2,4-ペンタンジオンのラットを用いた
吸入による 13 週間毒性試験報告書

試験番号：0600

TABLES

TABLES

TABLES (CONTINUED)

TABLE 1 CONCENTRATIONS OF 2,4-PENTANEDIONE IN THE INHALATION CHAMBER OF THE 13-WEEK INHALATION STUDY

Group Name	Concentration(ppm) Mean ± S.D.
Control	0.0 ± 0.0
25 ppm	25.4 ± 0.6
50 ppm	50.4 ± 0.8
100 ppm	100.9 ± 1.0
200 ppm	200.0 ± 1.7
400 ppm	401.4 ± 3.0

TABLE 2 SURVIVAL ANIMAL NUMBERS AND BODY WEIGHT CHANGES OF MALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Week on Study	Control		25 ppm			50 ppm			100 ppm			200 ppm			400 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.
	<10>		<10>			<10>			<10>			<10>			<10>		
0	122 (10)	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10	122 (10)	100	10 / 10
1	150 (10)	10 / 10	150 (10)	100	10 / 10	150 (10)	100	10 / 10	150 (10)	100	10 / 10	150 (10)	100	10 / 10	143 (10)	95	10 / 10
2	177 (10)	10 / 10	178 (10)	101	10 / 10	178 (10)	101	10 / 10	180 (10)	102	10 / 10	179 (10)	101	10 / 10	168 (10)	95	10 / 10
3	202 (10)	10 / 10	202 (10)	100	10 / 10	202 (10)	100	10 / 10	205 (10)	101	10 / 10	206 (10)	102	10 / 10	194 (10)	96	10 / 10
4	223 (10)	10 / 10	223 (10)	100	10 / 10	222 (10)	100	10 / 10	228 (10)	102	10 / 10	230 (10)	103	10 / 10	210 (10)	94	10 / 10
5	237 (10)	10 / 10	239 (10)	101	10 / 10	239 (10)	101	10 / 10	243 (10)	103	10 / 10	244 (10)	103	10 / 10	224 (10)	95	10 / 10
6	252 (10)	10 / 10	253 (10)	100	10 / 10	253 (10)	100	10 / 10	257 (10)	102	10 / 10	259 (10)	103	10 / 10	237 (10)	94	10 / 10
7	262 (10)	10 / 10	263 (10)	100	10 / 10	264 (10)	101	10 / 10	269 (10)	103	10 / 10	270 (10)	103	10 / 10	250 (10)	95	10 / 10
8	272 (10)	10 / 10	274 (10)	101	10 / 10	273 (10)	100	10 / 10	279 (10)	103	10 / 10	280 (10)	103	10 / 10	259 (10)	95	10 / 10
9	283 (10)	10 / 10	282 (10)	100	10 / 10	285 (10)	101	10 / 10	289 (10)	102	10 / 10	289 (10)	102	10 / 10	268 (10)	95	10 / 10
10	290 (10)	10 / 10	288 (10)	99	10 / 10	288 (10)	99	10 / 10	295 (10)	102	10 / 10	293 (10)	101	10 / 10	275 (10)	95	10 / 10
11	294 (10)	10 / 10	293 (10)	100	10 / 10	292 (10)	99	10 / 10	299 (10)	102	10 / 10	299 (10)	102	10 / 10	280 (10)	95	10 / 10
12	302 (10)	10 / 10	299 (10)	99	10 / 10	300 (10)	99	10 / 10	303 (10)	100	10 / 10	305 (10)	101	10 / 10	285 (10)	94	10 / 10
13	306 (10)	10 / 10	303 (10)	99	10 / 10	304 (10)	99	10 / 10	308 (10)	101	10 / 10	308 (10)	101	10 / 10	287 (10)	94	10 / 10

< > : 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 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Week on Study	Control		25 ppm			50 ppm			100 ppm			200 ppm			400 ppm		
	Av. Wt.	No. of Surviv. <10>	Av. Wt.	% of cont.	No. of Surviv. <10>	Av. Wt.	% of cont.	No. of Surviv. <10>	Av. Wt.	% of cont.	No. of Surviv. <10>	Av. Wt.	% of cont.	No. of Surviv. <10>	Av. Wt.	% of cont.	No. of Surviv. <10>
0	95 (10)	10 / 10	95 (10)	100	10 / 10	95 (10)	100	10 / 10	95 (10)	100	10 / 10	95 (10)	100	10 / 10	95 (10)	100	10 / 10
1	109 (10)	10 / 10	108 (10)	99	10 / 10	109 (10)	100	10 / 10	109 (10)	100	10 / 10	107 (10)	98	10 / 10	104 (10)	95	10 / 10
2	123 (10)	10 / 10	121 (10)	98	10 / 10	122 (10)	99	10 / 10	122 (10)	99	10 / 10	120 (10)	98	10 / 10	115 (10)	93	10 / 10
3	133 (10)	10 / 10	131 (10)	98	10 / 10	131 (10)	98	10 / 10	133 (10)	100	10 / 10	132 (10)	99	10 / 10	126 (10)	95	10 / 10
4	142 (10)	10 / 10	140 (10)	99	10 / 10	140 (10)	99	10 / 10	140 (10)	99	10 / 10	141 (10)	99	10 / 10	134 (10)	94	10 / 10
5	148 (10)	10 / 10	147 (10)	99	10 / 10	147 (10)	99	10 / 10	147 (10)	99	10 / 10	146 (10)	99	10 / 10	141 (10)	95	10 / 10
6	154 (10)	10 / 10	152 (10)	99	10 / 10	153 (10)	99	10 / 10	154 (10)	100	10 / 10	154 (10)	100	10 / 10	149 (10)	97	10 / 10
7	160 (10)	10 / 10	157 (10)	98	10 / 10	156 (10)	98	10 / 10	158 (10)	99	10 / 10	159 (10)	99	10 / 10	155 (10)	97	10 / 10
8	163 (10)	10 / 10	162 (10)	99	10 / 10	159 (10)	98	10 / 10	163 (10)	100	10 / 10	163 (10)	100	10 / 10	158 (10)	97	10 / 10
9	167 (10)	10 / 10	166 (10)	99	10 / 10	163 (10)	98	10 / 10	167 (10)	100	10 / 10	167 (10)	100	10 / 10	163 (10)	98	10 / 10
10	172 (10)	10 / 10	169 (10)	98	10 / 10	166 (10)	97	10 / 10	170 (10)	99	10 / 10	169 (10)	98	10 / 10	166 (10)	97	10 / 10
11	174 (10)	10 / 10	172 (10)	99	10 / 10	169 (10)	97	10 / 10	173 (10)	99	10 / 10	172 (10)	99	10 / 10	168 (10)	97	10 / 10
12	175 (10)	10 / 10	175 (10)	100	10 / 10	171 (10)	98	10 / 10	175 (10)	100	10 / 10	175 (10)	100	10 / 10	171 (10)	98	10 / 10
13	177 (10)	10 / 10	178 (10)	101	10 / 10	174 (10)	98	10 / 10	177 (10)	100	10 / 10	175 (10)	99	10 / 10	172 (10)	97	10 / 10

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

(Study No. 0600)

TABLE 4 FOOD CONSUMPTION CHANGES OF MALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Week on Study	Control		25 ppm			50 ppm			100 ppm			200 ppm			400 ppm		
	Av. FC.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.
	<10>		<10>			<10>			<10>			<10>			<10>		
1	14.5 (10)	10 / 10	14.6 (10)	101	10 / 10	14.1 (10)	97	10 / 10	13.9 (10)	96	10 / 10	14.2 (10)	98	10 / 10	13.2 (10)	91	10 / 10
2	15.4 (10)	10 / 10	15.5 (8)	101	10 / 10	15.2 (10)	99	10 / 10	15.5 (10)	101	10 / 10	15.0 (10)	97	10 / 10	13.3 (10)	86	10 / 10
3	16.5 (10)	10 / 10	16.1 (10)	98	10 / 10	16.3 (10)	99	10 / 10	16.6 (10)	101	10 / 10	17.0 (10)	103	10 / 10	15.4 (10)	93	10 / 10
4	16.9 (10)	10 / 10	16.8 (10)	99	10 / 10	16.7 (10)	99	10 / 10	16.6 (10)	98	10 / 10	17.1 (10)	101	10 / 10	15.0 (10)	89	10 / 10
5	16.9 (10)	10 / 10	16.5 (10)	98	10 / 10	16.4 (10)	97	10 / 10	17.0 (10)	101	10 / 10	17.0 (10)	101	10 / 10	15.5 (10)	92	10 / 10
6	16.2 (10)	10 / 10	16.0 (10)	99	10 / 10	16.2 (10)	100	10 / 10	16.6 (10)	102	10 / 10	16.5 (10)	102	10 / 10	15.5 (10)	96	10 / 10
7	16.2 (10)	10 / 10	16.3 (10)	101	10 / 10	16.6 (10)	102	10 / 10	16.7 (10)	103	10 / 10	16.7 (10)	103	10 / 10	15.9 (10)	98	10 / 10
8	16.5 (10)	10 / 10	16.0 (10)	97	10 / 10	16.4 (10)	99	10 / 10	16.1 (10)	98	10 / 10	16.6 (10)	101	10 / 10	15.8 (10)	96	10 / 10
9	16.7 (10)	10 / 10	16.0 (10)	96	10 / 10	16.5 (10)	99	10 / 10	16.6 (10)	99	10 / 10	16.6 (10)	99	10 / 10	15.6 (10)	93	10 / 10
10	16.5 (10)	10 / 10	16.1 (10)	98	10 / 10	16.1 (10)	98	10 / 10	16.5 (10)	100	10 / 10	16.4 (10)	99	10 / 10	16.0 (10)	97	10 / 10
11	16.2 (10)	10 / 10	16.3 (10)	101	10 / 10	15.7 (10)	97	10 / 10	16.0 (10)	99	10 / 10	16.2 (10)	100	10 / 10	15.0 (10)	93	10 / 10
12	16.2 (10)	10 / 10	16.1 (10)	99	10 / 10	15.6 (10)	96	10 / 10	16.0 (10)	99	10 / 10	16.2 (10)	100	10 / 10	14.8 (10)	91	10 / 10
13	15.8 (10)	10 / 10	15.8 (10)	100	10 / 10	15.8 (10)	100	10 / 10	16.0 (10)	101	10 / 10	15.7 (10)	99	10 / 10	14.8 (10)	94	10 / 10

< > : 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 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Week on Study	Control		25 ppm			50 ppm			100 ppm			200 ppm			400 ppm		
	Av. FC.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.	Av. FC.	% of cont.	No. of Surviv.
	<10>		<10>			<10>			<10>			<10>			<10>		
1	10.6 (10)	10 / 10	10.8 (10)	102	10 / 10	10.6 (10)	100	10 / 10	10.5 (10)	99	10 / 10	10.4 (10)	98	10 / 10	9.8 (10)	92	10 / 10
2	10.5 (10)	10 / 10	10.8 (10)	103	10 / 10	10.6 (10)	101	10 / 10	11.1 (10)	106	10 / 10	10.4 (10)	99	10 / 10	9.7 (10)	92	10 / 10
3	10.9 (10)	10 / 10	11.1 (10)	102	10 / 10	10.8 (10)	99	10 / 10	11.2 (10)	103	10 / 10	11.1 (10)	102	10 / 10	10.2 (10)	94	10 / 10
4	11.0 (10)	10 / 10	11.1 (10)	101	10 / 10	10.8 (10)	98	10 / 10	11.1 (10)	101	10 / 10	10.7 (10)	97	10 / 10	10.2 (10)	93	10 / 10
5	11.0 (10)	10 / 10	11.0 (10)	100	10 / 10	10.7 (10)	97	10 / 10	11.3 (10)	103	10 / 10	11.2 (10)	102	10 / 10	10.4 (10)	95	10 / 10
6	11.0 (10)	10 / 10	10.4 (10)	95	10 / 10	10.3 (10)	94	10 / 10	10.9 (10)	99	10 / 10	10.9 (10)	99	10 / 10	10.6 (10)	96	10 / 10
7	11.0 (10)	10 / 10	10.7 (10)	97	10 / 10	10.5 (10)	95	10 / 10	11.1 (10)	101	10 / 10	11.4 (10)	104	10 / 10	11.0 (10)	100	10 / 10
8	10.9 (10)	10 / 10	10.7 (10)	98	10 / 10	10.0 (10)	92	10 / 10	10.9 (10)	100	10 / 10	10.9 (10)	100	10 / 10	10.7 (10)	98	10 / 10
9	10.8 (10)	10 / 10	10.8 (10)	100	10 / 10	10.4 (10)	96	10 / 10	11.0 (10)	102	10 / 10	10.8 (10)	100	10 / 10	10.8 (10)	100	10 / 10
10	11.2 (10)	10 / 10	10.8 (10)	96	10 / 10	10.4 (10)	93	10 / 10	11.0 (10)	98	10 / 10	11.0 (10)	98	10 / 10	10.7 (10)	96	10 / 10
11	11.1 (10)	10 / 10	10.7 (10)	96	10 / 10	10.6 (10)	95	10 / 10	10.9 (10)	98	10 / 10	10.9 (10)	98	10 / 10	10.7 (10)	96	10 / 10
12	10.6 (10)	10 / 10	11.1 (10)	105	10 / 10	10.7 (10)	101	10 / 10	11.1 (10)	105	10 / 10	10.8 (10)	102	10 / 10	10.4 (10)	98	10 / 10
13	10.6 (10)	10 / 10	10.9 (10)	103	10 / 10	10.5 (10)	99	10 / 10	10.5 (10)	99	10 / 10	10.2 (10)	96	10 / 10	9.9 (10)	93	10 / 10

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

TABLE 6　HEMATOLOGY OF MALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Group Name	Control	25 ppm	50 ppm	100 ppm	200 ppm	400 ppm
No. of examined animals	10	10	10	10	10	10
RED BLOOD CELL ($10^6/\mu$ L)	9.40 ± 0.14	9.32 ± 0.16	9.40 ± 0.10	9.35 ± 0.19	9.32 ± 0.11	9.20 ± 0.11 *
MCH (pg)	17.2 ± 0.2	17.3 ± 0.2	17.3 ± 0.2	17.3 ± 0.1	17.3 ± 0.2	17.6 ± 0.1 **
MCHC (g/dL)	36.5 ± 0.4	36.6 ± 0.3	36.7 ± 0.4	36.7 ± 0.3	36.8 ± 0.4	37.1 ± 0.2 **
PLATELET ($10^3/\mu$ L)	701 ± 31	720 ± 35	705 ± 44	751 ± 40 *	744 ± 39 *	765 ± 25 **
RETICULOCYTE (%)	1.6 ± 0.1	1.6 ± 0.3	1.6 ± 0.2	1.7 ± 0.2	1.6 ± 0.2	2.0 ± 0.2 **

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

TABLE 7　HEMATOLOGY OF FEMALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Group Name	Control	25 ppm	50 ppm	100 ppm	200 ppm	400 ppm
No. of examined animals	10	10	10	10	10	10
RED BLOOD CELL ($10^6/\mu$ L)	8.68 ± 0.15	8.64 ± 0.16	8.72 ± 0.22	8.70 ± 0.13	8.57 ± 0.14	8.38 ± 0.13 **
MCV(fL)	49.6 ± 0.4	49.9 ± 0.4	49.8 ± 0.4	49.9 ± 0.7	49.9 ± 0.4	50.3 ± 0.5 **
MCH (pg)	18.7 ± 0.1	18.7 ± 0.1	18.7 ± 0.3	18.8 ± 0.3	18.9 ± 0.3	19.0 ± 0.2 *
PLATELET ($10^3/\mu$ L)	745 ± 51	745 ± 43	780 ± 21	770 ± 35	772 ± 48	818 ± 54 **
RETICULOCYTE (%)	1.6 ± 0.2	1.6 ± 0.1	1.7 ± 0.2	1.7 ± 0.2	1.7 ± 0.2	2.4 ± 0.5 **

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

TABLE 8 BIOCHEMISTRY OF MALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Group Name	Control	25 ppm		50 ppm		100 ppm		200 ppm		400 ppm	
No. of examined animals	10	10		10		10		10		10	
ALT (IU/L)	54 ± 6	45 ± 5	*	49 ± 13		47 ± 10	*	48 ± 10		41 ± 5	**
ALP (IU/L)	273 ± 18	261 ± 19		260 ± 25		259 ± 17		244 ± 24	*	238 ± 27	**
CALCIUM (mg/dL)	10.3 ± 0.3	10.2 ± 0.2		10.2 ± 0.2		10.1 ± 0.2		10.2 ± 0.2		9.9 ± 0.3	**

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

TABLE 9 BIOCHEMISTRY OF FEMALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Group Name	Control	25 ppm		50 ppm		100 ppm		200 ppm		400 ppm	
No. of examined animals	10	10		10		10		10		10	
AST (IU/L)	73 ± 9	78 ± 13		74 ± 8		77 ± 7		69 ± 6		63 ± 5	*
ALP (IU/L)	203 ± 18	223 ± 17	*	215 ± 19		213 ± 21		204 ± 17		189 ± 13	
CK (IU/L)	121 ± 24	119 ± 24		115 ± 18		115 ± 25		99 ± 22		94 ± 20	*
CALCIUM (mg/dL)	10.1 ± 0.2	9.9 ± 0.2		9.9 ± 0.2		9.9 ± 0.2		9.8 ± 0.2	*	9.5 ± 0.3	**

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

TABLE 10 ORGAN WEIGHTS OF MALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Group Name	Control	25 ppm	50 ppm	100 ppm	200 ppm	400 ppm
No. of examined animal	10	10	10	10	10	10
Body weight (g)	284 ± 11	280 ± 15	281 ± 11	285 ± 10	285 ± 10	265 ± 7 **
Testes (g)	3.162 ± 0.097	3.166 ± 0.110	3.116 ± 0.201	3.209 ± 0.129	3.210 ± 0.092	3.208 ± 0.096
Testes (%)	1.113 ± 0.043	1.134 ± 0.055	1.111 ± 0.061	1.127 ± 0.056	1.130 ± 0.065	1.211 ± 0.042 **
Heart (g)	0.896 ± 0.047	0.901 ± 0.063	0.891 ± 0.030	0.930 ± 0.026	0.919 ± 0.034	0.896 ± 0.034
Heart (%)	0.315 ± 0.009	0.322 ± 0.012	0.318 ± 0.009	0.327 ± 0.014	0.323 ± 0.010	0.339 ± 0.017 **
Lungs (g)	0.916 ± 0.051	0.922 ± 0.042	0.904 ± 0.028	0.937 ± 0.048	0.940 ± 0.040	0.914 ± 0.050
Lungs (%)	0.322 ± 0.018	0.330 ± 0.016	0.322 ± 0.007	0.329 ± 0.016	0.331 ± 0.014	0.345 ± 0.023 *
Kidneys (g)	1.739 ± 0.106	1.724 ± 0.111	1.754 ± 0.100	1.817 ± 0.058	1.850 ± 0.073 *	1.792 ± 0.047
Kidneys (%)	0.611 ± 0.025	0.616 ± 0.025	0.625 ± 0.021	0.638 ± 0.018	0.651 ± 0.026 **	0.677 ± 0.022 **
Spleen (g)	0.515 ± 0.026	0.506 ± 0.026	0.516 ± 0.028	0.531 ± 0.023	0.539 ± 0.029	0.531 ± 0.020
Spleen (%)	0.181 ± 0.009	0.181 ± 0.007	0.184 ± 0.010	0.186 ± 0.006	0.189 ± 0.006	0.200 ± 0.005 **
Liver (g)	7.122 ± 0.404	6.965 ± 0.478	7.043 ± 0.419	7.190 ± 0.253	7.253 ± 0.340	6.986 ± 0.288
Liver (%)	2.504 ± 0.068	2.488 ± 0.057	2.509 ± 0.083	2.522 ± 0.031	2.549 ± 0.060	2.636 ± 0.054 **
Brain (g)	1.891 ± 0.051	1.922 ± 0.030	1.900 ± 0.053	1.898 ± 0.038	1.915 ± 0.027	1.880 ± 0.053
Brain (%)	0.666 ± 0.029	0.688 ± 0.030	0.678 ± 0.024	0.666 ± 0.016	0.674 ± 0.022	0.710 ± 0.030 **

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

TABLE 11 ORGAN WEIGHTS OF FEMALE RATS IN THE 13-WEEK INHALATION STUDY OF 2,4-PENTANEDIONE

Group Name	Control	25 ppm	50 ppm	100 ppm	200 ppm	400 ppm
No. of examined animal	10	10	10	10	10	10
Body weight (g)	162 ± 7	162 ± 6	158 ± 10	161 ± 10	161 ± 7	155 ± 4
Kidneys (g)	1.098 ± 0.027	1.099 ± 0.046	1.088 ± 0.066	1.096 ± 0.038	1.110 ± 0.058	1.114 ± 0.042
Kidneys (%)	0.679 ± 0.025	0.678 ± 0.016	0.688 ± 0.014	0.681 ± 0.030	0.692 ± 0.029	0.717 ± 0.017 **
Spleen (g)	0.352 ± 0.026	0.349 ± 0.018	0.343 ± 0.023	0.336 ± 0.028	0.362 ± 0.022	0.383 ± 0.008 **
Spleen (%)	0.218 ± 0.014	0.216 ± 0.010	0.217 ± 0.008	0.208 ± 0.013	0.226 ± 0.009	0.247 ± 0.005 **
Liver (g)	3.918 ± 0.269	3.874 ± 0.203	3.778 ± 0.330	3.849 ± 0.278	3.926 ± 0.271	3.987 ± 0.108
Liver (%)	2.420 ± 0.084	2.391 ± 0.068	2.388 ± 0.093	2.385 ± 0.098	2.445 ± 0.095	2.566 ± 0.061 **

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