEN−WEEK STUDY: SUMMARY)

MOUSE: FEMALE

Clinical sign	Group Name	Administration Week-day 1-7 1	2-7 1	3-7 1	4-7 1	5-7 1	6-7 1	7-7 1	8-7 1	9-7 1	10-7 1	11-7 1	12-7 1	13-7 1
DEATH	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	0	0	0	0	0	0	1	1
HUNCHBACK POSITION	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	1	1	1	1	1	1	1	0	0
WASTING	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	0	0	0	0	0	0	0	0	0	1	1	0	0
PILOERECTION	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	1	0	0	0	0	0	0	0	1	1	1	0	0
OLIGO-STOOL	Control	0	0	0	0	0	0	0	0	0	0	0	0	0
	5000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	10000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	20000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	40000ppm	0	0	0	0	0	0	0	0	0	0	0	0	0
	80000ppm	1	0	0	0	1	1	1	0	0	0	0	0	0

APPENDIX B 2-1

BODY WEIGHT CHANGES (THIRTEEN−WEEK STUDY:SUMMARY)

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
Control	134± 4	167± 6	199± 7	225± 6	243± 8	261± 8	273± 10
2500 ppm	134± 4	166± 5	196± 7	220± 9	236± 12	251± 15	261± 17
5000 ppm	134± 4	164± 5	192± 6	216± 8	233± 11	247± 13	259± 17
10000 ppm	134± 4	163± 4	191± 7	212± 8**	227± 11*	241± 14**	251± 16*
20000 ppm	134± 4	162± 5	190± 8*	212± 10**	227± 12**	243± 13*	253± 15*
40000 ppm	134± 4	155± 5**	180± 7**	199± 10**	212± 13**	226± 16**	237± 19**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
Control	286± 11	300± 12	310± 13	316± 14	325± 13	335± 14	343± 14
2500 ppm	272± 18	285± 20	292± 22	300± 23	308± 23	317± 22	324± 21
5000 ppm	270± 17	283± 19	290± 20	298± 21	308± 23	315± 24	323± 23
10000 ppm	263± 18*	276± 21*	284± 22*	291± 23*	301± 23	310± 24	318± 23*
20000 ppm	265± 16*	276± 17*	285± 19*	293± 20	302± 21	311± 21	316± 21*
40000 ppm	249± 23**	260± 24**	267± 25**	275± 25**	284± 25**	293± 24**	299± 24**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 2-2

BODY WEIGHT CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
Control	101± 3	118± 4	133± 4	145± 6	154± 6	161± 6	166± 9
2500 ppm	102± 3	118± 4	133± 5	144± 5	152± 6	160± 8	164± 8
5000 ppm	101± 3	117± 4	132± 5	143± 7	151± 6	159± 8	163± 7
10000 ppm	101± 3	116± 5	131± 5	140± 6	148± 6	154± 7	157± 9
20000 ppm	102± 3	116± 4	131± 3	141± 4	147± 5	154± 6	157± 7
40000 ppm	102± 3	111± 3**	124± 4**	134± 4**	141± 5**	147± 5**	151± 6**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
Control	173± 12	176± 12	181± 13	186± 13	190± 13	192± 12	196± 13
2500 ppm	171± 9	175± 9	175± 9	181± 8	186± 10	189± 10	191± 8
5000 ppm	167± 11	173± 7	177± 8	181± 8	185± 9	189± 7	191± 7
10000 ppm	162± 9*	165± 10*	170± 11	172± 10**	176± 11*	180± 12*	181± 11**
20000 ppm	163± 9	167± 8	171± 9	174± 10*	174± 14*	181± 11	183± 11*
40000 ppm	157± 6**	160± 6**	164± 6**	166± 7**	169± 9**	173± 9**	174± 8**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 2-3

BODY WEIGHT CHANGES (THIRTEEN−WEEK STUDY:SUMMARY)

MOSUE : MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
Control	24.1± 0.9	24.9± 1.1	26.0± 1.0	26.7± 0.8	27.7± 0.7	28.5± 1.0	29.6± 1.2
5000ppm	24.1± 0.9	25.3± 1.1	26.4± 1.1	27.4± 1.2	28.1± 1.6	29.3± 1.3	30.3± 1.2
10000ppm	24.1± 0.9	25.1± 0.9	26.2± 1.2	27.2± 1.2	28.0± 1.5	29.1± 1.6	30.3± 1.8
20000ppm	24.1± 0.9	24.9± 1.1	26.3± 1.1	27.2± 1.1	28.2± 1.4	29.0± 1.3	30.1± 1.5
40000ppm	24.1± 1.0	25.2± 1.1	26.3± 0.8	27.1± 1.4	28.0± 1.2	28.9± 1.1	29.8± 1.6
80000ppm	24.1± 1.0	23.2± 0.9**	24.7± 1.3*	25.2± 1.5*	26.0± 2.0*	26.5± 2.8	27.0± 3.4

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
Control	30.3± 1.4	31.7± 1.5	32.7± 1.6	33.8± 1.9	34.4± 1.8	35.3± 2.0	35.9± 2.1
5000ppm	31.0± 1.8	32.2± 1.9	33.5± 1.8	34.6± 2.0	35.4± 2.3	36.2± 2.7	36.7± 2.6
10000ppm	30.8± 1.8	32.1± 2.1	33.0± 2.3	34.2± 2.5	34.7± 2.4	35.6± 2.5	36.3± 2.5
20000ppm	30.6± 1.9	31.7± 2.0	32.5± 2.1	33.0± 2.0	33.8± 1.8	34.5± 1.9	35.5± 2.1
40000ppm	30.1± 1.7	31.4± 2.1	32.0± 2.3	33.2± 2.5	33.6± 2.6	34.5± 2.7	35.4± 2.8
80000ppm	26.6± 4.1**	29.1± 1.2*	29.7± 1.0**	30.5± 1.3**	31.0± 1.5**	31.7± 1.6**	32.5± 1.2**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 2-4

BODY WEIGHT CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE: FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
Control	18.9± 0.7	20.1± 0.9	20.6± 0.5	20.8± 0.8	21.4± 0.8	22.0± 0.8	22.4± 0.9
5000ppm	19.0± 0.6	19.2± 0.6	20.4± 0.7	20.2± 0.8	21.1± 0.7	21.6± 1.0	22.0± 0.8
10000ppm	19.0± 0.7	19.5± 1.1	20.7± 1.1	20.9± 0.7	21.2± 1.1	21.7± 1.1	22.2± 1.1
20000ppm	19.0± 0.7	19.6± 0.9	20.2± 0.9	20.3± 0.8	20.9± 0.7	21.9± 1.1	21.8± 0.8
40000ppm	19.0± 0.7	19.5± 0.5	20.2± 0.5	20.6± 1.4	20.9± 1.1	21.5± 0.6	22.0± 0.9
80000ppm	19.0± 0.7	17.3± 1.5**	19.4± 1.0**	19.4± 0.7**	19.9± 1.2**	20.2± 2.3	20.0± 2.6**

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
Control	22.4± 1.0	23.2± 0.4	23.7± 0.9	23.3± 0.7	23.8± 0.4	23.7± 1.6	24.6± 1.3
5000ppm	21.8± 0.9	22.8± 0.8	23.7± 1.5	23.2± 1.1	23.4± 1.2	23.8± 1.1	24.1± 1.3
10000ppm	22.1± 1.2	23.2± 1.2	23.1± 1.1	23.7± 1.4	23.4± 1.6	23.9± 1.5	23.6± 1.7
20000ppm	21.9± 1.1	23.3± 0.8	22.9± 0.5	22.8± 0.9	23.7± 1.3	23.8± 1.0	23.9± 1.3
40000ppm	22.1± 1.0	22.8± 0.8	23.2± 0.8	22.9± 0.8	23.0± 1.1	23.6± 1.0	23.3± 0.7
80000ppm	20.4± 2.9	21.4± 2.7	21.7± 2.8	21.5± 2.9	22.0± 3.4	23.2± 1.4	22.9± 1.0

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 3-1

WATER CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(4)	2-7(4)	3-7(4)	4-7(4)	5-7(4)	6-7(4)	7-7(4)
Control	18.3± 1.0	20.4± 1.8	21.1± 1.4	21.7± 1.7	20.7± 1.3	20.1± 1.5	19.6± 1.6
2500 ppm	19.4± 1.2	21.3± 1.3	21.1± 1.1	21.6± 1.7	20.4± 2.1	19.7± 2.3	19.5± 2.6
5000 ppm	19.2± 1.2	21.1± 0.9	21.2± 0.7	22.0± 1.2	20.5± 1.0	20.5± 1.7	20.1± 1.8
10000 ppm	19.8± 1.4	22.2± 1.7	21.9± 1.6	21.7± 2.2	19.9± 1.9	19.2± 1.6	18.8± 1.8
20000 ppm	21.5± 1.6**	22.9± 2.5*	22.8± 2.4	23.6± 4.2	23.2± 3.7	21.4± 1.9	21.2± 1.5
40000 ppm	17.6± 2.0	18.6± 0.9	19.3± 1.9	18.7± 2.0*	18.3± 2.6	17.4± 2.1**	17.9± 2.7

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(4)	9-7(4)	10-7(4)	11-7(4)	12-7(4)	13-7(4)
Control	19.8± 2.2	19.4± 1.4	18.5± 1.3	18.2± 1.3	18.2± 1.3	18.7± 1.4
2500 ppm	19.7± 2.3	19.2± 2.2	19.0± 2.6	18.6± 2.2	18.4± 2.2	18.5± 2.1
5000 ppm	20.4± 2.0	19.4± 1.9	19.3± 2.0	19.3± 1.9	18.4± 1.8	18.9± 1.8
10000 ppm	19.3± 2.0	18.4± 1.8	18.3± 1.4	18.2± 1.5	18.3± 1.8	18.6± 1.5
20000 ppm	21.0± 1.9	21.1± 2.9	20.6± 2.4	20.9± 1.8**	20.0± 2.6	20.0± 2.3
40000 ppm	18.5± 1.8	17.5± 2.1	17.1± 1.8	18.6± 1.8	17.7± 1.4	18.1± 1.9

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 3-2

WATER CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(4)	2-7(4)	3-7(4)	4-7(4)	5-7(4)	6-7(4)	7-7(4)
Control	15.9± 0.7	16.8± 0.9	17.0± 0.9	16.7± 1.1	16.8± 1.6	19.1± 8.7	17.2± 2.8
2500 ppm	18.5± 5.9	17.1± 1.2	17.7± 2.0	18.6± 5.2	18.5± 6.0	19.0± 6.7	21.8± 11.4
5000 ppm	16.5± 1.5	17.7± 1.8	17.3± 1.6	17.3± 1.5	17.5± 1.6	18.6± 6.0	19.3± 8.6
10000 ppm	17.2± 1.4	18.0± 2.1	19.1± 6.7	17.4± 2.6	17.2± 2.5	16.5± 2.6	16.2± 2.3
20000 ppm	18.0± 1.0*	18.7± 1.5*	17.9± 1.3	17.4± 1.6	17.0± 1.6	16.2± 1.9	16.7± 2.4
40000 ppm	15.0± 1.4	15.3± 1.2	24.0± 17.8	20.4± 9.6	14.8± 2.1	14.4± 3.0	14.6± 2.4

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(4)	9-7(4)	10-7(4)	11-7(4)	12-7(4)	13-7(4)
Control	18.1± 4.5	18.5± 5.5	18.4± 5.0	18.8± 7.7	17.3± 3.9	16.9± 3.8
2500 ppm	22.4± 12.0	15.3± 8.2	17.3± 3.4	18.4± 7.9	17.4± 5.4	20.4± 8.8
5000 ppm	19.6± 8.8	18.5± 7.4	19.1± 9.6	18.5± 5.1	18.0± 7.3	18.4± 5.9
10000 ppm	16.5± 2.5	17.1± 3.3	16.8± 3.5	19.1± 6.5	18.0± 4.3	18.1± 6.3
20000 ppm	16.7± 1.4	16.2± 1.7	15.8± 1.5	19.0± 10.1	18.0± 5.9	22.1± 18.1
40000 ppm	15.1± 2.9	13.9± 2.9*	13.4± 3.5**	13.8± 2.9	13.3± 3.1	13.4± 2.3

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 3-3

WATER CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(4)	2-7(4)	3-7(4)	4-7(4)	5-7(4)	6-7(4)	7-7(4)
Control	5.1± 1.4	4.9± 1.0	4.6± 0.8	4.4± 0.8	4.6± 1.3	4.3± 1.0	4.3± 1.1
5000ppm	5.2± 0.8	4.7± 0.8	4.7± 0.7	4.7± 1.1	4.8± 1.4	4.6± 1.0	4.7± 0.9
10000ppm	5.2± 0.7	5.0± 0.7	4.8± 0.5	4.7± 0.5	4.5± 0.5	4.7± 0.4	4.6± 0.6
20000ppm	5.5± 0.8	5.2± 0.8	5.2± 1.0	5.0± 0.8	4.9± 0.8	4.7± 0.6	4.8± 0.9
40000ppm	6.4± 0.9**	5.7± 0.7*	5.6± 0.8*	5.3± 0.6*	5.1± 0.5	5.3± 0.3*	5.2± 0.4*
80000ppm	7.9± 2.0**	6.7± 2.4*	7.5± 3.2**	7.5± 3.3**	7.5± 3.7**	7.4± 3.7**	7.1± 2.0**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(4)	9-7(4)	10-7(4)	11-7(4)	12-7(4)	13-7(4)
Control	4.3± 0.9	4.0± 0.6	3.9± 0.7	3.7± 0.5	3.6± 0.4	3.6± 0.5
5000ppm	4.4± 1.0	4.1± 0.4	4.2± 0.5	4.0± 0.6	3.9± 0.4	3.8± 0.3
10000ppm	4.6± 0.5	4.2± 0.5	4.3± 0.5	4.1± 0.6	4.0± 0.4	3.9± 0.5
20000ppm	5.1± 1.5	4.6± 1.1	4.4± 0.7	4.3± 0.8	4.3± 0.7	4.2± 0.6
40000ppm	5.1± 0.4	4.9± 0.3*	4.9± 0.5**	4.6± 0.4*	4.6± 0.3**	4.5± 0.2**
80000ppm	6.3± 2.0**	6.0± 1.8**	6.2± 2.1**	6.0± 1.8**	5.8± 1.7**	5.6± 1.4**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 3-4

WATER CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(4)	2-7(4)	3-7(4)	4-7(4)	5-7(4)	6-7(4)	7-7(4)
Control	4.9± 0.8	4.7± 0.5	4.6± 0.6	5.0± 1.1	5.5± 1.8	5.2± 1.5	5.5± 1.5
5000ppm	5.0± 0.7	5.2± 0.8	5.0± 1.1	5.2± 1.0	5.5± 1.3	5.5± 1.5	5.5± 0.9
10000ppm	5.0± 0.7	5.2± 0.9	4.8± 0.5	4.9± 0.3	4.5± 0.3	4.8± 0.5	5.0± 0.5
20000ppm	5.4± 0.5	5.3± 0.9	6.0± 2.7	5.7± 1.1	5.9± 2.2	5.6± 1.5	6.3± 1.3
40000ppm	5.7± 0.3*	5.6± 0.6	6.0± 1.0**	6.0± 1.1*	6.6± 2.2	5.9± 1.0	6.2± 1.0
80000ppm	7.2± 2.4**	7.3± 1.0**	9.2± 2.7**	9.6± 3.3**	9.9± 1.9**	9.7± 2.8**	9.7± 2.3**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(4)	9-7(4)	10-7(4)	11-7(4)	12-7(4)	13-7(4)
Control	5.8± 2.6	6.8± 2.9	6.1± 2.8	6.7± 3.1	6.6± 3.5	5.9± 2.5
5000ppm	5.5± 1.2	5.3± 0.6	4.8± 0.5	4.8± 0.6	4.7± 0.5	4.8± 0.6
10000ppm	4.9± 0.6	4.8± 0.5	4.7± 0.3	4.8± 0.6	4.7± 0.7	5.1± 1.7
20000ppm	5.9± 1.5	6.5± 3.8	5.9± 1.5	5.9± 1.9	5.7± 1.7	5.9± 2.0
40000ppm	6.0± 0.8	5.6± 0.5	5.7± 0.8	5.7± 1.2	5.5± 1.1	5.5± 0.9
80000ppm	9.5± 3.5**	10.1± 4.6*	10.3± 4.6**	10.7± 7.0*	8.6± 2.2	7.3± 0.7*

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 4-1

FOOD CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	15.0± 1.1	16.3± 1.0	17.1± 0.8	17.3± 1.0	17.1± 0.6	16.6± 0.8	16.5± 1.0
2500 ppm	14.9± 0.5	16.1± 0.7	16.7± 0.9	16.6± 0.8	16.0± 1.2	15.3± 1.1	15.5± 1.3
5000 ppm	14.9± 0.7	15.6± 0.8	16.0± 0.9	16.6± 1.4	16.0± 1.2	15.5± 1.4	15.3± 1.6
10000 ppm	14.5± 0.5	16.0± 0.9	16.0± 1.1	16.4± 1.6	15.4± 1.4*	14.8± 1.6*	15.1± 1.8
20000 ppm	14.5± 0.8	15.7± 0.8	16.2± 1.1	16.4± 1.2	16.0± 1.4	15.2± 1.2	15.7± 1.1
40000 ppm	12.7± 0.9**	14.7± 0.8**	15.0± 1.2**	14.9± 1.1**	14.3± 1.5**	14.0± 1.5**	14.4± 1.7

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
Control	16.4± 0.9	16.5± 1.0	16.3± 1.1	16.6± 0.6	16.3± 1.0	16.4± 0.9
2500 ppm	15.3± 1.3	15.1± 1.4	15.2± 1.4	15.5± 1.2	14.7± 1.1	15.4± 0.6
5000 ppm	15.4± 1.6	15.0± 1.6	15.2± 1.6	15.4± 1.4	14.7± 1.8	15.1± 1.5
10000 ppm	14.8± 1.8	14.7± 1.8	14.7± 1.4	15.1± 1.4*	14.6± 1.4*	15.2± 1.3
20000 ppm	15.4± 1.2	15.3± 1.2	15.4± 1.4	15.8± 1.2	15.2± 1.5	15.5± 1.2
40000 ppm	14.1± 1.8**	14.5± 1.9	14.0± 1.4**	14.6± 1.3**	14.4± 1.2*	14.9± 1.1

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 4-2

FOOD CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	12.0± 0.7	12.8± 0.8	12.9± 0.9	12.7± 0.5	12.3± 0.8	11.6± 1.4	12.2± 1.5
2500 ppm	11.4± 0.7	12.1± 0.8	12.4± 1.0	12.3± 0.9	11.8± 1.0	11.3± 1.1	11.9± 1.0
5000 ppm	11.4± 0.6	12.4± 0.9	12.2± 0.8	12.2± 0.8	11.9± 0.8	11.3± 0.7	11.4± 0.9
10000 ppm	11.0± 0.5**	11.8± 1.0*	11.5± 0.8**	11.6± 1.0*	11.1± 0.9*	10.5± 1.3	10.7± 1.1*
20000 ppm	11.1± 0.3**	11.9± 0.4*	11.8± 0.7*	11.4± 0.7**	11.2± 0.8	10.4± 1.1	10.7± 1.1*
40000 ppm	10.1± 0.7**	11.2± 0.7**	11.2± 0.7**	11.2± 1.0**	10.9± 1.2**	10.1± 1.2*	10.6± 1.2*

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
Control	11.6± 1.2	11.5± 1.0	11.7± 1.4	11.7± 1.0	11.5± 0.9	11.5± 0.9
2500 ppm	11.3± 1.0	10.6± 1.4	11.1± 1.1	11.5± 1.3	11.3± 1.1	10.9± 0.7
5000 ppm	11.4± 0.9	11.0± 0.9	11.1± 0.8	11.4± 1.0	11.2± 0.9	11.0± 0.8
10000 ppm	10.4± 0.9*	10.2± 1.1*	10.0± 0.9**	10.3± 1.1	10.4± 1.1	10.0± 0.9**
20000 ppm	10.7± 0.9	10.2± 1.0*	10.2± 1.1*	10.0± 1.6*	10.6± 1.0	10.4± 1.0*
40000 ppm	10.3± 1.0*	9.9± 1.2**	9.7± 1.4**	10.1± 1.1*	9.9± 1.0**	9.6± 1.0**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 4-3

FOOD CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	3.9± 0.3	3.9± 0.3	3.9± 0.3	4.0± 0.3	3.9± 0.3	4.0± 0.3	3.9± 0.3
5000ppm	4.0± 0.3	4.0± 0.2	3.9± 0.2	4.0± 0.2	3.9± 0.2	4.1± 0.2	4.1± 0.3
10000ppm	3.9± 0.1	4.0± 0.2	3.9± 0.2	4.0± 0.2	4.0± 0.2	4.2± 0.2	4.0± 0.2
20000ppm	4.1± 0.3	4.1± 0.4	4.0± 0.4	4.2± 0.4	4.1± 0.3	4.2± 0.3	4.1± 0.3
40000ppm	4.1± 0.2	4.0± 0.2	3.9± 0.2	4.1± 0.1	4.0± 0.2	4.1± 0.2	4.0± 0.2
80000ppm	3.4± 0.3**	4.0± 0.3	3.8± 0.3	3.9± 0.3	3.8± 0.4	3.8± 0.4	3.6± 0.5

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
Control	4.2± 0.3	4.1± 0.4	4.2± 0.3	4.1± 0.2	4.2± 0.2	4.0± 0.3
5000ppm	4.2± 0.2	4.3± 0.3	4.4± 0.3	4.2± 0.3	4.3± 0.3	4.1± 0.2
10000ppm	4.2± 0.3	4.2± 0.2	4.3± 0.2	4.2± 0.2	4.2± 0.2	4.1± 0.2
20000ppm	4.2± 0.2	4.2± 0.3	4.2± 0.2	4.1± 0.2	4.2± 0.2	4.2± 0.3
40000ppm	4.2± 0.2	4.1± 0.1	4.3± 0.2	4.1± 0.2	4.2± 0.2	4.2± 0.2
80000ppm	4.0± 0.2	4.0± 0.3	4.1± 0.4	3.9± 0.3	4.1± 0.3	4.0± 0.3

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 4-4

FOOD CONSUMPTION CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	3.6± 0.1	3.4± 0.2	3.5± 0.2	3.7± 0.2	3.8± 0.3	3.8± 0.2	3.8± 0.3
5000ppm	3.4± 0.2	3.5± 0.2	3.5± 0.2	3.7± 0.2	3.8± 0.2	3.7± 0.2	3.8± 0.2
10000ppm	3.5± 0.2	3.5± 0.2	3.4± 0.2	3.6± 0.2	3.7± 0.2	3.7± 0.2	3.8± 0.3
20000ppm	3.4± 0.3	3.4± 0.2	3.4± 0.2	3.6± 0.2	3.8± 0.3	3.7± 0.2	3.9± 0.3
40000ppm	3.4± 0.2	3.5± 0.2	3.5± 0.2	3.7± 0.2	3.8± 0.2	3.7± 0.3	3.9± 0.2
80000ppm	3.0± 0.3**	3.4± 0.1	3.4± 0.2	3.6± 0.2	3.6± 0.4	3.5± 0.3	3.6± 0.4

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
Control	4.0± 0.2	4.1± 0.3	3.9± 0.2	3.9± 0.2	3.9± 0.3	4.0± 0.3
5000ppm	4.1± 0.2	4.1± 0.3	3.9± 0.2	3.9± 0.2	4.0± 0.2	3.9± 0.3
10000ppm	3.9± 0.2	3.9± 0.3	4.0± 0.3	3.8± 0.3	3.9± 0.3	3.7± 0.2
20000ppm	4.0± 0.3	3.9± 0.3	3.8± 0.3	3.9± 0.3	3.9± 0.3	3.9± 0.3
40000ppm	4.0± 0.3	4.0± 0.2	3.9± 0.2	3.8± 0.2	4.0± 0.2	3.8± 0.1
80000ppm	3.7± 0.4	3.7± 0.5	3.7± 0.4	3.5± 0.8	3.6± 0.7	3.6± 0.3**

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 5-1

CHEMICAL INTAKE CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 13
SEX : MALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
2500 ppm	0.292± 0.013	0.271± 0.013	0.240± 0.008	0.229± 0.013	0.203± 0.014	0.191± 0.018	0.179± 0.018
5000 ppm	0.584± 0.033	0.548± 0.019	0.491± 0.021	0.474± 0.015	0.415± 0.014	0.396± 0.025	0.373± 0.029
10000 ppm	1.211± 0.067	1.158± 0.061	1.031± 0.047	0.952± 0.065	0.825± 0.039	0.765± 0.049	0.713± 0.042
20000 ppm	2.648± 0.129	2.411± 0.267	2.153± 0.220	2.083± 0.372	1.912± 0.304	1.697± 0.129	1.606± 0.083
40000 ppm	4.559± 0.428	4.149± 0.195	3.891± 0.316	3.540± 0.277	3.228± 0.297	2.945± 0.269	2.873± 0.277

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 13
SEX : MALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
2500 ppm	0.173± 0.015	0.164± 0.015	0.159± 0.019	0.151± 0.016	0.146± 0.017	0.143± 0.015
5000 ppm	0.360± 0.018	0.335± 0.019	0.323± 0.018	0.313± 0.020	0.292± 0.017	0.292± 0.018
10000 ppm	0.700± 0.038	0.650± 0.031	0.628± 0.032	0.605± 0.023	0.589± 0.028	0.585± 0.026
20000 ppm	1.518± 0.122	1.482± 0.191	1.406± 0.131	1.386± 0.068	1.284± 0.123	1.264± 0.105
40000 ppm	2.848± 0.112	2.622± 0.205	2.494± 0.221	2.624± 0.227	2.427± 0.190	2.427± 0.197

APPENDIX B 5-2

CHEMICAL INTAKE CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 13
SEX : FEMALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
2500 ppm	0.392± 0.126	0.321± 0.018	0.308± 0.038	0.307± 0.094	0.290± 0.089	0.290± 0.099	0.321± 0.174
5000 ppm	0.701± 0.048	0.669± 0.047	0.606± 0.038	0.573± 0.034	0.552± 0.048	0.574± 0.202	0.590± 0.325
10000 ppm	1.475± 0.094	1.375± 0.122	1.370± 0.476	1.177± 0.141	1.118± 0.137	1.043± 0.127	0.996± 0.111
20000 ppm	3.094± 0.143	2.856± 0.210	2.534± 0.123	2.363± 0.160	2.195± 0.159	2.048± 0.165	2.051± 0.218
40000 ppm	5.430± 0.424	4.927± 0.347	7.181± 5.335	5.785± 2.757	4.040± 0.503	3.808± 0.678	3.717± 0.488

STUDY NO. : 0201
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 13
SEX : FEMALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
2500 ppm	0.324± 0.182	0.215± 0.109	0.240± 0.046	0.247± 0.102	0.231± 0.073	0.270± 0.126
5000 ppm	0.570± 0.272	0.524± 0.224	0.533± 0.294	0.506± 0.173	0.476± 0.197	0.481± 0.158
10000 ppm	0.997± 0.106	1.000± 0.178	0.971± 0.176	1.080± 0.329	0.999± 0.200	0.989± 0.283
20000 ppm	2.000± 0.118	1.896± 0.154	1.818± 0.134	2.246± 1.478	1.973± 0.542	2.407± 1.939
40000 ppm	3.746± 0.599	3.390± 0.587	3.210± 0.700	3.228± 0.528	3.050± 0.540	3.067± 0.412

APPENDIX B 5-3

CHEMICAL INTAKE CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g/kg/day
REPORT TYPE : A1 13
SEX : MALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
5000ppm	1.034± 0.219	0.892± 0.190	0.869± 0.155	0.851± 0.256	0.825± 0.279	0.754± 0.180	0.766± 0.184
10000ppm	2.085± 0.344	1.890± 0.257	1.764± 0.188	1.677± 0.201	1.558± 0.196	1.546± 0.158	1.482± 0.209
20000ppm	4.442± 0.729	3.963± 0.609	3.807± 0.751	3.529± 0.595	3.369± 0.647	3.097± 0.425	3.174± 0.734
40000ppm	10.240± 1.591	8.696± 1.096	8.311± 1.034	7.633± 0.982	7.139± 0.791	7.091± 0.623	6.969± 0.716
80000ppm	27.286± 7.411	19.163± 3.776	24.202± 12.555	23.671± 13.492	24.209± 17.569	23.824± 18.905	22.788± 12.294

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 13
SEX : MALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
5000ppm	0.684± 0.180	0.611± 0.097	0.610± 0.102	0.569± 0.125	0.541± 0.097	0.525± 0.081
10000ppm	1.439± 0.178	1.289± 0.172	1.268± 0.173	1.184± 0.181	1.127± 0.133	1.073± 0.165
20000ppm	3.281± 1.108	2.855± 0.773	2.672± 0.511	2.570± 0.614	2.507± 0.553	2.365± 0.458
40000ppm	6.518± 0.716	6.118± 0.658	5.884± 0.796	5.449± 0.702	5.330± 0.715	5.150± 0.472
80000ppm	17.353± 5.888	16.276± 5.005	16.258± 5.772	15.461± 4.650	14.750± 4.633	13.689± 3.439

APPENDIX B 5-4

CHEMICAL INTAKE CHANGES (THIRTEEN−WEEK STUDY: SUMMARY)

MOUSE: FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 13
SEX : FEMALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
5000ppm	1.291± 0.157	1.286± 0.192	1.243± 0.303	1.223± 0.231	1.286± 0.323	1.264± 0.365	1.262± 0.253
10000ppm	2.577± 0.469	2.530± 0.522	2.295± 0.241	2.294± 0.215	2.098± 0.178	2.171± 0.309	2.249± 0.273
20000ppm	5.571± 0.520	5.264± 0.667	5.849± 2.543	5.456± 1.078	5.420± 1.905	5.187± 1.409	5.798± 1.473
40000ppm	11.757± 0.697	11.155± 1.251	11.792± 2.732	11.490± 2.605	12.257± 4.362	10.693± 1.971	11.228± 2.201
80000ppm	32.638± 10.770	30.110± 4.729	38.096± 12.501	39.285± 16.258	40.298± 12.745	41.062± 21.053	40.398± 20.548

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 13
SEX : FEMALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
5000ppm	1.198± 0.291	1.119± 0.175	1.036± 0.156	1.031± 0.166	0.994± 0.128	0.998± 0.163
10000ppm	2.093± 0.252	2.081± 0.220	1.994± 0.145	2.062± 0.379	1.972± 0.341	2.214± 0.862
20000ppm	5.052± 1.222	5.686± 3.273	5.178± 1.347	4.946± 1.434	4.748± 1.353	4.848± 1.281
40000ppm	10.459± 1.380	9.723± 0.940	9.896± 1.372	9.969± 2.372	9.353± 1.678	9.413± 1.563
80000ppm	37.972± 24.174	40.835± 31.308	42.301± 32.944	45.871± 51.738	27.377± 3.328	25.517± 2.819

APPENDIX B 6-1

HEMATOLOGY (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$		HEMOGLOBIN g/dℓ		HEMATOCRIT %		MCV f ℓ		MCH p g		MCHC g/dℓ		PLATELET $10^3/\mu\ell$	
Control	10	9.85±	0.15	16.6±	0.2	47.1±	0.8	47.8±	0.4	16.9±	0.2	35.3±	0.4	738±	36
2500 ppm	10	9.75±	0.15	16.7±	0.3	46.7±	0.8	47.9±	0.5	17.2±	0.2	35.8±	0.4	731±	36
5000 ppm	10	9.66±	0.40	16.4±	0.7	46.2±	1.8	47.9±	0.8	17.0±	0.3	35.5±	0.6	741±	46
10000 ppm	10	9.74±	0.21	16.6±	0.3	46.7±	1.1	48.0±	0.8	17.1±	0.3	35.6±	0.5	725±	45
20000 ppm	10	9.83±	0.18	16.6±	0.3	46.6±	0.9	47.4±	0.7	16.9±	0.3	35.5±	0.6	736±	35
40000 ppm	10	9.74±	0.31	16.7±	0.3	46.8±	1.1	48.1±	0.8	17.1±	0.4	35.7±	0.5	726±	35

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$	Differential WBC (%) N-BAND	N-SEG	EOSINO	BASO	MONO	LYMPHO	OTHER
Control	10	5.14± 1.61	0± 0	30± 8	2± 1	0± 0	4± 1	65± 8	0± 0
2500 ppm	10	4.91± 1.10	0± 0	29± 7	2± 1	0± 0	4± 2	65± 8	0± 0
5000 ppm	10	4.84± 1.40	0± 1	28± 5	2± 1	0± 0	5± 1	65± 4	0± 0
10000 ppm	10	4.93± 1.38	0± 0	34± 7	1± 1	0± 0	4± 1	60± 7	0± 0
20000 ppm	10	4.36± 1.14	0± 0	30± 10	1± 1	0± 0	4± 2	64± 8	0± 0
40000 ppm	10	5.92± 1.60	0± 0	28± 6	1± 1	0± 0	4± 1	68± 5	0± 0

Significant difference : * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

APPENDIX B 6-2

HEMATOLOGY (THIRTEEN−WEEK STUDY: SUMMARY)

RAT: FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
Control	9	9.19± 0.17	16.9± 0.3	47.2± 1.1	51.4± 0.4	18.3± 0.2	35.7± 0.4	822± 41
2500 ppm	10	8.96± 0.37	16.6± 0.5	45.8± 2.0	51.1± 0.3	18.6± 0.7	36.3± 1.6	812± 47
5000 ppm	10	9.04± 0.35	16.7± 0.4	46.3± 1.8	51.2± 0.5	18.5± 0.6	36.1± 1.2	799± 33
10000 ppm	10	9.05± 0.30	16.5± 0.6	45.9± 1.5	50.7± 0.5*	18.3± 0.3	36.0± 0.4	813± 61
20000 ppm	10	9.11± 0.20	16.6± 0.3	46.4± 1.1	50.9± 0.5	18.3± 0.2	35.9± 0.5	805± 63
40000 ppm	10	8.86± 0.22	16.1± 0.5**	45.0± 0.9**	50.8± 0.7*	18.2± 0.2	35.9± 0.8	787± 42

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
Control	9	3.55±	0.78	0±	0	25±	6	2±	1	0±	0	4±	1	69±	6	0±	0
2500 ppm	10	3.56±	1.28	0±	0	28±	8	2±	2	0±	0	4±	1	65±	9	0±	0
5000 ppm	10	2.66±	0.61	1±	1	28±	6	2±	2	0±	0	4±	2	65±	8	0±	0
10000 ppm	10	3.15±	1.09	0±	0	25±	4	2±	1	0±	0	5±	1	68±	4	0±	0
20000 ppm	10	3.13±	0.97	1±	1	28±	6	2±	1	0±	0	4±	1	66±	7	0±	0
40000 ppm	10	3.05±	0.52	0±	0	25±	4	2±	1	0±	0	5±	2	69±	4	0±	0

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

APPENDIX B 6-3

HEMATOLOGY (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV fℓ	MCH pg	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
Control	10	10.41± 0.24	15.5± 0.4	45.5± 1.1	43.8± 0.8	14.9± 0.2	34.0± 0.8	1342± 89
5000ppm	10	10.61± 0.47	15.7± 0.7	46.6± 2.8	43.9± 1.1	14.8± 0.2	33.8± 0.7	1371± 165
10000ppm	10	10.55± 0.41	15.7± 0.4	46.1± 2.0	43.7± 0.6	14.9± 0.3	34.1± 1.0	1372± 112
20000ppm	10	10.63± 0.36	15.7± 0.6	46.3± 2.2	43.5± 0.9	14.8± 0.3	34.1± 0.7	1386± 117
40000ppm	10	10.59± 0.25	15.7± 0.3	45.8± 0.8	43.2± 0.4	14.9± 0.3	34.4± 0.4	1442± 89
80000ppm	9	10.47± 0.35	15.6± 0.3	45.2± 1.6	43.2± 0.5	14.9± 0.5	34.6± 1.1	1386± 106

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
Control	10	1.30±	0.72	1±	1	14±	4	2±	1	0±	0	4±	1	80±	5	0±	0
5000ppm	10	1.47±	0.94	1±	1	17±	5	1±	1	0±	0	4±	2	76±	6	0±	0
10000ppm	10	1.79±	0.95	1±	1	13±	4	1±	1	0±	0	4±	1	81±	3	0±	0
20000ppm	10	1.49±	0.73	1±	1	13±	3	2±	1	0±	0	4±	2	80±	4	0±	0
40000ppm	10	1.20±	0.51	0±	0	14±	3	2±	1	0±	0	4±	2	80±	3	0±	0
80000ppm	9	1.18±	0.40	1±	1	14±	3	1±	1	0±	0	3±	1	80±	3	0±	0

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

APPENDIX B 6-4

HEMATOLOGY (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
Control	10	10.62± 0.40	15.8± 0.7	45.5± 2.1	42.9± 0.9	14.9± 0.5	34.8± 1.0	1212± 75
5000ppm	10	10.45± 0.47	15.6± 0.6	45.3± 2.2	43.4± 0.4	15.0± 0.2	34.5± 0.6	1198± 138
10000ppm	10	10.51± 0.45	15.8± 0.7	45.7± 2.2	43.4± 0.4	15.0± 0.3	34.6± 0.6	1219± 124
20000ppm	9	10.62± 0.43	15.9± 0.7	46.1± 1.6	43.4± 0.7	15.0± 0.2	34.5± 0.7	1227± 83
40000ppm	10	10.46± 0.38	15.7± 0.5	45.5± 1.9	43.5± 0.4	15.0± 0.3	34.6± 0.9	1185± 101
80000ppm	9	10.54± 0.43	15.8± 0.6	45.5± 2.0	43.2± 0.5	15.0± 0.3	34.8± 0.6	1195± 135

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
Control	10	0.97±	0.67	0±	1	15±	5	1±	1	0±	0	3±	1	81±	4	0±	0
5000ppm	10	1.48±	2.04	1±	1	16±	6	1±	1	0±	0	3±	1	79±	5	0±	0
10000ppm	10	1.28±	1.38	1±	1	16±	5	1±	1	0±	0	3±	0	80±	6	0±	0
20000ppm	9	1.42±	0.98	1±	1	14±	5	1±	1	0±	0	3±	1	82±	5	0±	0
40000ppm	10	1.22±	0.88	1±	2	16±	10	1±	1	0±	0	3±	1	79±	13	0±	0
80000ppm	9	0.84±	0.42	0±	1	17±	8	0±	0	0±	0	3±	1	79±	8	0±	0

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

APPENDIX B 7-1

BIOCHEMISTRY (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dl	ALBUMIN g/dl	A/G RATIO	T-BILIRUBIN mg/dl	GLUCOSE mg/dl	T-CHOLESTEROL mg/dl	TRIGLYCERIDE mg/dl
Control	10	6.8± 0.2	3.8± 0.1	1.2± 0.1	0.21± 0.03	199± 11	60± 3	76± 26
2500 ppm	10	6.8± 0.3	3.8± 0.1	1.2± 0.1	0.22± 0.03	197± 17	61± 5	93± 29
5000 ppm	10	6.7± 0.2	3.7± 0.1	1.2± 0.1	0.21± 0.04	195± 22	60± 6	85± 35
10000 ppm	10	6.7± 0.2	3.7± 0.1	1.2± 0.1	0.22± 0.03	191± 19	58± 6	81± 31
20000 ppm	10	6.6± 0.3*	3.6± 0.1	1.3± 0.1	0.21± 0.05	201± 21	59± 3	72± 22
40000 ppm	10	6.5± 0.2**	3.7± 0.1	1.3± 0.0	0.21± 0.04	204± 13	61± 4	88± 20

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	PHOSPHOLIPID mg/dl	GOT IU/l	GPT IU/l	LDH IU/l	ALP IU/l	G-GTP IU/l	CPK IU/l
Control	10	106± 6	75± 12	25± 2	159± 37	288± 22	1± 1	84± 7
2500 ppm	10	113± 11	72± 11	24± 4	163± 26	294± 22	1± 1	89± 13
5000 ppm	10	108± 10	79± 15	26± 5	162± 35	307± 26	1± 1	80± 5
10000 ppm	10	106± 14	67± 10	23± 4	152± 18	297± 26	1± 1	82± 5
20000 ppm	10	109± 9	73± 16	26± 5	161± 42	291± 27	1± 1	84± 11
40000 ppm	10	115± 7	78± 18	25± 4	164± 43	287± 31	1± 1	83± 12

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	UREA NITROGEN mg/dℓ	CREATININE mg/dℓ	SODIUM mEq/ℓ	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
Control	10	17.6± 0.9	0.5± 0.1	143± 1	3.1± 0.1	106± 1	10.4± 0.2	5.1± 0.7
2500 ppm	10	17.8± 1.2	0.5± 0.1	143± 1	3.1± 0.2	106± 1	10.4± 0.3	5.4± 0.9
5000 ppm	10	16.9± 1.2	0.5± 0.1	143± 1	3.1± 0.2	106± 1	10.4± 0.2	5.1± 0.8
10000 ppm	10	17.5± 0.8	0.5± 0.1	143± 2	3.2± 0.2	106± 2	10.3± 0.2	5.0± 0.7
20000 ppm	10	18.0± 1.3	0.5± 0.1	142± 1	3.2± 0.2	105± 2	10.2± 0.4	5.1± 0.6
40000 ppm	10	20.7± 1.6**	0.5± 0.1	141± 1**	3.2± 0.1	104± 1*	10.2± 0.2	4.9± 0.7

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 7-2

BIOCHEMISTRY(THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dl		ALBUMIN g/dl		A/G RATIO		T-BILIRUBIN mg/dl		GLUCOSE mg/dl		T-CHOLESTEROL mg/dl		TRIGLYCERIDE mg/dl	
Control	9	6.6±	0.1	3.7±	0.1	1.2±	0.1	0.23±	0.02	150±	15	82±	7	34±	4
2500 ppm	10	6.6±	0.2	3.6±	0.1	1.2±	0.1	0.24±	0.03	150±	17	79±	5	35±	5
5000 ppm	10	6.5±	0.3	3.6±	0.2	1.3±	0.1	0.26±	0.04	152±	28	78±	7	35±	6
10000 ppm	10	6.4±	0.3	3.6±	0.1	1.3±	0.1	0.25±	0.03	151±	18	76±	9	32±	4
20000 ppm	10	6.5±	0.2	3.6±	0.1	1.2±	0.1	0.28±	0.08	138±	19	78±	9	32±	3
40000 ppm	10	6.0±	0.2**	3.4±	0.1**	1.3±	0.1	0.26±	0.05	147±	17	70±	4**	28±	3*

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	PHOSPHOLIPID mg/dℓ	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	G-GTP IU/ℓ	CPK IU/ℓ
Control	9	143± 9	66± 10	21± 5	201± 46	195± 21	2± 1	100± 13
2500 ppm	10	138± 8	78± 29	25± 11	222± 62	199± 25	1± 1	99± 16
5000 ppm	10	134± 12	71± 16	23± 8	217± 64	207± 27	2± 1	98± 17
10000 ppm	10	130± 14	78± 14	24± 5	245± 56	205± 23	2± 1	104± 16
20000 ppm	10	133± 13	75± 16	22± 7	222± 78	224± 32	2± 1	103± 28
40000 ppm	10	119± 7**	66± 6	18± 4	216± 62	200± 19	2± 1	97± 17

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	UREA NITROGEN mg/dl	CREATININE mg/dl	SODIUM mEq/l	POTASSIUM mEq/l	CHLORIDE mEq/l	CALCIUM mg/dl	INORGANIC PHOSPHORUS mg/dl
Control	9	19.6± 1.7	0.5± 0.1	143± 1	3.0± 0.2	108± 2	10.0± 0.4	4.9± 0.9
2500 ppm	10	19.6± 2.8	0.5± 0.1	142± 2	3.1± 0.2	107± 2	10.1± 0.2	4.7± 1.1
5000 ppm	10	19.9± 1.4	0.5± 0.1	142± 1	3.0± 0.2	108± 1	10.0± 0.3	4.7± 1.1
10000 ppm	10	20.8± 1.6	0.5± 0.1	143± 2	3.1± 0.2	108± 2	9.9± 0.3	4.6± 1.2
20000 ppm	10	20.3± 1.8	0.5± 0.1	142± 2	3.2± 0.3	108± 2	9.9± 0.3	5.0± 1.1
40000 ppm	10	22.3± 2.4*	0.5± 0.1	141± 2	3.3± 0.2	108± 1	9.6± 0.2**	4.8± 1.3

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 7-3

BIOCHEMISTRY (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ	ALBUMIN g/dℓ	A/G RATIO	T-BILIRUBIN mg/dℓ	GLUCOSE mg/dℓ	T-CHOLESTEROL mg/dℓ	TRIGLYCERIDE mg/dℓ
Control	10	5.3± 0.1	2.8± 0.1	1.2± 0.1	0.32± 0.08	227± 50	89± 5	79± 14
5000ppm	10	5.3± 0.4	2.8± 0.2	1.1± 0.0	0.34± 0.11	233± 41	90± 9	81± 8
10000ppm	10	5.3± 0.2	2.8± 0.1	1.1± 0.1	0.32± 0.10	241± 29	91± 6	75± 15
20000ppm	10	5.3± 0.2	2.8± 0.1	1.1± 0.1	0.34± 0.20	229± 53	88± 9	75± 17
40000ppm	10	5.2± 0.2	2.7± 0.1	1.1± 0.0	0.28± 0.12	240± 31	84± 5	73± 20
80000ppm	9	5.0± 0.2	2.7± 0.1*	1.1± 0.1	0.38± 0.20	242± 34	88± 4	72± 12

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

(HCL074)

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	CPK IU/ℓ	UREA NITROGEN mg/dℓ	SODIUM mEq/ℓ
Control	10	46± 6	11± 2	231± 35	180± 20	55± 19	25.4± 1.9	154± 2
5000ppm	10	43± 5	13± 2	237± 56	176± 19	63± 25	25.0± 1.4	154± 2
10000ppm	10	40± 8	14± 5	242± 79	177± 8	67± 54	24.6± 4.1	154± 2
20000ppm	10	42± 5	14± 3	227± 46	168± 16	55± 21	25.4± 2.2	154± 2
40000ppm	10	39± 5	12± 3	229± 49	169± 16	55± 17	26.1± 1.5	154± 1
80000ppm	9	40± 6	13± 4	279± 154	158± 40	59± 19	25.5± 2.7	153± 2

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	POTASSIUM mEq／ℓ		CHLORIDE mEq／ℓ		CALCIUM mg／dℓ		INORGANIC PHOSPHORUS mg／dℓ	
Control	10	3.9±	0.4	122±	2	8.7±	0.3	7.2±	0.8
5000ppm	10	4.3±	0.5	122±	3	8.8±	0.5	8.3±	1.7
10000ppm	10	4.2±	0.4	121±	2	8.6±	0.2	7.1±	1.3
20000ppm	10	4.1±	0.4	121±	2	8.8±	0.3	7.8±	1.9
40000ppm	10	4.0±	0.3	122±	2	8.7±	0.2	7.5±	1.0
80000ppm	9	3.9±	0.4	120±	2	8.6±	0.3	7.6±	1.1

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 7-4

BIOCHEMISTRY (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ	ALBUMIN g/dℓ	A/G RATIO	T-BILIRUBIN mg/dℓ	GLUCOSE mg/dℓ	T-CHOLESTEROL mg/dℓ	TRIGLYCERIDE mg/dℓ
Control	10	5.5± 0.2	3.1± 0.1	1.3± 0.0	0.39± 0.09	189± 22	76± 4	49± 10
5000ppm	10	5.4± 0.3	3.1± 0.1	1.3± 0.1	0.37± 0.07	167± 23	74± 10	49± 18
10000ppm	10	5.3± 0.3	3.0± 0.2	1.3± 0.0	0.39± 0.12	178± 28	74± 7	44± 9
20000ppm	9	5.3± 0.2	3.1± 0.1	1.4± 0.1	0.34± 0.05	178± 20	78± 9	51± 15
40000ppm	10	5.3± 0.3	3.0± 0.1	1.3± 0.1	0.42± 0.09	183± 22	72± 11	43± 13
80000ppm	9	5.0± 0.2**	2.9± 0.1**	1.4± 0.1	0.39± 0.17	185± 25	73± 7	44± 9

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	GOT IU/ℓ		GPT IU/ℓ		LDH IU/ℓ		ALP IU/ℓ		CPK IU/ℓ		UREA NITROGEN mg/dℓ		SODIUM mEq/ℓ	
Control	10	60±	14	14±	3	274±	67	281±	38	73±	30	21.8±	1.9	154±	3
5000ppm	10	64±	15	14±	4	290±	75	298±	31	82±	25	22.8±	2.0	153±	2
10000ppm	10	53±	9	13±	2	252±	40	277±	30	76±	14	23.3±	2.6	154±	2
20000ppm	9	52±	7	14±	5	246±	42	272±	24	74±	23	22.4±	1.9	154±	3
40000ppm	10	58±	12	16±	4	368±	145	292±	33	134±	127	24.0±	2.5	154±	3
80000ppm	9	53±	14	13±	5	319±	92	304±	29	113±	102	22.5±	2.4	155±	3

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	POTASSIUM mEq/ℓ		CHLORIDE mEq/ℓ		CALCIUM mg/dℓ		INORGANIC PHOSPHORUS mg/dℓ	
Control	10	3.9±	0.6	121±	3	8.8±	0.2	6.8±	0.9
5000ppm	10	3.5±	0.4	123±	3	8.7±	0.3	6.5±	1.0
10000ppm	10	3.7±	0.4	124±	3	8.6±	0.4	6.6±	1.7
20000ppm	9	3.8±	0.4	120±	2	8.6±	0.3	6.3±	1.4
40000ppm	10	3.7±	0.4	122±	3	8.6±	0.4	6.4±	1.1
80000ppm	9	3.6±	0.4	121±	3	8.5±	0.4	7.1±	1.1

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 8-1

URINALYSIS (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
SAMPLING DATE : 013-4
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Bilirubin −	+	2+	3+	CHI
Control	10	0	0	0	0	3	7	0		0	0	7	3	0	0		10	0	0	0	0	0		0	10	0	0	0	0		10	0	0	0	
2500 ppm	10	0	0	0	1	2	7	0		0	0	5	5	0	0		10	0	0	0	0	0		1	9	0	0	0	0		10	0	0	0	
5000 ppm	10	0	0	0	0	5	5	0		0	0	3	7	0	0		10	0	0	0	0	0		2	7	1	0	0	0		10	0	0	0	
10000 ppm	10	0	0	0	0	8	2	0	*	0	0	2	5	3	0	*	10	0	0	0	0	0		7	3	0	0	0	0	**	10	0	0	0	
20000 ppm	10	0	0	0	0	7	3	0		0	0	0	5	5	0	**	10	0	0	0	0	0		9	1	0	0	0	0	**	10	0	0	0	
40000 ppm	10	0	0	1	6	3	0	0	**	0	0	0	0	2	8	**	10	0	0	0	0	0		10	0	0	0	0	0	**	10	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

STUDY NO. : 0201
ANIMAL : RAT F344
SAMPLING DATE : 013-4
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
Control	10	10	0	0	0	0		10	0	0	0	0	
2500 ppm	10	9	1	0	0	0		10	0	0	0	0	
5000 ppm	10	10	0	0	0	0		10	0	0	0	0	
10000 ppm	10	10	0	0	0	0		10	0	0	0	0	
20000 ppm	10	10	0	0	0	0		10	0	0	0	0	
40000 ppm	10	10	0	0	0	0		10	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

APPENDIX B 8-2

URINALYSIS (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
SAMPLING DATE : 013-4
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Bilirubin −	+	2+	3+	CHI
Control	10	0	0	0	1	1	7	1		0	0	9	1	0	0		10	0	0	0	0	0		9	1	0	0	0	0		10	0	0	0	
2500 ppm	10	0	0	0	0	1	8	1		0	0	9	1	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
5000 ppm	10	0	0	0	0	0	9	1		0	0	8	2	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
10000 ppm	10	0	0	1	0	2	6	1		0	0	7	3	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
20000 ppm	10	0	0	0	1	2	6	1		0	0	0	8	2	0	**	10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
40000 ppm	10	0	0	0	1	8	1	0	*	0	0	0	0	5	5	**	10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

STUDY NO. : 0201
ANIMAL : RAT F344
SAMPLING DATE : 013-4
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
Control	10	10	0	0	0	0		10	0	0	0	0	
2500 ppm	10	10	0	0	0	0		10	0	0	0	0	
5000 ppm	10	10	0	0	0	0		10	0	0	0	0	
10000 ppm	10	10	0	0	0	0		10	0	0	0	0	
20000 ppm	10	10	0	0	0	0		10	0	0	0	0	
40000 ppm	10	10	0	0	0	0		10	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

APPENDIX B 8-3

URINALYSIS (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-4
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Occult blood −	±	+	2+	3+	CHI
Control	10	0	0	0	1	3	6	0		0	0	7	3	0	0		10	0	0	0	0	0		1	6	3	0	0	0		10	0	0	0	0	
5000ppm	10	0	0	0	0	5	5	0		0	0	5	5	0	0		10	0	0	0	0	0		1	9	0	0	0	0		10	0	0	0	0	
10000ppm	10	0	0	0	0	6	3	1		0	0	2	7	1	0		10	0	0	0	0	0		7	3	0	0	0	0	*	10	0	0	0	0	
20000ppm	10	0	0	0	0	4	6	0		0	0	0	5	4	1	**	10	0	0	0	0	0		10	0	0	0	0	0	**	10	0	0	0	0	
40000ppm	10	0	0	0	0	7	3	0		0	0	0	3	2	5	**	10	0	0	0	0	0		10	0	0	0	0	0	**	10	0	0	0	0	
80000ppm	9	0	0	0	3	6	0	0	*	0	0	0	0	0	9	**	9	0	0	0	0	0		9	0	0	0	0	0	**	9	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-4
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
Control	10	10	0	0	0	0	
5000ppm	10	10	0	0	0	0	
10000ppm	10	10	0	0	0	0	
20000ppm	10	10	0	0	0	0	
40000ppm	10	10	0	0	0	0	
80000ppm	9	9	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

APPENDIX B 8-4

URINALYSIS (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-4
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Occult blood −	±	+	2+	3+	CHI
Control	10	0	1	0	1	4	4	0		0	1	8	1	0	0		10	0	0	0	0	0		5	5	0	0	0	0		10	0	0	0	0	
5000ppm	10	0	0	2	1	6	1	0		0	0	8	2	0	0		10	0	0	0	0	0		6	3	1	0	0	0		10	0	0	0	0	
10000ppm	10	0	0	0	1	2	7	0		0	0	4	5	0	1		10	0	0	0	0	0		8	2	0	0	0	0		10	0	0	0	0	
20000ppm	10	0	0	0	0	8	2	0		0	0	4	3	3	0		10	0	0	0	0	0		10	0	0	0	0	0	**	10	0	0	0	0	
40000ppm	10	0	0	0	2	7	1	0		0	0	0	0	4	6	**	10	0	0	0	0	0		10	0	0	0	0	0	**	10	0	0	0	0	
80000ppm	9	0	0	0	5	4	0	0		0	0	0	0	2	7	**	9	0	0	0	0	0		9	0	0	0	0	0	*	9	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-4
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
Control	10	10	0	0	0	0	
5000ppm	10	10	0	0	0	0	
10000ppm	10	10	0	0	0	0	
20000ppm	10	10	0	0	0	0	
40000ppm	10	10	0	0	0	0	
80000ppm	9	9	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

APPENDIX B 9-1

GROSS FINDINGS (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE :SACRIFICED ANIMALS

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
ALL ANIMALS (0- 14W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	2500 ppm 10 (%)	5000 ppm 10 (%)	10000 ppm 10 (%)
other	hair:colored		0 (0)	0 (0)	0 (0)	0 (0)

Organ	Findings	Group Name NO. of Animals	20000 ppm 10 (%)	40000 ppm 10 (%)
other	hair:colored		6 (60)	10 (100)

APPENDIX B 9-2

GROSS FINDINGS (THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE :SACRIFICED ANIMALS

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
ALL ANIMALS (0- 14W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	2500 ppm 10 (%)	5000 ppm 10 (%)	10000 ppm 10 (%)
liver	herniation		0 (0)	0 (0)	1 (10)	1 (10)
other	hair:colored		0 (0)	0 (0)	0 (0)	0 (0)

Organ	Findings	Group Name NO. of Animals	20000 ppm 10 (%)	40000 ppm 10 (%)
liver	herniation		0 (0)	0 (0)
other	hair:colored		7 (70)	10 (100)

APPENDIX B 9-3

GROSS FINDINGS (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE DEAD AND MORIBUND ANIMALS

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	Control	5000ppm	10000ppm	20000ppm
		NO. of Animals	0 (%)	0 (%)	0 (%)	0 (%)
thymus	atrophic		- (-)	- (-)	- (-)	- (-)

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	40000ppm		80000ppm	
		NO. of Animals	0	(%)	1	(%)
thymus	atrophic		-	(-)	1	(100)

APPENDIX B 9-4

GROSS FINDINGS (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : FEMALE DEAD AND MORIBUND ANIMALS

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	Control	5000ppm	10000ppm	20000ppm
		NO. of Animals	0 (%)	0 (%)	0 (%)	0 (%)
whole body	wasting		- (-)	- (-)	- (-)	- (-)

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	40000ppm		80000ppm	
		NO. of Animals	0	(%)	1	(%)
whole body	wasting		-	(-)	1	(100)

APPENDIX B 9-5

GROSS FINDINGS (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : MALE :SACRIFICED ANIMALS

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	Control	5000ppm	10000ppm	20000ppm
		NO. of Animals	10 (%)	10 (%)	10 (%)	10 (%)
spleen	black zone		0 (0)	1 (10)	0 (0)	1 (10)
kidney	white zone		0 (0)	2 (20)	0 (0)	0 (0)

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	40000ppm	80000ppm
		NO. of Animals	10 (%)	9 (%)
spleen	black zone		0 (0)	0 (0)
kidney	white zone		0 (0)	0 (0)

APPENDIX B 9-6

GROSS FINDINGS (THIRTEEN−WEEK STUDY: SUMMARY)

MOSUE : FEMALE :SACRIFICED ANIMALS

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	Control	5000ppm	10000ppm	20000ppm
		NO. of Animals	10 (%)	10 (%)	10 (%)	10 (%)
spleen	black zone		1 (10)	2 (20)	0 (0)	0 (0)

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	40000ppm		80000ppm	
		NO. of Animals	10	(%)	9	(%)
spleen	black zone		0	(0)	0	(0)

APPENDIX B 10-1

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY),ABSOLUTE

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	TESTES	HEART	LUNGS
Control	10	321± 14	0.255± 0.026	0.048± 0.007	2.876± 0.129	0.923± 0.038	1.009± 0.059
2500 ppm	10	303± 21	0.225± 0.019*	0.049± 0.012	2.806± 0.127	0.885± 0.036	0.993± 0.057
5000 ppm	10	304± 22	0.230± 0.031	0.047± 0.005	2.737± 0.131	0.876± 0.047	0.976± 0.059
10000 ppm	10	299± 22	0.238± 0.025	0.047± 0.008	2.852± 0.096	0.886± 0.051	0.959± 0.042
20000 ppm	10	299± 19	0.225± 0.017*	0.046± 0.008	2.847± 0.127	0.916± 0.054	0.985± 0.040
40000 ppm	10	284± 22**	0.207± 0.021**	0.045± 0.004	2.827± 0.120	0.865± 0.047*	0.964± 0.077

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	1.913± 0.091	0.551± 0.031	8.008± 0.454	1.901± 0.034
2500 ppm	10	1.814± 0.102	0.517± 0.029	7.545± 0.390	1.865± 0.032
5000 ppm	10	1.812± 0.148	0.493± 0.035**	7.492± 0.773	1.864± 0.047
10000 ppm	10	1.839± 0.108	0.517± 0.042	7.486± 0.579	1.874± 0.040
20000 ppm	10	1.890± 0.112	0.516± 0.033	7.574± 0.552	1.866± 0.066
40000 ppm	10	1.895± 0.099	0.497± 0.032**	7.530± 0.769	1.869± 0.036

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 10-2

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY),ABSOLUTE

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
Control	10	182± 12	0.196± 0.020	0.053± 0.004	0.103± 0.016	0.613± 0.042	0.734± 0.057
2500 ppm	10	178± 9	0.185± 0.016	0.054± 0.005	0.095± 0.017	0.603± 0.023	0.731± 0.032
5000 ppm	10	179± 7	0.198± 0.024	0.050± 0.004	0.098± 0.018	0.608± 0.021	0.741± 0.032
10000 ppm	10	170± 11*	0.191± 0.012	0.054± 0.007	0.090± 0.017	0.587± 0.031	0.726± 0.055
20000 ppm	10	172± 10	0.196± 0.019	0.055± 0.006	0.088± 0.018	0.607± 0.043	0.744± 0.041
40000 ppm	10	166± 8**	0.174± 0.015*	0.053± 0.008	0.082± 0.020	0.578± 0.037	0.718± 0.033

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	1.220± 0.116	0.371± 0.044	4.377± 0.500	1.732± 0.033
2500 ppm	10	1.179± 0.038	0.359± 0.036	4.170± 0.289	1.729± 0.032
5000 ppm	10	1.180± 0.054	0.356± 0.032	4.179± 0.188	1.716± 0.055
10000 ppm	10	1.162± 0.059	0.351± 0.029	3.977± 0.291	1.699± 0.052
20000 ppm	10	1.201± 0.057	0.357± 0.019	4.038± 0.365	1.738± 0.025
40000 ppm	10	1.267± 0.057	0.363± 0.031	3.974± 0.225	1.681± 0.056

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 10-3

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY),ABSOLUTE

MOUSE: MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	TESTES	HEART	LUNGS
Control	10	32.5± 2.0	0.046± 0.009	0.009± 0.002	0.197± 0.025	0.145± 0.007	0.144± 0.004
5000ppm	10	33.7± 2.5	0.044± 0.008	0.009± 0.002	0.208± 0.030	0.149± 0.011	0.150± 0.013
10000ppm	10	33.2± 2.6	0.048± 0.012	0.010± 0.002	0.206± 0.022	0.147± 0.010	0.148± 0.008
20000ppm	10	32.2± 1.9	0.045± 0.007	0.010± 0.002	0.223± 0.030	0.148± 0.009	0.153± 0.010
40000ppm	10	31.9± 2.7	0.047± 0.009	0.010± 0.002	0.211± 0.019	0.149± 0.009	0.145± 0.010
80000ppm	9	29.6± 1.2*	0.038± 0.004	0.010± 0.002	0.227± 0.021	0.146± 0.011	0.147± 0.010

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	0.433± 0.015	0.045± 0.005	1.144± 0.061	0.447± 0.010
5000ppm	10	0.440± 0.033	0.048± 0.005	1.165± 0.057	0.444± 0.011
10000ppm	10	0.445± 0.023	0.049± 0.007	1.152± 0.052	0.445± 0.010
20000ppm	10	0.445± 0.032	0.052± 0.008	1.164± 0.049	0.442± 0.009
40000ppm	10	0.455± 0.015	0.047± 0.006	1.162± 0.042	0.446± 0.008
80000ppm	9	0.468± 0.029	0.047± 0.003	1.127± 0.052	0.436± 0.016

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 10-4

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY),ABSOLUTE

MOUSE: FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
Control	10	21.7± 1.0	0.045± 0.006	0.012± 0.002	0.028± 0.006	0.119± 0.006	0.143± 0.013
5000ppm	10	20.9± 1.2	0.043± 0.007	0.011± 0.002	0.032± 0.008	0.118± 0.007	0.143± 0.009
10000ppm	10	20.9± 1.2	0.041± 0.005	0.010± 0.001	0.028± 0.007	0.121± 0.009	0.140± 0.010
20000ppm	10	21.3± 1.0	0.043± 0.005	0.011± 0.002	0.030± 0.006	0.117± 0.006	0.145± 0.010
40000ppm	10	20.4± 0.8*	0.039± 0.004	0.010± 0.002	0.027± 0.004	0.117± 0.007	0.142± 0.016
80000ppm	9	20.4± 0.9*	0.038± 0.006*	0.010± 0.002	0.027± 0.005	0.114± 0.005	0.137± 0.011

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	0.292± 0.012	0.054± 0.007	0.907± 0.069	0.458± 0.021
5000ppm	10	0.298± 0.014	0.049± 0.007	0.857± 0.062	0.457± 0.018
10000ppm	10	0.285± 0.018	0.051± 0.007	0.860± 0.042	0.450± 0.017
20000ppm	10	0.294± 0.021	0.051± 0.009	0.897± 0.045	0.450± 0.019
40000ppm	10	0.292± 0.015	0.043± 0.005**	0.847± 0.040	0.455± 0.013
80000ppm	9	0.306± 0.022	0.042± 0.004**	0.844± 0.045*	0.440± 0.013

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 11-1

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY), RELATIVE

RAT : MALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	TESTES	HEART	LUNGS
Control	10	321± 14	0.079± 0.007	0.015± 0.002	0.896± 0.045	0.287± 0.014	0.314± 0.016
2500 ppm	10	303± 21	0.074± 0.004	0.016± 0.003	0.928± 0.049	0.293± 0.017	0.328± 0.010
5000 ppm	10	304± 22	0.076± 0.008	0.016± 0.001	0.905± 0.075	0.289± 0.012	0.323± 0.025
10000 ppm	10	299± 22	0.079± 0.005	0.016± 0.003	0.957± 0.062	0.297± 0.012	0.321± 0.013
20000 ppm	10	299± 19	0.075± 0.005	0.016± 0.003	0.956± 0.077	0.306± 0.010*	0.330± 0.020
40000 ppm	10	284± 22**	0.073± 0.008	0.016± 0.002	1.000± 0.056**	0.306± 0.021*	0.340± 0.013**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	0.595± 0.016	0.171± 0.007	2.491± 0.073	0.592± 0.027
2500 ppm	10	0.599± 0.015	0.171± 0.009	2.491± 0.065	0.618± 0.048
5000 ppm	10	0.596± 0.021	0.163± 0.009	2.461± 0.122	0.616± 0.041
10000 ppm	10	0.615± 0.023	0.173± 0.007	2.502± 0.069	0.629± 0.044
20000 ppm	10	0.632± 0.016**	0.173± 0.008	2.532± 0.079	0.625± 0.032
40000 ppm	10	0.670± 0.025**	0.176± 0.010	2.652± 0.096**	0.663± 0.050**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 11-2

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY), RELATIVE

RAT : FEMALE

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
Control	10	182± 12	0.107± 0.007	0.029± 0.003	0.057± 0.008	0.337± 0.022	0.403± 0.015
2500 ppm	10	178± 9	0.104± 0.009	0.030± 0.003	0.054± 0.010	0.339± 0.020	0.411± 0.023
5000 ppm	10	179± 7	0.111± 0.011	0.028± 0.002	0.055± 0.010	0.340± 0.014	0.414± 0.012
10000 ppm	10	170± 11*	0.113± 0.006	0.032± 0.004	0.054± 0.011	0.347± 0.017	0.428± 0.017*
20000 ppm	10	172± 10	0.115± 0.012	0.032± 0.003	0.052± 0.010	0.354± 0.018	0.434± 0.021**
40000 ppm	10	166± 8**	0.105± 0.011	0.032± 0.004	0.049± 0.012	0.349± 0.018	0.434± 0.020**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	0.669± 0.041	0.203± 0.016	2.400± 0.190	0.954± 0.063
2500 ppm	10	0.663± 0.034	0.201± 0.014	2.340± 0.102	0.973± 0.056
5000 ppm	10	0.660± 0.022	0.199± 0.013	2.337± 0.066	0.960± 0.036
10000 ppm	10	0.687± 0.032	0.207± 0.007	2.347± 0.073	1.007± 0.081
20000 ppm	10	0.700± 0.021	0.208± 0.008	2.350± 0.094	1.016± 0.059
40000 ppm	10	0.764± 0.022**	0.219± 0.018*	2.398± 0.109	1.015± 0.036

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 11-3

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY), RELATIVE

MOUSE: MALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	TESTES	HEART	LUNGS
Control	10	32.5± 2.0	0.141± 0.026	0.028± 0.007	0.608± 0.091	0.448± 0.029	0.444± 0.027
5000ppm	10	33.7± 2.5	0.131± 0.018	0.026± 0.006	0.619± 0.096	0.444± 0.041	0.446± 0.036
10000ppm	10	33.2± 2.6	0.145± 0.030	0.031± 0.008	0.624± 0.095	0.443± 0.032	0.447± 0.024
20000ppm	10	32.2± 1.9	0.139± 0.016	0.031± 0.008	0.691± 0.079	0.462± 0.046	0.476± 0.027
40000ppm	10	31.9± 2.7	0.148± 0.022	0.030± 0.004	0.665± 0.083	0.470± 0.035	0.457± 0.054
80000ppm	9	29.6± 1.2*	0.129± 0.008	0.032± 0.007	0.766± 0.064**	0.495± 0.031*	0.498± 0.039**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	1.338± 0.094	0.137± 0.010	3.526± 0.189	1.379± 0.087
5000ppm	10	1.311± 0.113	0.143± 0.020	3.468± 0.188	1.326± 0.130
10000ppm	10	1.342± 0.082	0.147± 0.020	3.480± 0.225	1.347± 0.109
20000ppm	10	1.385± 0.086	0.161± 0.025	3.625± 0.210	1.376± 0.075
40000ppm	10	1.433± 0.115	0.148± 0.023	3.657± 0.218	1.406± 0.123
80000ppm	9	1.580± 0.070**	0.160± 0.011	3.808± 0.132*	1.473± 0.033

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 11-4

ORGAN WEIGHT (THIRTEEN−WEEK STUDY: SUMMARY), RELATIVE

MOUSE: FEMALE

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
Control	10	21.7± 1.0	0.206± 0.024	0.055± 0.009	0.131± 0.025	0.548± 0.030	0.658± 0.063
5000ppm	10	20.9± 1.2	0.206± 0.025	0.053± 0.011	0.151± 0.034	0.566± 0.023	0.685± 0.033
10000ppm	10	20.9± 1.2	0.198± 0.017	0.048± 0.006	0.133± 0.034	0.581± 0.030	0.673± 0.041
20000ppm	10	21.3± 1.0	0.203± 0.022	0.052± 0.006	0.141± 0.026	0.548± 0.024	0.681± 0.051
40000ppm	10	20.4± 0.8*	0.190± 0.018	0.051± 0.011	0.131± 0.021	0.577± 0.045	0.698± 0.079
80000ppm	9	20.4± 0.9*	0.185± 0.027	0.050± 0.008	0.132± 0.025	0.559± 0.033	0.674± 0.040

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
Control	10	1.346± 0.075	0.249± 0.025	4.172± 0.201	2.113± 0.157
5000ppm	10	1.425± 0.073	0.235± 0.024	4.094± 0.149	2.187± 0.087
10000ppm	10	1.369± 0.077	0.244± 0.027	4.127± 0.169	2.161± 0.075
20000ppm	10	1.379± 0.083	0.236± 0.033	4.214± 0.106	2.118± 0.111
40000ppm	10	1.437± 0.095	0.209± 0.020**	4.167± 0.184	2.237± 0.122
80000ppm	9	1.504± 0.106**	0.207± 0.017**	4.148± 0.150	2.164± 0.097

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 12-1

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN−WEEK STUDY: SUMMARY)

RAT : MALE : SACRIFICED ANIMALS

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
ALL ANIMALS (0- 14W)

Organ	Findings	Group Name	Control				2500 ppm				5000 ppm				10000 ppm			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
larynx	inflammation		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lung	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	osseous metaplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
spleen	deposit of hemosiderin		0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)
[Circulatory system]																		
heart	granulation		3 (30)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
stomach	erosion:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	increase in superficial layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
liver	necrosis:focal		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	20000 ppm				40000 ppm			
		No. of Animals	10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]										
larynx	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lung	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	osseous metaplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]										
spleen	deposit of hemosiderin		0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)
[Circulatory system]										
heart	granulation		3 (30)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
[Digestive system]										
stomach	erosion:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)
	increase in superficial layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)
liver	necrosis:focal		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Urinary system]										
kidney	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

STUDY NO. : 0201
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
ALL ANIMALS (0- 14W)

Organ	Findings	Group Name	Control				2500 ppm				5000 ppm				10000 ppm			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	basophilic change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	eosinophilic body		1 (10)	9 (90)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
thyroid	ultimibranchial body remanet		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
prostate	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	1 (10)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
Harder gl	inflammation		1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	20000 ppm				40000 ppm			
		No. of Animals	10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]										
kidney	basophilic change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	eosinophilic body		0 (0)	10 (100)	0 (0)	0 (0)	1 (10)	9 (90)	0 (0)	0 (0)
[Endocrine system]										
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
thyroid	ultimibranchial body remanet		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Reproductive system]										
prostate	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]										
Harder gl	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 12-2

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN−WEEK STUDY: SUMMARY)

RAT : FEMALE : SACRIFICED ANIMALS

Organ	Findings	Group Name / No. of Animals	Control 10				2500 ppm 10				5000 ppm 10				10000 ppm 10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
nasal cavit	inflammation:squamous epithelium		1 (10)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow	granulation		3 (30)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	3 (30)	1 (10)	0 (0)	0 (0)
lymph node	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	1 (10)	0 (0)	0 (0)
spleen	deposit of hemosiderin		0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)
[Digestive system]																		
tongue	inflammation		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
stomach	erosion:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	decrease in middle layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
liver	herniation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	vacuolic change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	1 (10)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	20000 ppm				40000 ppm			
		No. of Animals	10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]										
nasal cavit	inflammation:squamous epithelium		2 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]										
bone marrow	granulation		4 (40)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)
lymph node	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spleen	deposit of hemosiderin		0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)
[Digestive system]										
tongue	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
stomach	erosion:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	decrease in middle layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
liver	herniation		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	vacuolic change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		2 (20)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name / No. of Animals	Control 10				2500 ppm 10				5000 ppm 10				10000 ppm 10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
pancreas	atrophy		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	basophilic change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization:cortico-medullary junction		10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
thyroid	ultimibranchial body remanet		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
Harder gl	inflammation		1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	20000 ppm				40000 ppm			
		No. of Animals	10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]										
pancreas	atrophy		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]										
kidney	basophilic change		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	mineralization:cortico-medullary junction		10 (100)	0 (0)	0 (0)	0 (0)	9 (90)	1 (10)	0 (0)	0 (0)
[Endocrine system]										
pituitary	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
thyroid	ultimibranchial body remanet		2 (20)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]										
Harder gl	inflammation		2 (20)	1 (10)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 12-3

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN−WEEK STUDY: SUMMARY)

MOUSE: MALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	Control				5000ppm				10000ppm				20000ppm			
		No. of Animals	0				0				0				0			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
thymus	atrophy		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
spleen	atrophy		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
	deposit of hemosiderin		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Digestive system]																		
liver	necrosis:single cell		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Urinary system]																		
kidney	vacuolization of proximal tubule		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Reproductive system]																		
testis	degeneration:seminiferous epithelium		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	40000ppm				80000ppm			
		No. of Animals	0				1			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]										
thymus	atrophy		- (-)	- (-)	- (-)	- (-)	0 (0)	0 (0)	1 (100)	0 (0)
spleen	atrophy		- (-)	- (-)	- (-)	- (-)	0 (0)	1 (100)	0 (0)	0 (0)
	deposit of hemosiderin		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)
[Digestive system]										
liver	necrosis:single cell		- (-)	- (-)	- (-)	- (-)	0 (0)	1 (100)	0 (0)	0 (0)
[Urinary system]										
kidney	vacuolization of proximal tubule		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)
[Reproductive system]										
testis	degeneration:seminiferous epithelium		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 12-4

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN−WEEK STUDY: SUMMARY)

MOUSE: FEMALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	Control				5000ppm				10000ppm				20000ppm			
		No. of Animals	0				0				0				0			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
thymus	atrophy		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
spleen	atrophy		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Circulatory system]																		
heart	necrosis		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	40000ppm				80000ppm			
		No. of Animals	0				1			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]										
thymus	atrophy		- (-)	- (-)	- (-)	- (-)	0 (0)	0 (0)	1 (100)	0 (0)
spleen	atrophy		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)
[Circulatory system]										
heart	necrosis		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 12-3

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN−WEEK STUDY: SUMMARY)

MOUSE: MALE : SACRIFICED ANIMALS

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	Control				5000ppm				10000ppm				20000ppm			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
nasal cavit	eosinophilic change:olfactory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
			0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	duct ectasia:olfactory gland		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
spleen	deposit of hemosiderin		5 (50)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)	7 (70)	0 (0)	0 (0)	0 (0)	5 (50)	0 (0)	0 (0)	0 (0)
	deposit of melanin		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Circulatory system]																		
heart	arthritis		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
stomach	increase in superficial layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	decrease in middle layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	decrease in deep layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	40000ppm				80000ppm			
		No. of Animals	10				9			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]										
nasal cavit	eosinophilic change:olfactory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
			0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	duct ectasia:olfactory gland		1 (10)	0 (0)	0 (0)	0 (0)	6 (67)	0 (0)	0 (0)	0 ** (0)
[Hematopoietic system]										
spleen	deposit of hemosiderin		5 (50)	0 (0)	0 (0)	0 (0)	4 (44)	0 (0)	0 (0)	0 (0)
	deposit of melanin		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Circulatory system]										
heart	arthritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]										
stomach	increase in superficial layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	8 (89)	0 (0)	0 (0)	0 ** (0)
	decrease in middle layer of fundus		5 (50)	0 (0)	0 (0)	0 * (0)	5 (56)	0 (0)	0 (0)	0 * (0)
	decrease in deep layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	6 (67)	0 (0)	0 (0)	0 ** (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	Control				5000ppm				10000ppm				20000ppm			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	granulation		4 (40)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	basophilic change		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
	vacuolization of proximal tubule		8 (80)	0 (0)	0 (0)	0 (0)	7 (70)	0 (0)	0 (0)	0 (0)	9 (90)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
adrenal	accesory cortical nodule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	40000ppm				80000ppm			
		No. of Animals	10				9			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]										
liver	granulation		3 (30)	0 (0)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	0 (0)
[Urinary system]										
kidney	basophilic change		0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
	vacuolization of proximal tubule		9 (90)	0. (0)	0 (0)	0 (0)	8 (89)	0 (0)	0 (0)	0 (0)
[Endocrine system]										
adrenal	accesory cortical nodule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 12-4

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN−WEEK STUDY: SUMMARY)

MOUSE: FEMALE : SACRIFICED ANIMALS

Organ	Findings	Group Name	Control				5000ppm				10000ppm				20000ppm			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
nasal cavit	eosinophilic change:olfactory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium		0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	duct ectasia:olfactory gland		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
spleen	deposit of hemosiderin		10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)
	deposit of melanin		1 (10)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
stomach	increase in superficial layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
liver	granulation		4 (40)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)	6 (60)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
adrenal	accesory cortical nodule		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	40000ppm				80000ppm			
		No. of Animals	10				9			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]										
nasal cavit	eosinophilic change:olfactory epithelium		1 (10)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
	duct ectasia:olfactory gland		0 (0)	0 (0)	0 (0)	0 (0)	9 (100)	0 (0)	0 (0)	0 (0) **
[Hematopoietic system]										
spleen	deposit of hemosiderin		10 (100)	0 (0)	0 (0)	0 (0)	9 (100)	0 (0)	0 (0)	0 (0)
	deposit of melanin		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]										
stomach	increase in superficial layer of fundus		0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
liver	granulation		3 (30)	0 (0)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	0 (0)
[Endocrine system]										
adrenal	accesory cortical nodule		1 (10)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

STUDY NO. : 0202
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	Control				5000ppm				10000ppm				20000ppm			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Special sense organs/appandage]																		
Harder gl	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Group Name		40000ppm				80000ppm			
No. of Animals		10				9			
Organ	Findings	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Special sense organs/appandage]									
Harder gl	inflammation	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 13-1

IDENTITY AND PURITY OF BIPHENYL

PERFORMED AT THE JAPAN BIOASSAY LABORATORY

(THIRTEEN−WEEK STUDY)

IDENTITY OF 1,3,5,7-TETRAAZATRICYCLO[3.3.1.1^{3,7}]DECANE PERFORMED AT THE JAPAN BIOASSAY LABORATORY (THIRTEEN-WEEK STUDIES)

Lot no. TWQ4880

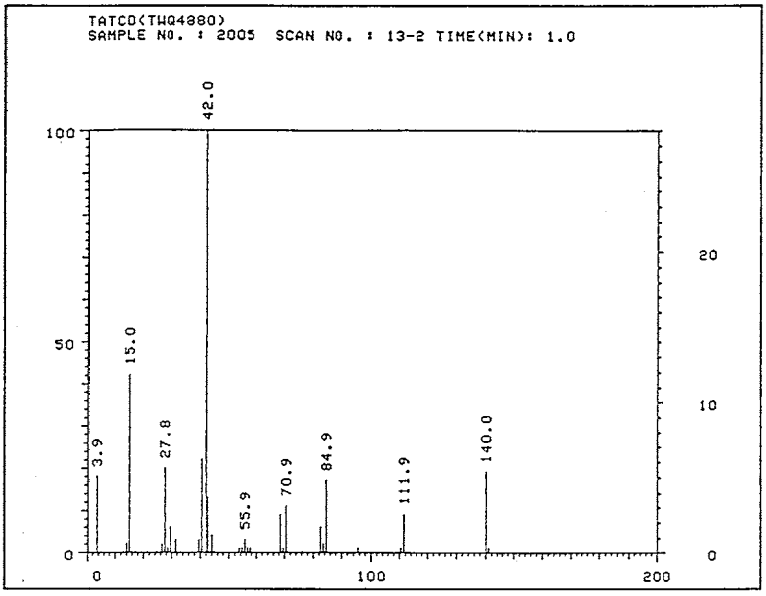
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of 1,3,5,7-Tetraazatricyclo[3.3.1.1^{3,7}]decane

Result:

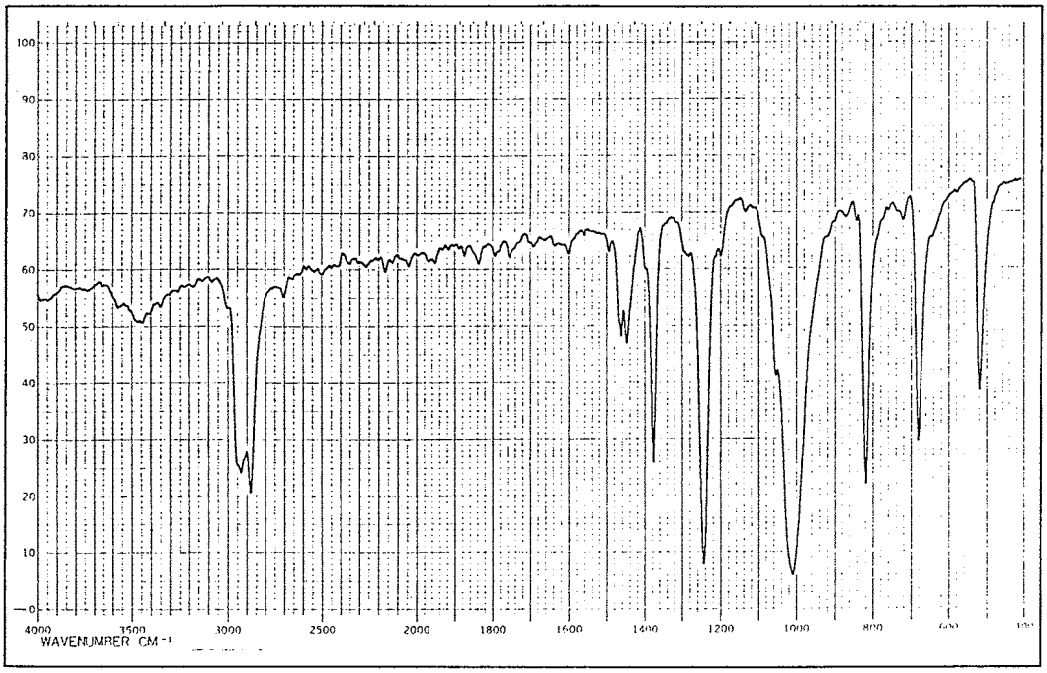
	Molecular Weight
Theoretical Value	140.1(Calculated)
Determined	140.0

Infrared Spectrum

Instrument : Hitachi 270-30

Cell : KBr

Slit : Medium



Infrared Spectrum of 1,3,5,7-Tetraazatricyclo[3.3.1.1^{3,7}]decane

Results:

Wave Number(CM^{-1})

Determined	Literature Value
480～ 530	480～ 530
640～ 700	640～ 700
780～ 830	780～ 830
910～1100	910～1100
1200～1270	1200～1270
1350～1420	1350～1420
1420～1490	1420～1490
2800～3000	2800～3000

(Performed by the WAKO PURE CHEMICAL INDUSTRIES, LTD.)

2. Conclusions: The result of the mass spectrum agreed with the theoretical value and the infrared spectrum agreed with the literature value.

APPENDIX B 13-2

STABILITY OF BIPHENYL AT THE JAPAN BIOASSAY LABORATORY

(THIRTEEN−WEEK STUDY)

STABILITY OF 1,3,5,7-TETRAAZATRICYCLO[3.3.1.1^{3,7}]DECANE AT THE JAPAN BIOASSAY LABORATORY (THIRTEEN-WEEK STUDIES)

Lot no. TWQ4880

1. Sample storage: 1,3,5,7-Tetraazatricyclo[3.3.1.1^{3,7}]decane was stored for about 15 weeks at 5°C.

2. Infrared Spectrum

Instrument : Hitachi 270-30

Cell : KBr

Slit : Medium

Results:

Wave Number (CM^{-1})

03/06/92	06/17/92
480～ 530	480～ 530
640～ 700	640～ 700
780～ 830	780～ 830
910～1100	910～1100
1200～1270	1200～1270
1350～1420	1350～1420
1420～1490	1420～1490
2800～3000	2800～3000

3. Conclusions: No notable differrence was observed between infrared spectrums of pre- and post-examination of the study.
Consequently, 1,3,5,7-tetraazatricyclo[3.3.1.1^{3,7}]decane was stable as the chemical when stored for about 15 weeks at 5°C.

APPENDIX B 13-3-1

ANALYSIS OF TATCD CONCENTRATION IN DRINKING WATER OF THE THIRTEEN −WEEK STUDIES

ANALYSIS OF 1,3,5,7-TETRAAZATRICYCLO[3.3.1.1^{3,7}]DECANE CONCENTRATION IN DRINKING WATER OF THE THIRTEEN-WEEK STUDIES

(Rat)

Concentration of 1,3,5,7-Tetraazatricyclo[3.3.1.1^{3,7}]decane in Drinking Water for Target Concentration(ppm)				
2500 (a)	5000 (a)	10000 (a)	20000 (a)	40000 (a)
2687.2(107.5)	5352.0(107.0)	10585.9(105.9)	20804.6(104.0)	40204.5(100.5)

(Mouse)

Concentration of 1,3,5,7-Tetraazatricyclo[3.3.1.1^{3,7}]decane in Drinking Water for Target Concentration(ppm)				
5000 (a)	10000 (a)	20000 (a)	40000 (a)	80000 (a)
5352.0(107.0)	10585.9(105.9)	20804.6(104.0)	40204.5(100.5)	80738.5(100.9)

(a) Percent of target concentration

Analytical method : The sample were analyzed by the Gas Chromatography.

Instrument : Hewlett Packard 5890A
Column : 4% Carbowax 20M / 0.8% KOH / 60/80 Carbopack B (2mmϕ × 2m)
Column Temperature: 215℃
Flow Rate : 34.5ml/min
Detector : FID(Hydrogen Flame Ionization)
Injection Volume : 1μl

APPENDIX B 31-3-2

STABILITY OF TATCD CONCENTRATION IN DRINKING WATER OF THE THIRTEEN - WEEK STUDIES

STABILITY OF 1,3,5,7-TETRAAZATRICYCLO[3.3.1.1^{3,7}]DECANE IN DRINKING WATER OF THE THIRTEEN-WEEK STUDIES

(Rat)

	Concentration of 1,3,5,7-Tetraazatricyclo[3.3.1.1^{3,7}]decane in Drinking Water for Target Concentration(ppm)	
Date	2500 (b)	40000 (b)
03/19/92(a)	2687.2(100)	40204.5(100)
03/23/92	2666.1(99.2)	40131.5(99.8)

(Mouse)

	Concentration of 1,3,5,7-Tetraazatricyclo[3.3.1.1^{3,7}]decane in Drinking Water for Target Concentration(ppm)	
Date	5000 (b)	80000 (b)
03/19/92(a)	5352.0(100)	80738.5(100)
03/23/92	5357.6(100.1)	80487.0(99.7)

(a) Date of preparation
(b) Percent of concentration on preparation day

Analytical method : The sample were analyzed by the Gas Chromatography.

Instrument : Hewlett Packard 5890A
Column : 4% Carbowax 20M / 0.8% KOH / 60/80 Carbopack B (2mmϕ × 2m)
Column Temperature: 215℃
Flow Rate : 34.5ml/min
Detector : FID(Hydrogen Flame Ionization)
Injection Volume : 1μl

APPENDIX C 1

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALSYS

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

Item	Method	Unit
Hematology		
Red blood cell (RBC)	Light scattering method [1]	$\times 10^6/\mu l$
Hemoglobin (Hgb)	Cyanmethemoglobin method [1]	g/dl
Hematocrit (Hct)	Calculated as RBC×MCV/10 [1]	%
Mean corpuscular volume (MCV)	Light scattering method [1]	fl
Mean corpuscular hemoglobin (MCH)	Calculated as Hgb/RBC×10 [1]	pg
Mean corpuscular hemoglobin concentration (MCHC)	Calculated as Hgb/Hct×100 [1]	g/dl
Platelet	Light scattering method [1]	$\times 10^3/\mu l$
White blood cell (WBC)	Light scattering method [1]	$\times 10^3/\mu l$
Differential WBC	Pattern recognition method [2] (May-Grunwald-Giemsa staining)	%
Biochemistry		
Total protein (TP)	Biuret method [3]	g/dl
Albumin (Alb)	BCG method [3]	g/dl
A/G ratio	Calculated as Alb/ (TP−Alb) [3]	
T-bilirubin	Michaelson method [3]	mg/dl
Glucose	Enzymatic method (HK•G-6-PDH) [3]	mg/dl
T-cholesterol	Enzymatic method (CEH•COD•POD) [3]	mg/dl
Triglyceride	Enzymatic method (GK•GPO•POD) [3]	mg/dl
Phospholipid	Enzymatic method (PLD•COD•POD) [3]	mg/dl
Glutamic oxaloacetic transaminase (GOT)	Karmen method [3]	IU/l
Glutamic pyruvic transaminase (GPT)	Karmen method [3]	IU/l
Lactate dehydrogenase (LDH)	Wroblewski-LaDue method [3]	IU/l
Alkaline phosphatase (ALP)	GSCC method [3]	IU/l
γ-Glutamyl transpeptidase (G-GTP)	L-γ-Glutamyl-p-nitroanilide substrate method [3]	IU/l
Creatine phosphokinase (CPK)	GSCC method [3]	IU/l
Urea nitrogen	Enzymatic method (Urease•GLDH) [3]	mg/dl
Creatinine	Jaffe method [3]	mg/dl
Sodium	Flame photometry [4]	mEq/l
Potassium	Flame photometry [4]	mEq/l
Chloride	Coulometric titration [4]	mEq/l
Calcium	OCPC method [3]	mg/dl
Inorganic phosphorus	Enzymatic method (SPL•PGM•G-6-PDH) [3]	mg/dl
Urinalysis		
pH, Protein, Glucose, Ketone body, Bilirubin, Occult blood, Urobilinogen	Urinalysis reagent paper method [5]	

1) Automatic blood cell analyzer (Technicon H•1 : Technicon Instruments Corporation,USA)
2) Automatic blood cell differential analyzer (Hitachi 8200 : Hitachi,Ltd.,Japan)
3) Automatic analyzer (Hitachi 705 : Hitachi,Ltd.,Japan)
4) Flame photometer (Hitachi 750 : Hitachi,Ltd.,Japan)
5) Ames reagent strips for urinalysis (Multistix, Uro-Labstix : Miles Sankyo Co.,Ltd.,Japan)

APPENDIX C 2

UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

UNITS AND DECIMNAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

	TEST ITEM	DECIMAL PLACE	UNIT
HEMATOLOGY	Red blood cell	2	$\times 10^6/\mu l$
	Hemoglobin	1	g/dl
	Hematocrit	1	%
	MCV	1	fl
	MCH	1	pg
	MCHC	1	g/dl
	Platelet	0	$\times 10^3/\mu l$
	White blood cell	2	$\times 10^3/\mu l$
	Differntial WBC	0	%
BIOCHEMISTRY	Total protein	1	g/dl
	Albumin	1	g/dl
	A/G ratio	1	
	T-bilirubin	2	mg/dl
	Glucose	0	mg/dl
	T-cholesterol	0	mg/dl
	Triglyceride	0	mg/dl
	Phospholipid	0	mg/dl
	GOT	0	IU/l
	GPT	0	IU/l
	LDH	0	IU/l
	ALP	0	IU/l
	γ -GTP	0	IU/l
	CPK	0	IU/l
	Urea nitrogen	1	mg/dl
	Creatinine	1	mg/dl
	Sodium	0	mEq/l
	Potassium	1	mEq/l
	Chloride	0	mEq/l
	Calcium	1	mg/dl
	Inorganic phosphorus	1	mg/dl