β－クロロプロピオン酸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

APPENDIX

(A1-1~A10-４)

2Week STUDY　NO. 0093 ; 0094

APPENDIXES

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

APPENDIXES (CONTINUED)

APPENDIX A 1-1

CLINICAL OBSERVATION : SUMMARY, RAT : MALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1 2

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 0-0	1-1	1-2	1-3	1-4	1-5	1-6	1-7	2-1	2-2	2-3	2-4	2-5	2-6
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
LOSS OF HAIR	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	1	1	1	1	1	1	1	1	1	1	1	1
SOILED PERI GENITALIA	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEFECT OF TEETH	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	1	1	1	1	1	1	1
	16000 ppm	0	0	0	0	0	0	0	0	2	2	2	2	2	2
LOOSE STOOL	Control	0	1	0	0	0	0	0	1	1	0	0	0	0	0
	1000 ppm	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	1	0	1	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	1	1	0	0	0	1
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Clinical sign	Group Name	Administration Week-day 2-7 1
LOSS OF HAIR	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	0
	8000 ppm	0
	16000 ppm	1
SOILED PERI GENITALIA	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	0
	8000 ppm	0
	16000 ppm	1
DEFECT OF TEETH	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	0
	8000 ppm	1
	16000 ppm	2
LOOSE STOOL	Control	0
	1000 ppm	0
	2000 ppm	1
	4000 ppm	0
	8000 ppm	1
	16000 ppm	0

APPENDIX A 1-2

CLINICAL OBSERVATION : SUMMARY, RAT : FEMALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1 2

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day 0-0 1	1-1 1	1-2 1	1-3 1	1-4 1	1-5 1	1-6 1	1-7 1	2-1 1	2-2 1	2-3 1	2-4 1	2-5 1	2-6 1
LOSS OF HAIR	Control	0	0	0	0	0	0	0	0	0	0	0	1	1	1
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	1	1	0
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOILED PERI GENITALIA	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	2	2	2	1	1	1	1	1	1	1
	8000 ppm	0	0	0	0	3	3	4	4	4	4	4	4	1	1
	16000 ppm	0	2	4	5	5	6	7	7	7	7	7	6	5	6
DEFECT OF TEETH	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	1	1	1	3	3	3	3
	8000 ppm	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	16000 ppm	0	0	0	0	0	0	0	2	2	2	2	2	2	2
LOOSE STOOL	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Clinical sign	Group Name	Administration Week-day 2-7 1
LOSS OF HAIR	Control	1
	1000 ppm	0
	2000 ppm	0
	4000 ppm	0
	8000 ppm	2
	16000 ppm	1
SOILED PERI GENITALIA	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	2
	8000 ppm	3
	16000 ppm	6
DEFECT OF TEETH	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	3
	8000 ppm	1
	16000 ppm	2
LOOSE STOOL	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	0
	8000 ppm	0
	16000 ppm	0

APPENDIX A 1-3

CLINICAL OBSERVATION : SUMMARY, MOSUE : MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 2

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 0-0	1-1	1-2	1-3	1-4	1-5	1-6	1-7	2-1	2-2	2-3	2-4	2-5	2-6
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
SOILED	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	1	1	1
PILOERECTION	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	4000 ppm	0	0	0	0	0	0	0	0	0	0	1	1	1	1
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	16000 ppm	0	0	0	1	2	2	2	2	2	2	2	2	2	3
LOSS OF HAIR	Control	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	1000 ppm	0	1	1	1	1	1	1	1	1	1	1	2	2	2
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	1	1	1	1	1	1	1	1	2	2
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEFECT OF TEETH	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 2

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 2-7 1
SOILED	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	0
	8000 ppm	0
	16000 ppm	1
PILOERECTION	Control	0
	1000 ppm	0
	2000 ppm	1
	4000 ppm	1
	8000 ppm	1
	16000 ppm	4
LOSS OF HAIR	Control	2
	1000 ppm	2
	2000 ppm	0
	4000 ppm	0
	8000 ppm	2
	16000 ppm	0
DEFECT OF TEETH	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	1
	8000 ppm	0
	16000 ppm	0

APPENDIX A 1-4

CLINICAL OBSERVATION : SUMMARY, MOSUE: FEMALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 2

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day 0-0	1-1	1-2	1-3	1-4	1-5	1-6	1-7	2-1	2-2	2-3	2-4	2-5	2-6
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
PILOERECTION	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	0	0	0	0	1	1	1	0	0	0	0	1
LOSS OF HAIR	Control	0	0	0	0	0	0	1	1	1	1	1	1	1	3
	1000 ppm	0	0	0	0	0	0	0	0	1	1	2	2	2	2
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DEFECT OF TEETH	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	4000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8000 ppm	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	16000 ppm	0	0	0	0	1	1	1	1	1	0	0	0	0	1

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 2

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day 2-7 1
PILOERECTION	Control	0
	1000 ppm	0
	2000 ppm	0
	4000 ppm	0
	8000 ppm	0
	16000 ppm	1
LOSS OF HAIR	Control	3
	1000 ppm	2
	2000 ppm	1
	4000 ppm	1
	8000 ppm	0
	16000 ppm	0
DEFECT OF TEETH	Control	0
	1000 ppm	0
	2000 ppm	1
	4000 ppm	0
	8000 ppm	0
	16000 ppm	0

APPENDIX A 2-1

BODY WEIGHT CHANGES :SUMMARY, RAT : MALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 2
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-2	1-4	1-7	2-4	2-7
Control	124± 5	129± 5	134± 6	143± 6	158± 8	178± 9	193± 9
1000 ppm	124± 5	128± 6	133± 6	142± 6	158± 8	178± 10	192± 12
2000 ppm	124± 5	128± 5	131± 5	139± 6	154± 6	173± 7	187± 7
4000 ppm	123± 5	126± 5	130± 5	138± 5	152± 5	171± 7	184± 7
8000 ppm	123± 4	124± 4	126± 4**	134± 5*	148± 6**	165± 8**	177± 8**
16000 ppm	123± 4	118± 4**	117± 5**	122± 6**	134± 6**	149± 7**	158± 8**

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

APPENDIX A 2-2

BODY WEIGHT CHANGES : SUMMARY, RAT : FEMALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 2
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-2	1-4	1-7	2-4	2-7
Control	105± 4	108± 5	110± 6	115± 6	123± 6	132± 6	139± 6
1000 ppm	105± 4	108± 4	110± 4	115± 4	123± 5	132± 5	140± 6
2000 ppm	105± 4	107± 4	109± 5	113± 5	122± 6	131± 5	137± 5
4000 ppm	105± 4	106± 4	108± 3	113± 4	120± 4	129± 4	135± 4
8000 ppm	105± 4	104± 4	105± 4*	110± 4	118± 5	127± 5	133± 5*
16000 ppm	105± 4	100± 4**	99± 4**	102± 4**	111± 4**	121± 4**	125± 4**

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

APPENDIX A 2-3

BODY WEIGHT CHANGES :SUMMARY, MOSUE : MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 2
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-2	1-4	1-7	2-4	2-7
Control	22.9± 1.0	22.7± 1.0	23.0± 1.1	23.3± 1.1	23.7± 1.1	24.0± 1.0	24.4± 1.1
1000 ppm	22.8± 0.8	22.7± 1.0	23.2± 1.0	23.4± 1.3	24.1± 1.2	23.8± 1.1	24.3± 1.2
2000 ppm	22.9± 1.1	22.8± 1.0	23.3± 0.9	23.5± 1.1	23.9± 1.2	24.1± 1.2	24.5± 1.1
4000 ppm	23.0± 1.1	22.7± 1.1	22.8± 1.1	22.9± 1.5	23.1± 1.3	23.3± 1.0	23.7± 1.1
8000 ppm	23.0± 1.1	22.3± 0.8	22.8± 0.8	22.9± 0.9	23.1± 0.8	23.2± 0.9	23.4± 1.2
16000 ppm	22.9± 1.2	20.8± 1.2**	20.6± 1.0**	21.3± 1.3**	21.9± 1.1**	21.8± 1.2**	22.4± 1.1**

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

APPENDIX A 2-4

BODY WEIGHT CHANGES : SUMMARY, MOSUE: FEMALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 2
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-2	1-4	1-7	2-4	2-7
Control	18.6± 0.9	18.2± 0.9	18.4± 1.1	18.3± 1.1	18.7± 1.1	19.0± 1.0	19.9± 1.2
1000 ppm	18.5± 0.9	18.2± 0.8	18.5± 0.8	18.4± 0.8	19.0± 0.7	19.3± 0.7	19.9± 0.9
2000 ppm	18.6± 0.9	18.1± 0.9	18.3± 0.9	18.5± 1.1	18.8± 0.9	18.8± 0.8	19.4± 1.0
4000 ppm	18.6± 0.9	18.0± 0.7	18.4± 0.8	18.7± 0.7	18.8± 0.8	19.1± 0.9	19.6± 0.9
8000 ppm	18.6± 0.9	17.9± 0.8	18.3± 0.9	18.0± 0.6	18.4± 0.9	18.6± 0.9	19.0± 0.9
16000 ppm	18.6± 0.9	16.7± 0.7**	16.7± 0.6**	17.4± 0.6	18.0± 0.5	18.3± 0.5	18.6± 0.7**

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

APPENDIX A 3-1

WATER CONSUMPTION CHANGES : SUMMARY, RAT: MALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 2
SEX : MALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-4(4)	1-7(3)	2-4(4)	2-7(3)
Control	18.7± 0.8	18.7± 1.0	19.5± 1.1	19.8± 0.8
1000 ppm	17.0± 0.8**	17.1± 0.8**	17.9± 0.7**	18.4± 0.9
2000 ppm	15.0± 0.7**	15.2± 0.6**	16.5± 1.0**	16.9± 1.2*
4000 ppm	14.4± 0.9**	14.4± 0.7**	15.5± 1.1**	15.6± 1.0**
8000 ppm	13.0± 0.7**	13.9± 0.5**	14.5± 0.9**	15.5± 3.5**
16000 ppm	9.3± 1.0**	12.5± 0.9**	12.7± 0.9**	12.8± 1.0**

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

APPENDIX A 3-2

WATER CONSUMPTION CHANGES : SUMMARY, RAT: FEMALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 2
SEX : FEMALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-4(4)	1-7(3)	2-4(4)	2-7(3)
Control	17.6± 1.9	17.7± 1.8	18.1± 1.8	18.2± 1.8
1000 ppm	15.4± 0.9	16.0± 1.0*	16.5± 2.0	17.6± 2.7
2000 ppm	13.1± 0.7**	13.3± 1.6**	13.5± 0.7*	13.3± 0.6*
4000 ppm	13.1± 0.6*	13.1± 1.0**	13.2± 0.7**	13.3± 0.8**
8000 ppm	11.2± 0.6**	12.1± 1.0**	12.3± 1.0**	12.1± 1.1**
16000 ppm	8.4± 0.9**	11.1± 1.2**	11.2± 0.9**	10.9± 0.9**

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

APPENDIX A 3-3

WATER CONSUMPTION CHANGES : SUMMARY, MOUSE: MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 2
SEX : MALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-4(4)	1-7(3)	2-4(4)	2-7(3)
Control	4.4± 0.4	4.1± 0.3	4.2± 0.4	4.1± 0.5
1000 ppm	4.6± 0.4	4.3± 0.5	4.4± 0.8	4.2± 0.5
2000 ppm	4.5± 0.7	4.3± 1.4	4.1± 0.9	3.8± 0.7
4000 ppm	3.9± 0.5	3.2± 0.7	2.9± 0.4*	2.7± 0.4**
8000 ppm	3.1± 0.5**	2.6± 0.7**	2.7± 1.4**	2.4± 1.0**
16000 ppm	2.1± 0.3**	2.3± 0.4**	2.2± 0.4**	2.2± 0.6**

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

APPENDIX 3-4

WATER CONSUMPTION CHANGES : SUMMARY, MOUSE: MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 2
SEX : FEMALE

WATER CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-4(4)	1-7(3)	2-4(4)	2-7(3)
Control	4.5± 0.7	4.3± 0.8	4.9± 1.4	5.1± 1.8
1000 ppm	4.1± 0.6	4.3± 0.6	4.3± 0.8	4.4± 0.9
2000 ppm	4.0± 0.5	3.8± 0.3	4.0± 0.7	4.0± 0.7
4000 ppm	3.8± 0.4	3.6± 0.3	3.6± 0.6	3.7± 0.7*
8000 ppm	3.0± 0.6**	2.9± 1.1**	3.1± 1.1**	2.7± 0.7**
16000 ppm	2.1± 0.3**	2.2± 0.3**	2.3± 0.4**	2.3± 0.5**

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

APPENDIX A 4-1

FOOD CONSUMPTION CHANGES : SUMMARY, RAT : MALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 2
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration 1-7(7)	week-day(effective) 2-7(7)
Control	15.1± 0.9	16.2± 1.0
1000 ppm	14.7± 0.7	16.0± 1.0
2000 ppm	14.1± 0.8**	15.7± 0.9
4000 ppm	13.5± 0.6**	14.8± 0.8**
8000 ppm	12.8± 0.6**	14.2± 0.8**
16000 ppm	10.5± 0.3**	11.7± 0.6**

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

APPENDIX A 4-2

FOOD CONSUMPTION CHANGES : SUMMARY, RAT : FEMALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 2
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration 1-7(7)	week-day(effective) 2-7(7)
Control	12.1± 0.6	12.2± 0.7
1000 ppm	11.8± 0.7	12.1± 0.6
2000 ppm	11.3± 0.8*	11.4± 0.5*
4000 ppm	11.0± 0.4**	11.3± 0.5**
8000 ppm	10.3± 0.6**	11.0± 0.7**
16000 ppm	8.9± 0.4**	10.0± 0.6**

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

APPENDIX A 4-3

FOOD CONSUMPTION CHANGES : SUMMARY, MOSUE : MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 2
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)
Control	3.2± 0.2	3.2± 0.2
1000 ppm	3.1± 0.3	3.2± 0.3
2000 ppm	3.1± 0.3	3.1± 0.4
4000 ppm	3.4± 0.2	3.5± 0.2
8000 ppm	3.2± 0.2	3.2± 0.4
16000 ppm	3.0± 0.3	3.3± 0.1

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

APPENDIX A 4-4

FOOD CONSUMPTION CHANGES : SUMMARY, MOSUE : FEMALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 2
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)
Control	3.7± 0.2	3.6± 0.2
1000 ppm	4.0± 0.3	3.7± 0.3
2000 ppm	4.0± 0.3	4.0± 0.4
4000 ppm	3.8± 0.3	3.9± 0.3
8000 ppm	3.8± 0.4	4.0± 0.3
16000 ppm	3.2± 0.2**	3.8± 0.3

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

APPENDIX A 5-1

CHEMICAL INTAKE CHANGES: SUMMARY, RAT : MALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : mg／kg／d a y
REPORT TYPE : A1 2
SEX : MALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2
Control	0.000± 0.000	0.000± 0.000
1000 ppm	108.383± 5.263	96.134± 2.691
2000 ppm	197.418± 8.044	180.796± 9.008
4000 ppm	378.095± 18.191	340.581± 17.663
8000 ppm	752.324± 21.830	701.233±145.550
16000 ppm	1484.931± 73.171	1290.308± 82.568

APPENDIX A 5-2

CHEMICAL INTAKE CHANGES: SUMMARY, RAT : FEMALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
UNIT : mg/kg/d a y
REPORT TYPE : A1 2
SEX : FEMALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2
Control	0.000± 0.000	0.000± 0.000
1000 ppm	130.557± 7.819	125.498± 19.944
2000 ppm	218.648± 25.761	195.101± 10.929
4000 ppm	437.077± 24.471	392.814± 28.131
8000 ppm	820.739± 57.113	728.411± 48.729
16000 ppm	1597.718±136.148	1394.359± 89.570

APPENDIX A 5-3

CHEMICAL INTAKE CHANGES: SUMMARY, MOUSE: MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : mg/kg/day
REPORT TYPE : A1 2
SEX : MALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2
Control	0.000± 0.000	0.000± 0.000
1000 ppm	180.488± 24.085	173.991± 26.454
2000 ppm	361.707±102.826	306.668± 51.148
4000 ppm	560.804±138.807	457.875± 71.188
8000 ppm	901.190±236.110	828.736±335.329
16000 ppm	1708.239±329.162	1588.772±440.428

APPENDIX A 5-4

CHEMICAL INTAKE CHANGES: SUMMARY, MOUSE: FEMALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
UNIT : mg/kg/d a y
REPORT TYPE : A1 2
SEX : FEMALE

CHEMICAL INTAKE CHENGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2
Control	0.000± 0.000	0.000± 0.000
1000 ppm	226.984± 32.558	222.236± 47.892
2000 ppm	408.625± 44.936	415.256± 80.518
4000 ppm	770.960± 80.790	743.930±129.818
8000 ppm	1254.895±508.321	1126.271±278.802
16000 ppm	1934.086±301.489	1957.187±475.822

APPENDIX A 6-1

HEMATOLOGY : SUMMARY, RAT : MALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (2)

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	8.03± 0.23	15.4± 0.3	43.7± 1.3	54.4± 0.7	19.1± 0.4	35.2± 0.9	1161± 38
1000 ppm	10	8.03± 0.42	15.3± 0.5	43.9± 2.5	54.7± 0.6	19.1± 0.5	34.9± 1.1	1101± 56
2000 ppm	10	8.09± 0.32	15.4± 0.4	43.9± 2.0	54.2± 0.7	19.1± 0.4	35.2± 1.1	1062± 45**
4000 ppm	9	8.06± 0.21	15.4± 0.3	43.7± 1.4	54.2± 0.6	19.1± 0.5	35.3± 1.0	1016± 73**
8000 ppm	10	8.09± 0.29	15.3± 0.3	43.6± 1.9	53.8± 0.6	18.9± 0.4	35.1± 1.0	954± 78**
16000 ppm	10	8.26± 0.38	15.5± 0.5	44.2± 2.6	53.4± 0.9*	18.8± 0.3	35.2± 1.0	828± 53**

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

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
Control	10	5.05±	2.38	0±	0	14±	4	0±	0	0±	0	3±	2	82±	4	1±	1
1000 ppm	10	4.59±	1.40	0±	0	12±	5	0±	1	0±	0	2±	1	85±	5	0±	1
2000 ppm	10	4.27±	1.57	0±	0	12±	4	1±	1	0±	0	3±	1	85±	5	0±	1
4000 ppm	9	4.14±	0.87	0±	0	12±	4	0±	1	0±	0	3±	1	84±	4	0±	1
8000 ppm	10	3.82±	1.10	0±	0	12±	3	1±	1**	0±	0	3±	1	83±	3	1±	1
16000 ppm	10	3.27±	0.91	0±	0	12±	3	0±	0	0±	0	3±	1	85±	3	1±	1

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

APPENDIX A 6-2

HEMATOLOGY : SUMMARY, RAT : FEMALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (2)

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	8.32± 0.39	16.3± 0.5	45.2± 1.8	54.3± 0.7	19.6± 0.5	36.1± 0.8	1061± 44
1000 ppm	10	8.31± 0.26	16.3± 0.5	45.1± 1.3	54.2± 0.3	19.6± 0.3	36.2± 0.6	1063± 67
2000 ppm	10	8.30± 0.34	16.3± 0.7	45.1± 1.9	54.2± 0.5	19.7± 0.3	36.2± 0.5	1026± 57
4000 ppm	9	8.27± 0.24	16.2± 0.3	44.6± 1.0	53.9± 0.6	19.6± 0.4	36.4± 0.7	996± 40*
8000 ppm	10	8.34± 0.27	16.3± 0.4	44.9± 1.2	53.8± 0.6	19.5± 0.3	36.2± 0.5	937± 67**
16000 ppm	10	8.38± 0.21	16.2± 0.3	44.8± 1.1	53.4± 0.7**	19.4± 0.4	36.3± 0.6	854± 33**

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

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

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

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
Control	10	5.69±	2.71	0±	0	12±	4	1±	1	0±	0	3±	1	84±	4	1±	1
1000 ppm	10	3.81±	1.17	0±	0	9±	2	1±	1	0±	0	2±	1	88±	3	1±	1
2000 ppm	10	5.40±	2.01	0±	0	12±	4	1±	1	0±	0	3±	1	84±	5	1±	1
4000 ppm	9	3.99±	1.70	0±	0	9±	2	1±	1	0±	0	3±	1	87±	3	0±	1
8000 ppm	10	3.69±	1.01	0±	0	9±	3	1±	1	0±	0	3±	1	87±	2	1±	1
16000 ppm	10	3.21±	0.93*	0±	0	10±	2	2±	1	0±	0	3±	1	86±	3	1±	1

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

APPENDIX A 6-3

HEMATOLOGY : SUMMARY, MOSUE : MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (2)

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	7	11.28± 0.32	16.5± 0.6	50.9± 1.6	45.1± 0.6	14.7± 0.2	32.5± 0.3	1414± 77
1000 ppm	8	11.36± 0.27	16.6± 0.4	51.4± 1.3	45.1± 0.5	14.6± 0.2	32.3± 0.2	1228± 161
2000 ppm	8	11.13± 0.45	16.4± 0.5	50.4± 1.8	45.3± 0.5	14.7± 0.2	32.4± 0.3	1376± 83
4000 ppm	9	11.36± 0.30	16.7± 0.4	51.2± 1.4	45.1± 0.5	14.7± 0.1	32.5± 0.3	1345± 118
8000 ppm	10	11.45± 0.43	16.7± 0.6	51.4± 1.8	44.8± 0.3	14.6± 0.2	32.5± 0.3	1314± 178
16000 ppm	10	11.32± 0.39	16.7± 0.7	51.3± 1.8	45.3± 0.5	14.7± 0.2	32.5± 0.2	1342± 132

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

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Group Name	NO. of Animals	WBC $10^3/\mu\ell$	Differential WBC (%) N-BAND	N-SEG	EOSINO	BASO	MONO	LYMPHO	OTHER
Control	7	3.64± 1.50	0± 1	11± 3	1± 1	0± 0	1± 1	86± 4	0± 0
1000 ppm	8	2.79± 1.93	0± 0	11± 4	1± 1	0± 0	1± 1	86± 5	0± 0
2000 ppm	8	3.48± 1.79	1± 1	9± 3	1± 1	0± 0	1± 1	88± 5	0± 0
4000 ppm	9	3.47± 1.65	0± 1	12± 3	1± 1	0± 0	2± 2	85± 4	0± 0
8000 ppm	10	3.98± 1.82	0± 0	15± 6	1± 1	0± 0	2± 1	82± 6	0± 0
16000 ppm	10	3.26± 1.08	1± 1	17± 7	1± 1	0± 0	1± 1	80± 7	0± 0

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

APPENDIX A 6-4

HEMATOLOGY : SUMMARY, MOSUE : FEMALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (2)

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	10.82± 0.25	16.0± 0.5	48.6± 1.4	44.9± 0.4	14.8± 0.2	33.0± 0.3	1133± 92
1000 ppm	8	10.84± 0.42	16.0± 0.6	48.8± 1.9	44.9± 0.3	14.8± 0.1	32.8± 0.2	1149± 152
2000 ppm	8	10.93± 0.28	16.1± 0.4	49.1± 1.1	44.9± 0.7	14.7± 0.2	32.8± 0.2	1161± 131
4000 ppm	8	10.98± 0.52	16.2± 0.8	49.5± 2.4	45.0± 0.3	14.8± 0.1	32.8± 0.2	1205± 139
8000 ppm	10	10.83± 0.51	16.0± 0.6	48.8± 2.0	45.0± 0.7	14.8± 0.2	32.8± 0.3	1104± 158
16000 ppm	8	11.05± 0.34	16.4± 0.6	49.9± 1.5	45.1± 0.7	14.8± 0.3	32.8± 0.3	1118± 68

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

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

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

Group Name	NO. of Animals	WBC $10^3/\mu\ell$	Differential WBC (%) N-BAND	N-SEG	EOSINO	BASO	MONO	LYMPHO	OTHER
Control	9	3.60± 1.81	0± 1	11± 3	2± 1	0± 0	2± 1	86± 4	0± 0
1000 ppm	8	3.10± 1.46	0± 0	11± 3	1± 1	0± 0	2± 1	86± 3	0± 0
2000 ppm	8	4.06± 2.53	0± 0	11± 5	1± 1	0± 0	1± 1	87± 5	0± 0
4000 ppm	8	3.40± 2.58	0± 0	12± 3	1± 1	0± 0	2± 1	85± 4	0± 1
8000 ppm	10	3.75± 1.74	0± 0	14± 2	1± 1	0± 0	2± 1	83± 4	0± 0
16000 ppm	8	3.40± 1.57	0± 0	12± 4	1± 1	0± 0	2± 1	85± 4	0± 0

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

APPENDIX A 7-1

BIOCHEMISTRY : SUMMARY, RAT : MALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ		ALBUMIN g/dℓ		GLUCOSE mg/dℓ		T-CHOLESTEROL mg/dℓ		GOT IU/ℓ		GPT IU/ℓ		LDH IU/ℓ	
Control	10	6.1±	0.1	3.5±	0.1	204±	11	61±	2	53±	2	17±	2	129±	27
1000 ppm	10	6.0±	0.1	3.5±	0.1	209±	16	59±	4	51±	3	16±	1*	126±	32
2000 ppm	10	6.0±	0.1	3.5±	0.1	209±	16	60±	3	50±	4	16±	1	137±	34
4000 ppm	10	5.9±	0.2**	3.4±	0.1**	203±	16	59±	3	49±	4*	15±	1**	164±	90
8000 ppm	10	5.8±	0.1**	3.4±	0.1**	206±	15	53±	3**	46±	2**	13±	1**	126±	20
16000 ppm	10	5.7±	0.1**	3.3±	0.1**	203±	18	47±	3**	44±	3**	12±	2**	123±	28

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

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	CPK IU/ℓ	UREA NITROGEN mg/dℓ	CREATININE mg/dℓ	SODIUM mEq/ℓ	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ
Control	10	145± 28	15.8± 1.6	0.4± 0.1	139± 1	3.6± 0.2	103± 1	10.8± 0.4
1000 ppm	10	136± 35	16.6± 1.7	0.4± 0.0	139± 1	3.7± 0.2	103± 2	10.6± 0.4
2000 ppm	10	131± 19	17.6± 2.2	0.4± 0.0	139± 1	3.7± 0.2	103± 1	10.7± 0.4
4000 ppm	10	150± 33	17.2± 2.9	0.4± 0.0	138± 1*	3.9± 0.3*	104± 2	10.5± 0.4
8000 ppm	10	133± 18	17.8± 2.0	0.4± 0.0	138± 1**	3.7± 0.3	103± 2	10.4± 0.3
16000 ppm	10	121± 23	17.8± 1.6	0.4± 0.0	138± 1*	3.9± 0.3*	104± 2	10.2± 0.3**

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

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	INORGANIC PHOSPHORUS mg/dℓ
Control	10	8.2± 0.7
1000 ppm	10	7.9± 0.7
2000 ppm	10	7.7± 1.1
4000 ppm	10	7.7± 0.9
8000 ppm	10	7.4± 1.1
16000 ppm	10	7.4± 1.1

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

APPENDIX A 7-2

BIOCHEMISTRY : SUMMARY, RAT : FEMALE

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	TOTAL PROTEIN g／dℓ		ALBUMIN g／dℓ		GLUCOSE mg／dℓ		T-CHOLESTEROL mg／dℓ		GOT IU／ℓ		GPT IU／ℓ		LDH IU／ℓ	
Control	10	5.9±	0.2	3.5±	0.1	192±	11	72±	4	48±	4	13±	1	124±	30
1000 ppm	10	5.9±	0.2	3.5±	0.1	190±	20	70±	3	48±	2	13±	1	127±	26
2000 ppm	10	5.9±	0.3	3.5±	0.2	198±	14	69±	3	48±	3	13±	2	140±	35
4000 ppm	10	5.8±	0.1	3.4±	0.1	192±	23	66±	4*	46±	4	13±	1	151±	105
8000 ppm	10	5.6±	0.1**	3.4±	0.1	198±	12	64±	4**	45±	3	12±	1	128±	36
16000 ppm	10	5.6±	0.1**	3.3±	0.1*	188±	21	60±	6**	46±	3	12±	1	122±	26

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

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	CPK IU/ℓ	UREA NITROGEN mg/dℓ	CREATININE mg/dℓ	SODIUM mEq/ℓ	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ
Control	10	120± 18	16.9± 1.8	0.4± 0.0	139± 1	3.7± 0.3	105± 1	10.5± 0.4
1000 ppm	10	114± 14	16.5± 2.8	0.4± 0.0	139± 1	3.8± 0.5	105± 3	10.5± 0.3
2000 ppm	10	130± 32	17.5± 2.7	0.4± 0.0	138± 1	3.8± 0.3	106± 1	10.4± 0.6
4000 ppm	10	114± 15	17.6± 2.7	0.4± 0.0	138± 2	3.8± 0.7	105± 2	10.2± 0.2
8000 ppm	10	117± 26	18.0± 2.3	0.4± 0.1	137± 1*	3.7± 0.4	105± 2	10.3± 0.2
16000 ppm	10	108± 11	20.2± 3.3*	0.4± 0.0	137± 1*	3.8± 0.5	106± 2	10.1± 0.2**

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

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	INORGANIC PHOSPHORUS mg/dℓ
Control	10	7.2± 1.1
1000 ppm	10	6.8± 1.4
2000 ppm	10	7.2± 0.9
4000 ppm	10	6.5± 1.6
8000 ppm	10	6.4± 1.4
16000 ppm	10	6.4± 1.0

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

APPENDIX A 7-3

BIOCHEMISTRY : SUMMARY, MOSUE : MALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ	ALBUMIN g/dℓ	GLUCOSE mg/dℓ	T-CHOLESTEROL mg/dℓ	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ
Control	9	5.4± 0.2	2.9± 0.1	308± 15	98± 5	35± 4	12± 2	333± 83
1000 ppm	9	5.3± 0.2	2.9± 0.1	303± 20	91± 4	38± 6	13± 6	384± 94
2000 ppm	8	5.2± 0.2	2.9± 0.1	320± 21	92± 7	34± 6	12± 3	297± 89
4000 ppm	9	5.3± 0.2	2.9± 0.2	306± 10	91± 6	52± 43	17± 9	389± 168
8000 ppm	10	5.3± 0.4	2.9± 0.2	300± 25	89± 16**	37± 4	12± 2	359± 75
16000 ppm	10	5.1± 0.2	2.8± 0.1	299± 20	86± 6**	50± 39	11± 2	420± 242

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

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	CPK IU/ℓ	UREA NITROGEN mg/dℓ	SODIUM mEq/ℓ	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
Control	9	85± 32	25.1± 5.9	152± 3	5.4± 0.7	122± 3	9.6± 0.4	8.7± 0.8
1000 ppm	9	92± 47	24.9± 4.7	152± 3	5.1± 0.5	122± 3	9.5± 0.4	8.9± 1.0
2000 ppm	8	65± 26	23.8± 6.1	152± 2	5.2± 0.6	120± 2	9.2± 0.5	8.7± 0.7
4000 ppm	9	68± 24	20.3± 4.2	152± 3	5.4± 0.5	121± 2	9.2± 0.6	9.2± 1.2
8000 ppm	10	55± 16	24.3± 6.8	152± 3	5.1± 0.5	121± 2	9.2± 0.4	7.6± 0.9*
16000 ppm	10	63± 49	26.6± 5.6	152± 2	4.9± 0.2	120± 4	8.9± 0.4**	8.2± 0.6

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

APPENDIX A 7-4

BIOCHEMISTRY : SUMMARY, MOSUE : FEMALE

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ	ALBUMIN g/dℓ	GLUCOSE mg/dℓ	T-CHOLESTEROL mg/dℓ	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ
Control	9	5.0± 0.1	3.0± 0.1	279± 13	77± 5	39± 3	11± 3	369± 117
1000 ppm	8	5.1± 0.2	3.1± 0.1	274± 24	79± 7	42± 5	13± 3	415± 121
2000 ppm	9	5.2± 0.2	3.1± 0.1	277± 13	79± 4	43± 6	12± 3	432± 148
4000 ppm	10	5.2± 0.3	3.1± 0.2	282± 18	79± 10	40± 5	11± 2	371± 122
8000 ppm	9	5.0± 0.2	3.0± 0.1	291± 25	76± 6	45± 11	12± 4	410± 121
16000 ppm	9	4.9± 0.2	3.0± 0.1	270± 33	74± 5	43± 12	9± 2	428± 251

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

(HCL074)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (2)

Group Name	NO. of Animals	CPK IU/ℓ	UREA NITROGEN mg/dℓ	SODIUM mEq/ℓ	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
Control	9	68± 26	21.6± 3.0	150± 2	5.1± 0.7	122± 2	9.1± 0.4	7.2± 1.0
1000 ppm	8	86± 44	22.2± 2.6	150± 2	5.4± 0.7	122± 2	9.2± 0.4	7.8± 0.9
2000 ppm	9	76± 28	20.7± 2.9	152± 2	5.6± 0.3	122± 3	9.3± 0.5	8.3± 1.3
4000 ppm	10	77± 35	17.7± 2.6	151± 2	5.3± 0.8	122± 3	9.2± 0.4	8.1± 1.1
8000 ppm	9	84± 53	18.8± 2.4	151± 3	5.3± 0.7	123± 3	9.1± 0.4	7.7± 1.1
16000 ppm	9	65± 35	23.5± 5.4	151± 3	5.3± 0.6	122± 2	8.9± 0.4	7.7± 1.1

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

APPENDIX A 8-1

GROSS FINDINGS : SUMMARY, RAT : MALE :SACRIFICED ANIMALS

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	1000 ppm 10 (%)	2000 ppm 10 (%)	4000 ppm 10 (%)
tooth	absence		0 (0)	0 (0)	0 (0)	0 (0)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name	8000 ppm	16000 ppm
		NO. of Animals	10 (%)	10 (%)
tooth	absence		1 (10)	2 (20)

APPENDIX A 8-2

GROSS FINDINGS : SUMMARY, RAT : FEMALE : SACRIFICED ANIMALS

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	1000 ppm 10 (%)	2000 ppm 10 (%)	4000 ppm 10 (%)
thymus	red zone		0 (0)	0 (0)	0 (0)	0 (0)
tooth	absence		0 (0)	0 (0)	0 (0)	3 (30)
liver	herniation		0 (0)	0 (0)	0 (0)	0 (0)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name NO. of Animals	8000 ppm 10 (%)	16000 ppm 10 (%)
thymus	red zone		0 (0)	1 (10)
tooth	absence		1 (10)	2 (20)
liver	herniation		0 (0)	1 (10)

APPENDIX A 8-3

GROSS FINDINGS : SUMMARY, MOUSE : MALE : SACRIFICED ANIMALS

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	1000 ppm 10 (%)	2000 ppm 10 (%)	4000 ppm 10 (%)
spleen	black zone		2 (20)	0 (0)	0 (0)	1 (10)
tooth	white		0 (0)	0 (0)	0 (0)	1 (10)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name NO. of Animals	8000 ppm 10 (%)	16000 ppm 10 (%)
spleen	black zone		0 (0)	1 (10)
tooth	white		0 (0)	0 (0)

APPENDIX A 8-4

GROSS FINDINGS : SUMMARY, MOUSE : FEMALE : SACRIFICED ANIMALS

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	1000 ppm 10 (%)	2000 ppm 10 (%)	4000 ppm 10 (%)
spleen	black zone		0 (0)	1 (10)	1 (10)	0 (0)
uterus	dilated lumen		1 (10)	0 (0)	0 (0)	0 (0)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name NO. of Animals	8000 ppm 10 (%)	16000 ppm 10 (%)
spleen	black zone		1 (10)	0 (0)
uterus	dilated lumen		0 (0)	0 (0)

APPENDIX A 9-1

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : SACRIFICED ANIMALS

(2Week STUDY)

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name	Control				1000 ppm				2000 ppm				4000 ppm			
		No. of Animals	2				2				2				2			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (50)	0 (0)	0 (0)	0 (0)	1 (50)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0093
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name	8000 ppm				16000 ppm			
		No. of Animals	2				2			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]										
kidney	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

APPENDIX A 9-2

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOUSE: MALE : SACRIFICED ANIMALS

(2Week STUDY)

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name	Control				1000 ppm				2000 ppm				4000 ppm			
		No. of Animals	2				2				2				2			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	granulation		1 (50)	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>:Slight <2>:Moderate <3>:Marked <4>:Severe

STUDY NO. : 0094
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (2W)

Organ	Findings	Group Name	8000 ppm				16000 ppm			
		No. of Animals	2				2			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]										
liver	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

APPENDIX A 9-3

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOUSE : FEMALE : SACRIFICED ANIMALS

(2Week STUDY)

Organ	Findings	Group Name	Control				1000 ppm				2000 ppm				4000 ppm			
		No. of Animals	2				2				2				2			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
spleen	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	1 (50)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Circulatory system]																		
heart	mineralization		1 (50)	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>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	8000 ppm				16000 ppm			
		No. of Animals	2				2			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]										
spleen	deposit of hemosiderin		1 (50)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Circulatory system]										
heart	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

APPENDIX A 10-1

IDENTITY OF β-CHLOROPROPIONIC ACID

(2Week STUDY)

IDENTITY OF β-CHLOROPROPIONIC ACID(TWO-WEEK STUDIES)

Lot no. FBO 01

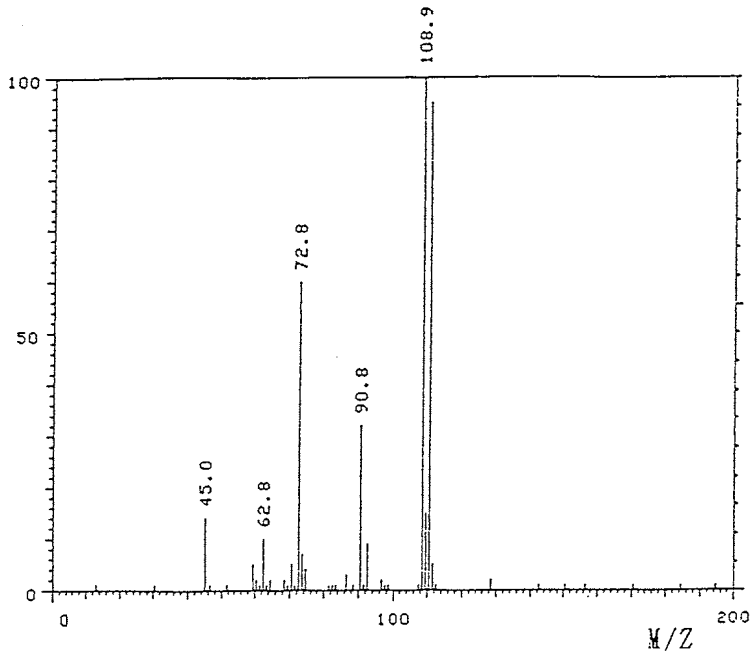
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B

Ionization : CI(Chemical Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Result:

Molecular Weight

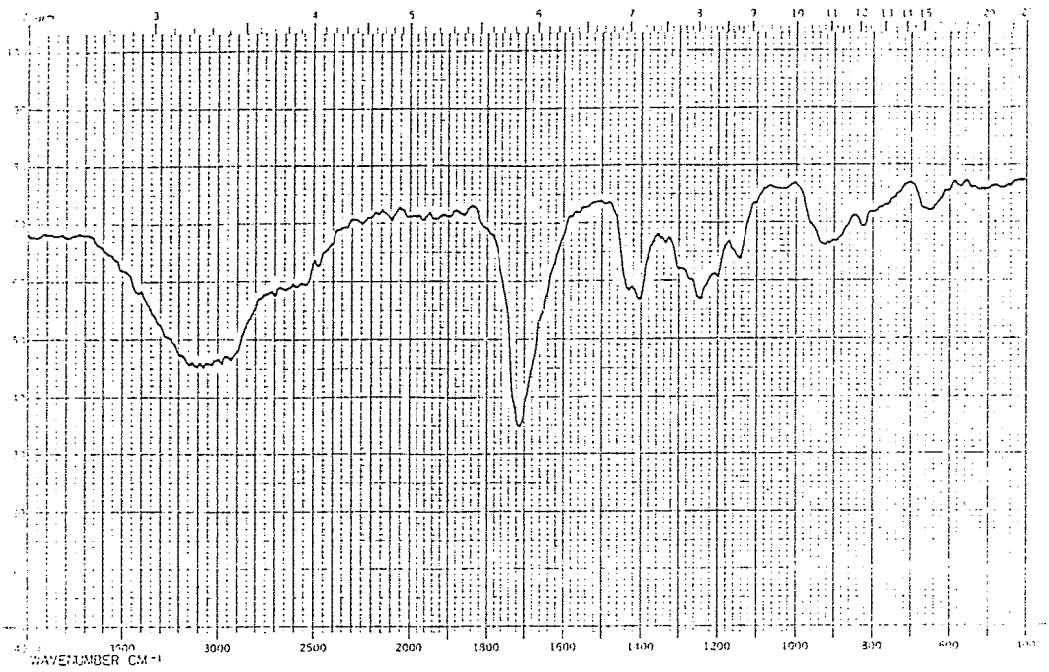
Calculated Value (+H⁺)	109.0
Determined Value	108.9

Infrared Spectrometry

Instrument : Hitachi 270-30

Cell : KBr

Slit : Medium



Infrared Spectrum of Test Substance

Results:	Determined Value Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
	620～ 700	620～ 700
	850～1000	850～1000
	1100～1170	1100～1170
	1180～1320	1180～1320
	1380～1460	1380～1460
	1600～1800	1600～1800
	2800～3400	2800～3400

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

2. Conclusions: The result of the mass spectrum agreed with the calculated value and the infrared spectrum agreed with the literature values. Consequently, the test substance was identified as β-chloropropionic acid.

APPENDIX A 10-2

STABILITY OF β-CHLOROPROPIONIC ACID

(2Week STUDY)

STABILITY OF β-CHLOROPROPIONIC ACID(TWO-WEEK STUDIES)

Lot no. FBO 01

1. Sample: This lot was used from 1987.11.26 to 1987.12.17. Test substance was stored at 5°C.

2. Infrared Spectrometry

Instrument : Hitachi 270-30

Cell : KBr

Slit : Medium

Results: Infrared spectrum of the test substance agreed with before use and after use.

1987.11.11(date analyzed) Wave Number(cm^{-1})	1987.12.18(date analyzed) Wave Number(cm^{-1})
620～ 700	620～ 700
850～1000	850～1000
1100～1170	1100～1170
1180～1320	1180～1320
1380～1460	1380～1460
1600～1800	1600～1800
2800～3400	2800～3400

3. Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: FALM(2mmφ × 2m)

Column Temperature: 160°C

Flow Rate: 28 ml/min

Detector: FID(Flame Ionization)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No.5) and four impurities(peak No.1,2,3,4 < 7% of total area) analyzed at 1987.11.11 and one major peak(peak No.4) and three impurities(peak No.1,2,3 < 4% of total area) analyzed at 1987.12.18. The new treace impurity peak in the test substance analyzed at 1989.12.22 was not detected.

Date	Peak No.	Retention Time(min)	AREA COUNT	(percent of total peak)
1987.11.11	1	0.042	438	0.50
(date analyzed)	2	0.287	2872	3.27
	3	0.808	507	0.58
	4	0.932	2276	2.59
	5	4.313	81690	93.06
1987.12.18	1	0.04	421	0.50
(date analyzed)	2	0.798	144	0.17
	3	0.933	2603	3.09
	4	4.302	80937	96.23

4. Conclusions: The results indicated that the test substance did not change when stored in the dark at 5°C during this period(for about 5 weeks).

APPENDIX A 10-3

CONCENTRATION OF β-CHLOROPROPIONIC ACID IN DRINKING WATER

(2Week STUDY)

CONCENTRATION OF β-CHLOROPROPIONIC ACID IN DRINKING WATER(TWO-WEEK STUDIES)

(Rat)

	Target Concentration(ppm)				
Date analyzed	1000	2000	4000	8000	16000
1987.11.27	982.0(98.2)*	2016.0(100.8)	4123.0(103.1)	7879.0(98.5)	16391.0(102.4)

(Mouse)

	Target Concentration(ppm)				
Date analyzed	1000	2000	4000	8000	16000
1987.12.10	1039.7(104.0)*	2133.8(106.7)	4066.9(101.7)	8198.1(102.5)	16572.0(103.6)

(*) % of target concentration

Analytical method: The sample were analyzed by the HPLC.

Instrument	: Hewlett Packard 5890A	Flow Rate	: 1ml/min
Column	: ULTRON PS-80H(8mmφ × 30cm)	Detector	: UV(205nm)
Column Temperature	: 55℃	Internal Standard	: Citric acid
Carrier	: Water(pH 2.3 phosphate buffer)	Injection Volume	: 10μl

APPENDIX A 10-4

STABILITY OF β-CHLOROPROPIONIC ACID IN DRINKING WATER

(2Week STUDY)

STABILITY OF β-CHLOROPROPIONIC ACID IN DRINKING WATER(TWO-WEEK STUDIES)

(Rat)

	Target Concentration(ppm)				
Date analyzed	1000	2000	4000	8000	16000
1987.11.27(a)	982.0	2016.0	4123.0	7879.0	16391.0
1987.11.30(b)	1014.6	1971.6	4007.6	8020.9	15676.6

(Mouse)

	Target Concentration(ppm)				
Date analyzed	1000	2000	4000	8000	16000
1987.12.10(a)	1039.7	2133.8	4066.9	8198.1	16572.0
1987.12.14(b)	1029.4	1982.6	3960.2	7963.8	16087.0

(a) Date of preparation
(b) The stability of β-Chloropropionic acid in drinking water was established for 4 days when stored at 25℃.

Analytical method: The sample were analyzed by the HPLC.

Instrument	: Hewlett Packard 5890A	Flow Rate	: 1ml/min
Column	: ULTRON PS-80H(8mmφ×30cm)	Detector	: UV(205nm)
Column Temperature	: 55℃	Internal Standard	: Citric acid
Carrier	: Water(pH 2.3 phosphate buffer)	Injection Volume	: 10μl