アクリル酸=2 - ヒドロキシエチルのラットを用いた
経口投与による 13 週間毒性試験(混水試験)報告書

試験番号：０３２３

TABLES

TABLES

TABLE 1 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control		250 ppm			500 ppm			1000 ppm			2000 ppm			4000 ppm		
	<10>		<10>			<10>			<10>			<10>			<10>		
Week on Study	Survival No.	BW g	Survival No.	BW g	%	Survival No.	BW g	%	Survival No.	BW g	%	Survival No.	BW g	%	Survival No.	BW g	%
0	10	124 (10)	10	124 (10)	100	10	124 (10)	100	10	124 (10)	100	10	124 (10)	100	10	124 (10)	100
1	10	154 (10)	10	154 (10)	100	10	153 (10)	99	10	150 (10)	97	10	144 (10)	94 **	10	112 (10)	73 **
2	10	188 (10)	10	186 (10)	99	10	184 (10)	98	10	181 (10)	96	10	170 (10)	90 **	10	131 (10)	70 **
3	10	212 (10)	10	208 (10)	98	10	206 (10)	97	10	204 (10)	96	10	192 (10)	91 **	10	156 (10)	74 **
4	10	230 (10)	10	226 (10)	98	10	224 (10)	97	10	221 (10)	96	10	207 (10)	90 **	10	171 (10)	74 **
5	10	244 (10)	10	240 (10)	98	10	239 (10)	98	10	235 (10)	96	10	221 (10)	91 **	10	182 (10)	75 **
6	10	255 (10)	10	252 (10)	99	10	251 (10)	98	10	248 (10)	97	10	231 (10)	91 **	10	189 (10)	74 **
7	10	268 (10)	10	262 (10)	98	10	261 (10)	97	10	257 (10)	96	10	240 (10)	90 **	10	196 (10)	73 **
8	10	278 (10)	10	272 (10)	98	10	271 (10)	97	10	266 (10)	96	10	247 (10)	89 **	10	202 (10)	73 **
9	10	287 (10)	10	279 (10)	97	10	278 (10)	97	10	274 (10)	95 *	10	252 (10)	88 **	10	211 (10)	74 **
10	10	296 (10)	10	286 (10)	97	10	286 (10)	97	10	281 (10)	95 *	10	258 (10)	87 **	10	217 (10)	73 **
11	10	302 (10)	10	293 (10)	97	10	293 (10)	97	10	288 (10)	95 *	10	266 (10)	88 **	10	226 (10)	75 **
12	10	308 (10)	10	300 (10)	97	10	299 (10)	97	10	294 (10)	95 *	10	271 (10)	88 **	10	230 (10)	75 **
13	10	312 (10)	10	303 (10)	97	10	303 (10)	97	10	298 (10)	96	10	276 (10)	88 **	10	235 (10)	75 **

< > : No.of effective animals, ( ) : No.of measured animals, % : Percent of control group
Significant difference, * : $p \leqq 0.05$, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 2 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control		250 ppm			500 ppm			1000 ppm			2000 ppm			4000 ppm		
	<10>		<10>			<10>			<10>			<10>			<10>		
Week on Study	Survival No.	BW g	Survival No.	BW g	%	Survival No.	BW g	%	Survival No.	BW g	%	Survival No.	BW g	%	Survival No.	BW g	%
0	10	98 (10)	10	98 (10)	100	10	98 (10)	100	10	98 (10)	100	10	98 (10)	100	10	98 (10)	100
1	10	113 (10)	10	111 (10)	98	10	111 (10)	98	10	110 (10)	97	10	105 (10)	93 **	10	85 (10)	75 **
2	10	129 (10)	10	126 (10)	98	10	125 (10)	97	10	124 (10)	96	10	119 (10)	92 **	10	99 (10)	77 **
3	10	135 (10)	10	134 (10)	99	10	127 (10)	94 **	10	128 (10)	95 *	10	128 (10)	95 **	10	111 (10)	82 **
4	10	144 (10)	10	141 (10)	98	10	141 (10)	98	10	139 (10)	97	10	134 (10)	93 **	10	119 (10)	83 **
5	10	151 (10)	10	146 (10)	97	10	144 (10)	95 *	10	145 (10)	96	10	139 (10)	92 **	10	123 (10)	81 **
6	10	154 (10)	10	150 (10)	97	10	150 (10)	97	10	148 (10)	96	10	144 (10)	94 *	10	127 (10)	82 **
7	10	161 (10)	10	154 (10)	96 *	10	156 (10)	97	10	152 (10)	94 **	10	148 (10)	92 **	10	131 (10)	81 **
8	10	165 (10)	10	157 (10)	95 *	10	158 (10)	96	10	155 (10)	94 **	10	150 (10)	91 **	10	132 (10)	80 **
9	10	169 (10)	10	160 (10)	95	10	162 (10)	96	10	158 (10)	93	10	153 (10)	91 **	10	134 (10)	79 **
10	10	173 (10)	10	164 (10)	95 *	10	166 (10)	96	10	162 (10)	94 **	10	157 (10)	91 **	10	137 (10)	79 **
11	10	177 (10)	10	167 (10)	94 *	10	168 (10)	95 *	10	166 (10)	94 **	10	161 (10)	91 **	10	141 (10)	80 **
12	10	180 (10)	10	171 (10)	95 *	10	171 (10)	95 *	10	168 (10)	93 **	10	164 (10)	91 **	10	143 (10)	79 **
13	10	182 (10)	10	171 (10)	94 **	10	173 (10)	95 *	10	168 (10)	92 **	10	165 (10)	91 **	10	145 (10)	80 **

< > : No.of effective animals, ( ) : No.of measured animals, % : Percent of control group
Significant difference, * : $p \leqq 0.05$, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 3 WATER CONSUMPTION CHANGES OF MALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control	250 ppm		500 ppm		1000 ppm		2000 ppm		4000 ppm	
Week on Study	<10> WC g	<10> WC g	%	<10> WC g	%	<10> WC g	%	<10> WC g	%	<10> WC g	%
1	16.7 (10)	15.1 (10)	90 **	14.4 (10)	86 **	13.3 (10)	80 **	11.6 (10)	69 **	5.8 (10)	35 **
2	18.3 (10)	16.3 (10)	89 **	14.8 (10)	81 **	13.8 (10)	75 **	11.7 (10)	64 **	8.4 (10)	46 **
3	18.6 (10)	16.4 (10)	88 **	15.2 (10)	82 **	14.0 (10)	75 **	12.0 (10)	65 **	9.1 (10)	49 **
4	19.0 (10)	16.3 (10)	86 **	15.5 (10)	82 **	13.9 (10)	73 **	11.5 (10)	61 **	8.7 (10)	46 **
5	18.7 (10)	16.5 (10)	88	15.6 (10)	83	13.8 (10)	74 **	11.9 (10)	64 **	8.8 (10)	47 **
6	18.6 (10)	16.5 (10)	89 **	15.2 (10)	82 **	14.1 (10)	76 **	12.0 (10)	65 **	8.7 (10)	47 **
7	18.7 (10)	16.7 (10)	89 **	16.2 (10)	87 **	14.1 (10)	75 **	11.9 (10)	64 **	9.3 (10)	50 **
8	17.8 (10)	16.2 (10)	91 **	14.9 (10)	84 **	14.0 (10)	79 **	12.0 (10)	67 **	8.9 (10)	50 **
9	18.3 (10)	16.2 (10)	89 **	15.2 (10)	83 **	13.7 (10)	75 **	12.3 (10)	67 **	9.3 (10)	51 **
10	18.5 (10)	15.7 (10)	85	14.9 (10)	81	13.6 (10)	74 **	11.7 (10)	63 **	9.0 (10)	49 **
11	17.7 (10)	15.3 (10)	86 **	14.8 (10)	84 **	13.5 (10)	76 **	12.0 (10)	68 **	9.6 (10)	54 **
12	17.1 (10)	15.1 (10)	88 **	14.3 (10)	84 **	13.3 (10)	78 **	11.4 (10)	67 **	9.1 (10)	53 **
13	17.5 (10)	15.2 (10)	87 **	14.4 (10)	82 **	13.3 (10)	76 **	11.5 (10)	66 **	9.3 (10)	53 **

< > : No.of effective animals, ( ) : No.of measured animals, % : Percent of control group
Significant difference, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 4 WATER CONSUMPTION CHANGES OF FEMALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control	250 ppm		500 ppm		1000 ppm		2000 ppm		4000 ppm	
Week on Study	<10> WC g	<10> WC g	%	<10> WC g	%	<10> WC g	%	<10> WC g	%	<10> WC g	%
1	14.1 (10)	12.6 (10)	89 **	12.1 (10)	86 **	10.5 (10)	74 **	9.1 (10)	65 **	5.6 (10)	40 **
2	15.2 (10)	13.3 (10)	88	13.4 (10)	88	10.5 (10)	69 **	9.8 (10)	64 **	7.5 (10)	49 **
3	18.9 (10)	12.7 (10)	67	12.6 (10)	67	10.7 (10)	57 **	9.5 (10)	50 **	7.2 (10)	38 **
4	17.0 (9)	12.6 (10)	74	14.4 (10)	85	10.1 (10)	59 **	9.3 (10)	55 **	7.0 (10)	41 **
5	16.9 (9)	13.1 (10)	78	11.8 (9)	70	10.6 (10)	63 **	9.8 (10)	58 **	7.1 (10)	42 **
6	16.9 (8)	17.5 (10)	104	12.1 (9)	72	10.2 (10)	60 **	9.7 (10)	57 **	7.2 (10)	43 **
7	20.7 (9)	16.8 (9)	81	16.6 (10)	80	11.0 (10)	53 **	10.5 (10)	51 **	7.4 (10)	36 **
8	19.3 (8)	14.1 (9)	73	17.1 (10)	89	10.5 (10)	54 **	9.8 (10)	51 **	7.0 (10)	36 **
9	19.1 (10)	13.2 (9)	69	15.9 (10)	83	10.4 (10)	54 **	9.9 (10)	52 **	6.9 (10)	36 **
10	16.6 (8)	14.7 (10)	89	16.1 (9)	97	10.7 (10)	64 *	9.4 (10)	57 **	7.0 (10)	42 **
11	18.1 (9)	12.6 (8)	70	15.8 (9)	87	11.2 (10)	62 *	9.4 (10)	52 **	7.5 (10)	41 **
12	16.0 (9)	12.9 (8)	81	14.7 (10)	92	11.0 (10)	69 *	9.1 (10)	57 **	6.9 (10)	43 **
13	18.1 (9)	16.1 (10)	89	14.5 (10)	80	9.9 (10)	55 *	9.2 (10)	51 **	7.1 (10)	39 **

< > : No.of effective animals, ( ) : No.of measured animals, % : Percent of control group
Significant difference, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 5 FOOD CONSUMPTION CHANGES OF MALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control	250 ppm		500 ppm		1000 ppm		2000 ppm		4000 ppm	
Week on Study	<10> FC g	<10> FC g	%	<10> FC g	%	<10> FC g	%	<10> FC g	%	<10> FC g	%
1	14.3 (10)	13.5 (10)	94	14.1 (10)	99	13.5 (10)	94	12.2 (10)	85 **	7.7 (10)	54 **
2	16.1 (10)	15.5 (10)	96	15.3 (10)	95	14.9 (10)	93 **	13.9 (10)	86 **	10.1 (10)	63 **
3	16.4 (10)	15.8 (10)	96	15.6 (10)	95	15.7 (10)	96	14.4 (10)	88 **	12.3 (10)	75 **
4	16.2 (10)	15.3 (10)	94 *	15.5 (10)	96	15.5 (10)	96	14.2 (10)	88 **	12.2 (10)	75 **
5	15.8 (10)	15.3 (10)	97	15.6 (10)	99	15.2 (10)	96	14.2 (10)	90 **	12.2 (10)	77 **
6	15.6 (10)	14.9 (10)	96	15.0 (10)	96	15.3 (10)	98	13.9 (10)	89 **	11.4 (10)	73 **
7	15.6 (10)	14.7 (10)	94	14.9 (10)	96	14.6 (10)	94 *	13.7 (10)	88 **	11.3 (10)	72 **
8	15.5 (10)	14.6 (10)	94	14.6 (10)	94	14.5 (10)	94 *	13.3 (10)	86 **	11.6 (10)	75 **
9	15.7 (10)	14.8 (10)	94	14.8 (10)	94	14.7 (10)	94 *	13.4 (10)	85 **	11.8 (10)	75 **
10	15.3 (10)	14.3 (10)	93 *	14.6 (10)	95	14.3 (10)	93 *	13.3 (10)	87 **	11.9 (10)	78 **
11	15.5 (10)	14.5 (10)	94 *	14.8 (10)	95	14.7 (10)	95	13.9 (10)	90 **	12.7 (10)	82 **
12	15.4 (10)	14.2 (10)	92 **	14.4 (10)	94 *	14.6 (10)	95	13.6 (10)	88 **	12.3 (10)	80 **
13	15.2 (10)	14.6 (10)	96	14.8 (10)	97	14.7 (10)	97	13.7 (10)	90 **	12.8 (10)	84 **

< > : No.of effective animals, ( ) : No.of measured animals, % : Percent of control group
Significant difference, * : $p \leqq 0.05$, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 6 FOOD CONSUMPTION CHANGES OF FEMALE RATS
IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control	250 ppm		500 ppm		1000 ppm		2000 ppm		4000 ppm	
Week on Study	<10> FC g	<10> FC g	%	<10> FC g	%	<10> FC g	%	<10> FC g	%	<10> FC g	%
1	10.9 (10)	10.5 (10)	96	10.5 (10)	96	10.1 (10)	93 **	9.1 (10)	83 **	6.0 (10)	55 **
2	11.2 (10)	10.7 (10)	96	10.7 (10)	96	10.3 (10)	92 **	10.1 (10)	90 **	8.6 (10)	77 **
3	10.9 (10)	10.7 (10)	98	10.7 (10)	98	10.3 (10)	94	10.2 (10)	94	9.3 (10)	85 **
4	11.0 (10)	10.4 (10)	95	10.6 (10)	96	10.2 (10)	93 **	9.9 (10)	90 **	9.0 (10)	82 **
5	11.0 (10)	10.4 (10)	95	10.3 (10)	94 *	10.3 (10)	94 *	10.1 (10)	92 **	8.9 (10)	81 **
6	10.9 (10)	10.0 (10)	92	10.3 (10)	94	9.8 (10)	90 *	9.8 (10)	90 **	8.7 (10)	80 **
7	11.1 (10)	10.1 (10)	91 **	10.4 (10)	94	9.7 (10)	87 **	9.7 (10)	87 **	8.4 (10)	76 **
8	11.0 (10)	10.3 (10)	94	10.1 (10)	92	9.7 (10)	88 *	9.4 (10)	85 **	8.3 (10)	75 **
9	11.1 (10)	10.1 (10)	91 **	10.3 (10)	93 *	9.5 (10)	86 **	9.5 (10)	86 **	8.4 (10)	76 **
10	10.7 (10)	10.0 (10)	93 *	10.1 (10)	94	9.6 (10)	90 **	9.3 (10)	87 **	8.5 (10)	79 **
11	11.1 (10)	10.3 (10)	93 *	10.4 (10)	94 *	9.8 (10)	88 **	9.7 (10)	87 **	8.7 (10)	78 **
12	10.9 (10)	10.4 (10)	95	10.2 (10)	94	9.6 (10)	88 **	9.5 (10)	87 **	8.7 (10)	80 **
13	11.1 (10)	10.3 (10)	93 **	10.3 (10)	93 **	9.7 (10)	87 **	9.8 (10)	88 **	8.9 (10)	80 **

< > : No.of effective animals, ( ) : No.of measured animals, % : Percent of control group
Significant difference, * : $p \leqq 0.05$, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 7 HEMATOLOGY OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE (SELECTED)

Group	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined	<10>	<10>	<10>	<10>	<10>	<10>
Red blood cell ($10^6/\mu$ L)	8.98 ± 0.18	8.92 ± 0.20	8.75 ± 0.40	8.77 ± 0.21	8.49 ± 0.30 **	8.58 ± 0.25 **
Hemoglobin (g/dL)	15.7 ± 0.3	15.8 ± 0.3	15.5 ± 0.3	15.6 ± 0.3	15.2 ± 0.4 **	15.5 ± 0.2
Hematocrit (%)	44.2 ± 0.9	44.2 ± 1.3	43.6 ± 2.1	43.9 ± 1.3	42.9 ± 1.6	43.8 ± 1.6
MCV (fL)	49.2 ± 0.3	49.6 ± 0.7	49.8 ± 1.0	50.0 ± 0.8	50.6 ± 0.7 **	51.1 ± 0.8 **
MCH (pg)	17.5 ± 0.2	17.7 ± 0.5	17.8 ± 0.8	17.8 ± 0.5	17.9 ± 0.3 *	18.1 ± 0.4 **
MCHC (g/dL)	35.6 ± 0.5	35.8 ± 1.0	35.6 ± 1.4	35.6 ± 1.1	35.3 ± 0.7	35.3 ± 1.0
Reticulocyte (‰)	31 ± 6	27 ± 8	25 ± 5	30 ± 8	29 ± 6	35 ± 6
Platelet ($10^3/\mu$ L)	664 ± 36	647 ± 58	643 ± 50	645 ± 30	672 ± 62	692 ± 51
WBC ($10^3/\mu$ L)	3.68 ± 0.86	3.83 ± 1.02	3.39 ± 0.98	3.66 ± 1.07	3.42 ± 1.11	3.51 ± 0.70
Prothrombin time (sec)	15.0 ± 3.2	15.6 ± 1.5	13.8 ± 0.8	13.0 ± 1.0	12.9 ± 1.2 a)	12.5 ± 0.3 *

Data represent means ± S.D.

a) : Number of examined animals was 9.

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

TABLE 8 HEMATOLOGY OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE (SELECTED)

Group	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined	<10>	<10>	<10>	<10>	<10>	<9>
Red blood cell ($10^6/\mu$ L)	8.02 ± 0.41	8.26 ± 0.26	8.10 ± 0.30	8.04 ± 0.40	7.78 ± 0.30	8.06 ± 0.27
Hemoglobin (g/dL)	15.4 ± 0.4	15.6 ± 0.5	15.5 ± 0.5	15.6 ± 0.3	15.4 ± 0.3	15.5 ± 0.4
Hematocrit (%)	41.9 ± 2.2	43.3 ± 1.9	42.7 ± 1.7	42.6 ± 2.1	41.9 ± 1.8	43.1 ± 2.1
MCV (fL)	52.2 ± 0.8	52.5 ± 1.0	52.8 ± 0.6	53.0 ± 0.6	53.8 ± 0.9 **	53.3 ± 1.0 *
MCH (pg)	19.3 ± 1.0	18.9 ± 0.2	19.1 ± 0.4	19.5 ± 0.9	19.8 ± 0.7 *	19.3 ± 0.3
MCHC (g/dL)	36.9 ± 1.7	36.1 ± 0.8	36.2 ± 0.6	36.7 ± 1.7	36.7 ± 1.3	36.1 ± 1.1
Reticulocyte (‰)	26 ± 5	23 ± 5	27 ± 5	23 ± 4	31 ± 3	34 ± 9 **
Platelet ($10^3/\mu$ L)	681 ± 80	710 ± 55	671 ± 73	697 ± 46	678 ± 68	728 ± 82
WBC ($10^3/\mu$ L)	1.93 ± 0.57	1.89 ± 0.61	2.07 ± 1.01	2.07 ± 0.56	2.24 ± 0.71	2.87 ± 1.11
Prothrombin time (sec)	12.1 ± 0.5 [a)]	12.2 ± 0.6	12.0 ± 0.4	12.2 ± 0.3	12.1 ± 0.3	12.0 ± 0.5

Data represent means ± S.D.

[a)] : Number of examined animals was 9.

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

TABLE 9 BIOCHEMISTRY OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined	<10>	<10>	<10>	<10>	<10>	<10>
Total protein (g/dL)	6.3 ± 0.1	6.3 ± 0.1	6.3 ± 0.2	6.4 ± 0.1	6.2 ± 0.2	6.0 ± 0.2 **
Albumin (g/dL)	3.9 ± 0.1	3.9 ± 0.1	3.9 ± 0.1	4.0 ± 0.1	3.9 ± 0.1	3.8 ± 0.1
A/G ratio	1.6 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	1.7 ± 0.1	1.7 ± 0.1 **	1.7 ± 0.1 **
T-Bilirubin (mg/dL)	0.13 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.14 ± 0.01	0.16 ± 0.01 **
Glucose (mg/dL)	188 ± 10	184 ± 6	179 ± 10	180 ± 15	172 ± 9 **	172 ± 11 **
T-Cholesterol (mg/dL)	61 ± 7	62 ± 4	67 ± 4	70 ± 5 *	72 ± 3 **	79 ± 8 **
Triglyceride (mg/dL)	56 ± 19	59 ± 16	54 ± 23	59 ± 16	43 ± 14	64 ± 10
Phospholipid (mg/dL)	110 ± 10	115 ± 4	119 ± 7	125 ± 9 *	126 ± 7 **	145 ± 16 **
GOT (IU/L)	94 ± 18	100 ± 26	119 ± 37	101 ± 44	99 ± 26	103 ± 32
GPT (IU/L)	53 ± 9	53 ± 9	62 ± 16	54 ± 18	54 ± 13	62 ± 21
LDH (IU/L)	203 ± 36	218 ± 70	256 ± 78	231 ± 85	233 ± 46	222 ± 42
ALP (IU/L)	268 ± 15	267 ± 16	259 ± 19	260 ± 16	253 ± 23	263 ± 24
γ -GTP (IU/L)	3 ± 5	2 ± 1	1 ± 1	2 ± 1	6 ± 15	3 ± 2
CPK (IU/L)	110 ± 10	111 ± 23	101 ± 11	100 ± 11	116 ± 61	118 ± 20
Urea nitrogen (mg/L)	19.1 ± 1.8	18.6 ± 0.6	19.7 ± 1.2	19.9 ± 1.5	26.1 ± 15.9 *	22.8 ± 3.1 **
Creatinine (mg/dL)	0.6 ± 0.1	0.5 ± 0.0	0.5 ± 0.1	0.5 ± 0.1	0.8 ± 0.8	0.5 ± 0.1
Sodium (mEq/L)	141 ± 1	141 ± 1	140 ± 1	140 ± 1	139 ± 2 **	140 ± 1
Potassium (mEq/L)	3.8 ± 0.3	3.8 ± 0.4	3.9 ± 0.3	3.9 ± 0.4	4.9 ± 2.1 **	4.3 ± 0.3 **
Chloride (mEq/L)	106 ± 1	106 ± 1	105 ± 1	105 ± 1	105 ± 2	105 ± 1
Calcium (mg/dL)	10.2 ± 0.1	10.3 ± 0.1	10.3 ± 0.2	10.4 ± 0.2	10.2 ± 0.1	10.2 ± 0.2
Inorganic phosphorus (mg/dL)	6.1 ± 0.8	6.0 ± 0.7	6.0 ± 0.7	6.0 ± 0.5	7.3 ± 3.1	6.5 ± 0.5

Data represent means ± S.D.
Significant difference, * : $p \leqq 0.05$, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 10 BIOCHEMISTRY OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group	Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined	<10>	<10>	<10>	<10>	<10>	<9>
Total protein (g/dL)	6.2 ± 0.1	6.2 ± 0.2	6.2 ± 0.2	6.1 ± 0.2	6.1 ± 0.1	5.7 ± 0.2 **
Albumin (g/dL)	3.8 ± 0.1	3.9 ± 0.1	3.9 ± 0.1	3.9 ± 0.1	3.9 ± 0.1	3.6 ± 0.1 *
A/G ratio	1.6 ± 0.1	1.6 ± 0.1	1.7 ± 0.1	1.7 ± 0.1 **	1.7 ± 0.0 *	1.7 ± 0.2 **
T-Bilirubin (mg/dL)	0.15 ± 0.01	0.15 ± 0.01	0.15 ± 0.01	0.15 ± 0.01	0.16 ± 0.01	0.17 ± 0.07
Glucose (mg/dL)	146 ± 9	146 ± 12	150 ± 10	150 ± 9	151 ± 12	149 ± 12
T-Cholesterol (mg/dL)	70 ± 5	73 ± 9	76 ± 6	77 ± 5	84 ± 8 **	92 ± 62
Triglyceride (mg/dL)	15 ± 1	16 ± 3	19 ± 5	19 ± 3 *	20 ± 5 *	35 ± 45 **
Phospholipid (mg/dL)	127 ± 10	133 ± 17	137 ± 12	139 ± 8	148 ± 12 **	164 ± 104
GOT (IU/L)	77 ± 15	81 ± 18	73 ± 14	77 ± 17	79 ± 13	93 ± 54
GPT (IU/L)	40 ± 10	43 ± 22	37 ± 12	38 ± 9	39 ± 7	47 ± 30
LDH (IU/L)	270 ± 82	280 ± 55	264 ± 44	263 ± 86	307 ± 111	273 ± 54
ALP (IU/L)	188 ± 9	180 ± 26	174 ± 15	182 ± 18	181 ± 13	258 ± 141
γ -GTP (IU/L)	2 ± 1	3 ± 1	2 ± 1	2 ± 1	3 ± 1	20 ± 47 **
CPK (IU/L)	140 ± 33	131 ± 27	117 ± 17	128 ± 39	137 ± 51	129 ± 26
Urea nitrogen (mg/dL)	19.5 ± 2.2	18.8 ± 1.8	18.6 ± 2.0	20.4 ± 0.8	20.7 ± 1.7	24.4 ± 3.4 **
Creatinine (mg/dL)	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0	0.4 ± 0.1 **
Sodium (mEq/L)	141 ± 1	140 ± 1	140 ± 1	139 ± 1 *	138 ± 1 **	138 ± 1 **
Potassium (mEq/L)	3.8 ± 0.4	3.8 ± 0.3	3.9 ± 0.4	4.1 ± 0.5	4.1 ± 0.5	4.1 ± 0.4
Chloride (mEq/L)	108 ± 2	107 ± 2	108 ± 2	106 ± 2	106 ± 1	106 ± 1
Calcium (mg/dL)	9.9 ± 0.2	9.9 ± 0.2	9.9 ± 0.2	10.0 ± 0.1	9.9 ± 0.2	9.7 ± 0.3
Inorganic phosphorus (mg/dL)	5.1 ± 1.3	5.3 ± 1.2	5.5 ± 1.1	5.3 ± 1.0	5.6 ± 0.9	5.9 ± 0.5

Data represent means ± S.D.
Significant difference, * : $p \leqq 0.05$, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 11 URINALYSIS OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE (SELECTED)

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined		<10>	<10>	<10>	<10>	<10>	<10>
pH	6.0	0	0	0	0	0	0
	6.5	0	0	0	0	0	0
	7.0	0	0	0	0	0	0
	7.5	0	0	0	0	1	0
	8.0	4	8	5	7	6	6
	8.5	6	2	5	3	3	4
	(Grade)						
Protein	−	0	0	0	0	0	0 **
	±	0	0	0	0	0	0
	+	5	2	4	1	1	0
	2+	5	8	6	9	9	10
	3+	0	0	0	0	0	0
Ketone body	−	0	0	0	0	0	0
	±	4	2	3	1	2	2
	+	3	8	6	8	6	7
	2+	3	0	1	1	2	1

Significant difference : ** : $p \leqq 0.01$ Chi square test

TABLE 12 URINALYSIS OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE (SELECTED)

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined		<10>	<10>	<10>	<10>	<10>	<10>
pH	6.0	0	0	0	0	0	0
	6.5	0	0	0	0	0	0
	7.0	0	1	0	0	2	0
	7.5	2	0	0	1	1	2
	8.0	5	5	3	5	4	6
	8.5	3	4	7	4	3	2
	(Grade)						
Protein	−	0	0	0	0	0 *	0 *
	±	4	1	1	1	0	0
	+	6	8	8	8	8	5
	2+	0	1	1	1	2	5
	3+	0	0	0	0	0	0
Ketone body	−	10	9	10	10	9	7
	±	0	1	0	0	1	3
	+	0	0	0	0	0	0
	2+	0	0	0	0	0	0

Significant difference : * : $p \leqq 0.05$ Chi square test

TABLE 13 ORGAN WEIGHTS OF MALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined		<10>	<10>	<10>	<10>	<10>	<10>
Liver	(g)	7.195 ± 0.571	7.102 ± 0.472	7.150 ± 0.393	7.316 ± 0.257	7.062 ± 0.356	6.479 ± 0.577 **
	(%)	2.483 ± 0.095	2.503 ± 0.073	2.520 ± 0.088	2.607 ± 0.082 *	2.723 ± 0.088 **	2.921 ± 0.136 **
Kidney	(g)	1.801 ± 0.067	1.823 ± 0.094	1.873 ± 0.107	1.883 ± 0.080	1.861 ± 0.104	1.750 ± 0.096
	(%)	0.623 ± 0.015	0.643 ± 0.022	0.660 ± 0.023 **	0.671 ± 0.020 **	0.717 ± 0.026 **	0.791 ± 0.029 **
Thymus	(g)	0.218 ± 0.019	0.213 ± 0.022	0.216 ± 0.022	0.218 ± 0.019	0.177 ± 0.024 **	0.162 ± 0.028 **
	(%)	0.075 ± 0.006	0.075 ± 0.007	0.076 ± 0.008	0.078 ± 0.006	0.068 ± 0.009	0.073 ± 0.011
Adrenal	(g)	0.053 ± 0.008	0.053 ± 0.008	0.048 ± 0.005	0.049 ± 0.004	0.050 ± 0.002	0.044 ± 0.004 **
	(%)	0.018 ± 0.003	0.019 ± 0.003	0.017 ± 0.002	0.018 ± 0.001	0.019 ± 0.001	0.020 ± 0.001
Testis	(g)	3.010 ± 0.148	3.049 ± 0.117	3.000 ± 0.085	3.027 ± 0.110	2.969 ± 0.072	2.888 ± 0.090
	(%)	1.040 ± 0.031	1.077 ± 0.054	1.058 ± 0.028	1.079 ± 0.029 *	1.146 ± 0.050 **	1.307 ± 0.076 **
Heart	(g)	0.906 ± 0.050	0.903 ± 0.059	0.900 ± 0.053	0.883 ± 0.053	0.847 ± 0.047	0.776 ± 0.063 **
	(%)	0.313 ± 0.009	0.318 ± 0.015	0.318 ± 0.017	0.314 ± 0.017	0.327 ± 0.015	0.350 ± 0.022 **
Lung	(g)	1.011 ± 0.045	1.005 ± 0.064	0.984 ± 0.034	0.999 ± 0.054	0.950 ± 0.037 *	0.864 ± 0.049 **
	(%)	0.350 ± 0.008	0.355 ± 0.016	0.347 ± 0.012	0.356 ± 0.013	0.366 ± 0.009 **	0.391 ± 0.024 **
Spleen	(g)	0.539 ± 0.032	0.527 ± 0.033	0.533 ± 0.022	0.525 ± 0.023	0.507 ± 0.044	0.462 ± 0.025 **
	(%)	0.186 ± 0.004	0.186 ± 0.006	0.188 ± 0.005	0.187 ± 0.005	0.195 ± 0.014	0.209 ± 0.006 **
Brain	(g)	1.870 ± 0.037	1.898 ± 0.040	1.884 ± 0.030	1.876 ± 0.036	1.844 ± 0.040	1.812 ± 0.041 **
	(%)	0.647 ± 0.028	0.670 ± 0.025	0.665 ± 0.018	0.669 ± 0.018	0.712 ± 0.033 **	0.820 ± 0.040 **

Data represent means ± S.D.
Significant difference, * : $p \leqq 0.05$, ** : $p \leqq 0.01$, Test of Dunnett

TABLE 14 ORGAN WEIGHTS OF FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
No. of animals examined		<10>	<10>	<10>	<10>	<10>	<10>
Liver	(g)	3.979 ± 0.168	3.890 ± 0.178	3.964 ± 0.207	3.970 ± 0.163	4.210 ± 0.199	4.088 ± 0.418
	(%)	2.366 ± 0.100	2.440 ± 0.081	2.468 ± 0.087 *	2.510 ± 0.070 **	2.718 ± 0.079 **	2.997 ± 0.271 **
Kidney	(g)	1.155 ± 0.034	1.163 ± 0.068	1.181 ± 0.075	1.238 ± 0.045 **	1.307 ± 0.054 **	1.259 ± 0.045 **
	(%)	0.687 ± 0.025	0.729 ± 0.025 **	0.735 ± 0.040 **	0.782 ± 0.016 **	0.844 ± 0.024 **	0.924 ± 0.034 **
Thymus	(g)	0.196 ± 0.033	0.171 ± 0.021 *	0.181 ± 0.017	0.178 ± 0.014	0.169 ± 0.017 *	0.158 ± 0.021 **
	(%)	0.116 ± 0.017	0.107 ± 0.011	0.112 ± 0.009	0.112 ± 0.007	0.109 ± 0.009	0.116 ± 0.012
Adrenal	(g)	0.056 ± 0.005	0.056 ± 0.005	0.052 ± 0.005	0.055 ± 0.006	0.050 ± 0.004	0.050 ± 0.007
	(%)	0.033 ± 0.003	0.035 ± 0.004	0.032 ± 0.003	0.035 ± 0.003	0.033 ± 0.002	0.036 ± 0.006
Ovary	(g)	0.115 ± 0.012	0.105 ± 0.009	0.105 ± 0.011	0.102 ± 0.010	0.107 ± 0.007	0.102 ± 0.016
	(%)	0.068 ± 0.006	0.066 ± 0.009	0.066 ± 0.006	0.064 ± 0.006	0.069 ± 0.004	0.075 ± 0.011
Heart	(g)	0.617 ± 0.050	0.602 ± 0.054	0.599 ± 0.037	0.591 ± 0.047	0.590 ± 0.026	0.530 ± 0.024 **
	(%)	0.367 ± 0.021	0.377 ± 0.024	0.373 ± 0.018	0.374 ± 0.025	0.381 ± 0.018	0.389 ± 0.018
Lung	(g)	0.755 ± 0.029	0.737 ± 0.037	0.726 ± 0.040	0.726 ± 0.036	0.720 ± 0.034	0.655 ± 0.018 **
	(%)	0.449 ± 0.020	0.463 ± 0.031	0.452 ± 0.022	0.459 ± 0.020	0.465 ± 0.019	0.481 ± 0.022 *
Spleen	(g)	0.385 ± 0.022	0.359 ± 0.029	0.356 ± 0.025	0.370 ± 0.029	0.380 ± 0.028	0.349 ± 0.025 *
	(%)	0.229 ± 0.015	0.225 ± 0.013	0.222 ± 0.012	0.234 ± 0.013	0.245 ± 0.015 *	0.256 ± 0.013 **
Brain	(g)	1.739 ± 0.056	1.747 ± 0.036	1.725 ± 0.060	1.738 ± 0.024	1.734 ± 0.040	1.674 ± 0.036 **
	(%)	1.035 ± 0.058	1.098 ± 0.061 *	1.075 ± 0.039	1.100 ± 0.040 *	1.121 ± 0.041 **	1.229 ± 0.049 **

Data represent means ± S.D.

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

TABLE 15 HISTOLOGICAL LESIONS OF MALE AND FEMALE RATS IN THE 13-WEEK DRINKING WATER STUDY OF 2-HYDROXYETHYL ACRYLATE (SELECTED)

Group		Control	250 ppm	500 ppm	1000 ppm	2000 ppm	4000 ppm
Male							
No. of animals examined		<10>	<10>	<10>	<10>	<10>	<10>
	Grade						
Kidney							
Hyaline cast	+	0	0	0	1	0	1
Stomach							
Hyperplasia : forestomach	+	0	0	0	0	0	1
Salivary gland							
Atrophy	+	0	0	0	0	0	5
Female							
No. of animals examined		<10>	<10>	<10>	<10>	<10>	<10>
	Grade						
Kidney							
Eosinophilic droplet : proximal tubule	+	0	0	4	8	10	10
Salivary gland							
Atrophy	+	0	0	0	0	0	7

Grade + : Slight