アクリル酸のラットを用いた吸入による2週間毒性試験報告書

試験番号：0638

TABLES

TABLES

TABLES (CONTINUED)

TABLE 12 INCIDENCES OF SELECTED LESIONS OF FEMALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID (SACRIFICED ANIMALS)

TABLE 1 CONCENTRATIONS OF ACRYLIC ACID IN THE INHALATION CHAMBER OF THE 2-WEEK INHALATION STUDY

Group Name	Concentration(ppm) Mean ± S.D.
Control	0.0 ± 0.0
38 ppm	37.9 ± 0.5
75 ppm	75.0 ± 0.6
150 ppm	150.1 ± 0.8
300 ppm	299.4 ± 1.2
600 ppm	599.2 ± 2.9

TABLE 2 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF MALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Week-Day on Study	Control		38 ppm			75 ppm			150 ppm			300 ppm			600 ppm		
	Av.Wt.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.
	< 5>		< 5>			< 5>			< 5>			< 5>			< 5>		
0-0	123 (5)	5/ 5	123 (5)	100	5/ 5	123 (5)	100	5/ 5	122 (5)	99	5/ 5	123 (5)	100	5/ 5	122 (5)	99	5/ 5
1-2	131 (5)	5/ 5	128 (5)	98	5/ 5	127 (5)	97	5/ 5	124 (5)	95	5/ 5	123 (5)	94	5/ 5	119 (5)	91	5/ 5
1-4	136 (5)	5/ 5	133 (5)	98	5/ 5	133 (5)	98	5/ 5	130 (5)	96	5/ 5	131 (5)	96	5/ 5	126 (5)	93	5/ 5
1-7	143 (5)	5/ 5	141 (5)	99	5/ 5	139 (5)	97	5/ 5	133 (5)	93	5/ 5	128 (5)	90	5/ 5	111 (5)	78	5/ 5
2-3	154 (5)	5/ 5	151 (5)	98	5/ 5	151 (5)	98	5/ 5	144 (5)	94	5/ 5	134 (5)	87	5/ 5	117 (5)	76	5/ 5
2-7	165 (5)	5/ 5	162 (5)	98	5/ 5	164 (5)	99	5/ 5	156 (5)	95	5/ 5	143 (5)	87	5/ 5	116 (5)	70	5/ 5

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

TABLE 3 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF FEMALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Week-Day on Study	Control		38 ppm			75 ppm			150 ppm			300 ppm			600 ppm		
	Av.Wt.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.	Av.Wt.	% of cont.	No.of Surviv.
	< 5>		< 5>			< 5>			< 5>			< 5>			< 5>		
0-0	100 (5)	5/ 5	100 (5)	100	5/ 5	100 (5)	100	5/ 5	100 (5)	100	5/ 5	100 (5)	100	5/ 5	100 (5)	100	5/ 5
1-2	103 (5)	5/ 5	104 (5)	101	5/ 5	104 (5)	101	5/ 5	101 (5)	98	5/ 5	101 (5)	98	5/ 5	95 (5)	92	5/ 5
1-4	106 (5)	5/ 5	107 (5)	101	5/ 5	106 (5)	100	5/ 5	105 (5)	99	5/ 5	104 (5)	98	5/ 5	99 (5)	93	5/ 5
1-7	109 (5)	5/ 5	110 (5)	101	5/ 5	108 (5)	99	5/ 5	105 (5)	96	5/ 5	102 (5)	94	5/ 5	85 (5)	78	5/ 5
2-3	115 (5)	5/ 5	114 (5)	99	5/ 5	114 (5)	99	5/ 5	112 (5)	97	5/ 5	106 (5)	92	5/ 5	87 (5)	76	5/ 5
2-7	122 (5)	5/ 5	120 (5)	98	5/ 5	121 (5)	99	5/ 5	117 (5)	96	5/ 5	111 (5)	91	5/ 5	88 (4)	72	4/ 5

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

TABLE 4 FOOD CONSUMPTION CHANGES OF MALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Week-Day on Study	Control Av.Fc.	Control No.of Surviv.	38 ppm Av.Fc.	38 ppm % of cont.	38 ppm No.of Surviv.	75 ppm Av.Fc.	75 ppm % of cont.	75 ppm No.of Surviv.	150 ppm Av.Fc.	150 ppm % of cont.	150 ppm No.of Surviv.	300 ppm Av.Fc.	300 ppm % of cont.	300 ppm No.of Surviv.	600 ppm Av.Fc.	600 ppm % of cont.	600 ppm No.of Surviv.
	< 5>		< 5>			< 5>			< 5>			< 5>			< 5>			
1-7	13.6 (5)	5/ 5	13.7 (5)	101	5/ 5	12.8 (5)	94	5/ 5	12.5 (5)	92	5/ 5	10.5 (5)	77	5/ 5	8.1 (5)	60	5/ 5
2-7	14.3 (5)	5/ 5	14.0 (5)	98	5/ 5	13.6 (5)	95	5/ 5	12.9 (5)	90	5/ 5	11.4 (5)	80	5/ 5	9.8 (5)	69	5/ 5

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

TABLE 5 FOOD CONSUMPTION CHANGES OF FEMALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Week-Day on Study	Control Av.Fc.	Control No.of Surviv.	38 ppm Av.Fc.	38 ppm % of cont.	38 ppm No.of Surviv.	75 ppm Av.Fc.	75 ppm % of cont.	75 ppm No.of Surviv.	150 ppm Av.Fc.	150 ppm % of cont.	150 ppm No.of Surviv.	300 ppm Av.Fc.	300 ppm % of cont.	300 ppm No.of Surviv.	600 ppm Av.Fc.	600 ppm % of cont.	600 ppm No.of Surviv.
	< 5>		< 5>			< 5>			< 5>			< 5>			< 5>			
1-7	11.1 (5)	5/ 5	11.1 (5)	100	5/ 5	10.7 (5)	96	5/ 5	10.1 (5)	91	5/ 5	9.3 (5)	84	5/ 5	6.5 (5)	59	5/ 5
2-7	11.2 (5)	5/ 5	11.4 (5)	102	5/ 5	11.2 (5)	100	5/ 5	11.0 (5)	98	5/ 5	9.8 (5)	88	5/ 5	7.6 (4)	68	4/ 5

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

TABLE 6　HEMATOLOGY OF MALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Group Name	Control	38 ppm	75 ppm	150 ppm	300 ppm	600 ppm
No. of examined animals	5	5	5	5	5	5
PLATELET ($10^3/\mu$ L)	941 ± 54	968 ± 37	964 ± 68	921 ± 27	806 ± 41 **	776 ± 102 **
RETICULOCYTE (%)	2.3 ± 0.2	2.2 ± 0.2	2.4 ± 0.4	2.1 ± 0.1	1.4 ± 0.3 **	4.6 ± 3.6

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

TABLE 7　HEMATOLOGY OF FEMALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Group Name	Control	38 ppm	75 ppm	150 ppm	300 ppm	600 ppm
No. of examined animals	5	5	5	5	5	4
RETICULOCYTE (%)	1.4 ± 0.3	1.4 ± 0.2	1.3 ± 0.1	1.3 ± 0.3	1.0 ± 0.1 **	5.5 ± 3.6 *
WBC ($10^3/\mu$ L)	5.59 ± 0.73	4.70 ± 1.49	5.81 ± 1.58	4.42 ± 1.41	4.83 ± 1.32	2.41 ± 0.34 **

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

TABLE 8 ORGAN WEIGHTS OF MALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Group Name	Control	38 ppm	75 ppm	150 ppm	300 ppm	600 ppm
No. of examined animal	5	5	5	5	5	5
Body weight (g)	148 ± 7	146 ± 4	146 ± 11	138 ± 8	127 ± 9 **	101 ± 8 **
Thymus (g)	0.241 ± 0.024	0.252 ± 0.021	0.254 ± 0.019	0.226 ± 0.017	0.178 ± 0.036 **	0.054 ± 0.013 **
Thymus (%)	0.163 ± 0.015	0.172 ± 0.017	0.174 ± 0.007	0.163 ± 0.008	0.140 ± 0.021	0.054 ± 0.011 **
Adrenals (g)	0.041 ± 0.002	0.039 ± 0.005	0.041 ± 0.004	0.042 ± 0.003	0.045 ± 0.004	0.049 ± 0.004 **
Adrenals (%)	0.028 ± 0.003	0.027 ± 0.003	0.028 ± 0.003	0.031 ± 0.002	0.035 ± 0.003 *	0.050 ± 0.008 **
Testes (g)	2.282 ± 0.208	2.272 ± 0.130	2.377 ± 0.137	2.245 ± 0.110	2.223 ± 0.236	1.919 ± 0.254 *
Testes (%)	1.539 ± 0.101	1.553 ± 0.053	1.636 ± 0.125	1.624 ± 0.071	1.758 ± 0.170 *	1.900 ± 0.149 **
Heart (g)	0.621 ± 0.045	0.596 ± 0.037	0.594 ± 0.038	0.591 ± 0.037	0.571 ± 0.026	0.540 ± 0.058
Heart (%)	0.419 ± 0.027	0.407 ± 0.018	0.409 ± 0.025	0.427 ± 0.005	0.452 ± 0.021	0.535 ± 0.024 **
Lungs (g)	0.610 ± 0.040	0.631 ± 0.027	0.637 ± 0.033	0.606 ± 0.028	0.576 ± 0.024	0.580 ± 0.030
Lungs (%)	0.412 ± 0.018	0.432 ± 0.017	0.438 ± 0.013	0.438 ± 0.016	0.457 ± 0.026 **	0.577 ± 0.025 **
Kidneys (g)	1.132 ± 0.072	1.142 ± 0.048	1.143 ± 0.081	1.096 ± 0.066	1.062 ± 0.055	1.009 ± 0.068 *
Kidneys (%)	0.763 ± 0.015	0.781 ± 0.011	0.785 ± 0.032	0.792 ± 0.022	0.840 ± 0.019 **	1.004 ± 0.053 **
Spleen (g)	0.350 ± 0.029	0.349 ± 0.015	0.349 ± 0.030	0.322 ± 0.015	0.279 ± 0.040 **	0.187 ± 0.018 **
Spleen (%)	0.236 ± 0.009	0.239 ± 0.008	0.240 ± 0.012	0.233 ± 0.003	0.220 ± 0.031	0.185 ± 0.010 *
Liver (g)	4.373 ± 0.189	4.307 ± 0.137	4.197 ± 0.411	4.019 ± 0.272	3.775 ± 0.303 *	3.207 ± 0.304 **
Liver (%)	2.953 ± 0.098	2.946 ± 0.024	2.875 ± 0.061	2.902 ± 0.035	2.980 ± 0.047	3.179 ± 0.069 **
Brain (g)	1.661 ± 0.041	1.655 ± 0.033	1.664 ± 0.049	1.638 ± 0.013	1.633 ± 0.045	1.598 ± 0.031
Brain (%)	1.122 ± 0.047	1.133 ± 0.036	1.145 ± 0.068	1.186 ± 0.071	1.294 ± 0.070 **	1.592 ± 0.107 **

Mean ± S.D.

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

TABLE 9 ORGAN WEIGHTS OF FEMALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID

Group Name	Control	38 ppm	75 ppm	150 ppm	300 ppm	600 ppm
No. of examined animal	5	5	5	5	5	5
Body weight (g)	109 ± 4	107 ± 5	108 ± 5	104 ± 6	98 ± 3 **	73 ± 3 **
Thymus (g)	0.222 ± 0.025	0.209 ± 0.011	0.215 ± 0.015	0.215 ± 0.025	0.172 ± 0.016 **	0.029 ± 0.014 **
Thymus (%)	0.204 ± 0.016	0.196 ± 0.014	0.199 ± 0.009	0.206 ± 0.013	0.175 ± 0.011 *	0.040 ± 0.019 **
Adrenals (g)	0.051 ± 0.004	0.049 ± 0.004	0.050 ± 0.005	0.049 ± 0.004	0.051 ± 0.003	0.054 ± 0.003
Adrenals (%)	0.047 ± 0.002	0.046 ± 0.002	0.047 ± 0.005	0.047 ± 0.003	0.053 ± 0.004	0.073 ± 0.007 **
Ovaries (g)	0.064 ± 0.009	0.068 ± 0.012	0.073 ± 0.010	0.068 ± 0.008	0.065 ± 0.007	0.040 ± 0.008 **
Ovaries (%)	0.059 ± 0.006	0.063 ± 0.009	0.067 ± 0.008	0.065 ± 0.005	0.067 ± 0.006	0.054 ± 0.009
Heart (g)	0.471 ± 0.052	0.456 ± 0.030	0.472 ± 0.016	0.479 ± 0.034	0.454 ± 0.008	0.400 ± 0.048
Heart (%)	0.431 ± 0.036	0.425 ± 0.021	0.437 ± 0.012	0.459 ± 0.029	0.466 ± 0.010	0.545 ± 0.051 **
Lungs (g)	0.537 ± 0.031	0.543 ± 0.034	0.544 ± 0.029	0.545 ± 0.038	0.520 ± 0.026	0.508 ± 0.027
Lungs (%)	0.493 ± 0.017	0.506 ± 0.014	0.503 ± 0.007	0.522 ± 0.017	0.533 ± 0.018 *	0.694 ± 0.036 **
Kidneys (g)	0.926 ± 0.026	0.928 ± 0.031	0.933 ± 0.032	0.936 ± 0.035	0.948 ± 0.032	0.854 ± 0.040 *
Kidneys (%)	0.850 ± 0.014	0.866 ± 0.034	0.865 ± 0.018	0.898 ± 0.031 *	0.972 ± 0.009 **	1.166 ± 0.020 **
Spleen (g)	0.269 ± 0.025	0.263 ± 0.016	0.272 ± 0.025	0.255 ± 0.021	0.239 ± 0.022	0.118 ± 0.038 **
Spleen (%)	0.246 ± 0.016	0.245 ± 0.016	0.252 ± 0.013	0.245 ± 0.014	0.245 ± 0.017	0.160 ± 0.048 **
Liver (g)	3.223 ± 0.235	3.279 ± 0.246	3.330 ± 0.183	3.230 ± 0.278	3.054 ± 0.138	2.483 ± 0.428 **
Liver (%)	2.954 ± 0.120	3.056 ± 0.095	3.082 ± 0.059	3.091 ± 0.117	3.128 ± 0.051	3.376 ± 0.471
Brain (g)	1.597 ± 0.059	1.602 ± 0.026	1.591 ± 0.034	1.572 ± 0.029	1.567 ± 0.027	1.531 ± 0.015
Brain (%)	1.467 ± 0.066	1.497 ± 0.056	1.475 ± 0.056	1.511 ± 0.090	1.606 ± 0.044 **	2.092 ± 0.065 **

Mean ± S.D.

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

TABLE 10 INCIDENCES OF SELECTED LESIONS OF MALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID (SACRIFICED ANIMALS)

Group Name	Control				38 ppm				75 ppm				150 ppm				300 ppm				600 ppm			
Number of examined animals	5				5				5				5				5				5			
Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
nasal cavity	<5>				<5>				<5>				<5>				<5>				<5>			
necrosis:respiratory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	0	0	5	0	0
ulcer:respiratory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
inflammation:respiratory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0
squamous cell metaplasia: respiratory epithelium	0	0	0	0	0	0	0	0	2	0	0	0	4	1	0	0	0	5	0	0	0	0	5	0
necrosis:olfactory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	3	0	0
atrophy:olfactory epithelium	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	0	0	5	0	0	0	5	0	0

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< > : Number of animals examined at the site

TABLE 11 INCIDENCES OF SELECTED LESIONS OF FEMALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID (DEAD ANIMALS)

Group Name	Control				38 ppm				75 ppm				150 ppm				300 ppm				600 ppm			
Number of examined animals	0				0				0				0				0				1			
Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
skin/appendage																					<1>			
ulcer		—				—				—				—				—			0	1	0	0
nasal cavity																					<1>			
necrosis:respiratory epithelium		—				—				—				—				—			0	1	0	0
ulcer:respiratory epithelium		—				—				—				—				—			0	0	1	0
inflammation:respiratory epithelium		—				—				—				—				—			0	1	0	0
squamous cell metaplasia: respiratory epithelium		—				—				—				—				—			0	1	0	0
necrosis:olfactory epithelium		—				—				—				—				—			0	0	1	0
atrophy:olfactory epithelium		—				—				—				—				—			0	0	1	0

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< > : Number of animals examined at the site

TABLE 12 INCIDENCES OF SELECTED LESIONS OF FEMALE RATS IN THE 2-WEEK INHALATION STUDY OF ACRYLIC ACID (SACRIFICED ANIMALS)

Group Name	Control				38 ppm				75 ppm				150 ppm				300 ppm				600 ppm			
Number of examined animals	5				5				5				5				5				4			
Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
nasal cavity	<5>				<5>				<5>				<5>				<5>				<4>			
necrosis:respiratory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0
ulcer:respiratory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0
inflammation:respiratory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	2	0	0
squamous cell metaplasia : respiratory epithelium	0	0	0	0	0	0	0	0	2	0	0	0	4	1	0	0	0	5	0	0	0	2	2	0
necrosis:olfactory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	3	1	0	0
atrophy:olfactory epithelium	0	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	5	0	0	0	4	0	0
squamous cell metaplasia: olfactory epithelium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	1	0	0	0

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< > : Number of animals examined at the site