

## Summary of results (Tributyltin chloride)

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of pregnant females			15	15	15	15	15	15
Found dead			0	0	0	0	0	0
F0	Gestation Period	Clinical findings	-	-	-	-	-	-
		Body weights (g)	Day 0 239.7 ±10.2	239.6 ±12.0	239.8 ±12.3	239.5 ±11.7	239.3 ±14.2	239.5 ±12.5
			Day 7 277.4 ±13.1	278.9 ±14.3	274.3 ±14.5	272.5 ±14.3	275.3 ±17.4	272.3 ±15.8
			Day 14 313.9 ±14.5	315.9 ±16.9	310.4 ±18.0	307.7 ±16.8	310.5 ±19.6	307.9 ±19.0
			Day 20 388.5 ±16.4	392.9 ±18.8	386.7 ±18.7	383.3 ±19.2	384.3 ±26.0	372.9 ±19.5
			Autopsy day 387.0 ±15.6	391.0 ±23.3	381.3 ±19.9	384.0 ±43.3	382.7 ±38.2	376.0 ±26.0
		Body weight gains(g)	Day 0-7 37.7 ±6.3	39.3 ±4.4	34.5 ±6.9	33.0 ±6.5	36.3 ±5.4	32.8 ±9.4
			Day 7-20 111.1 ±12.8	114.1 ±9.7	112.3 ±8.8	110.8 ±12.0	109.8 ±15.7	100.6 ±14.3
		Food consumption (g)	Day 0-7 20.95 ±2.66	21.49 ±2.19	21.03 ±3.17	20.13 ±1.82	20.95 ±2.18	20.71 ±2.79
			Day 7-14 22.87 ±2.11	23.47 ±1.63	23.61 ±2.04	22.85 ±1.41	23.49 ±2.62	22.29 ±3.53
			Day 14-20 24.27 ±2.09	24.61 ±1.74	24.79 ±1.17	23.57 ±1.58	23.62 ±2.36	24.53 ±2.16
		Food efficiency	Day 0-7 1.81 ±0.27	1.84 ±0.19	1.68 ±0.43	1.64 ±0.27	1.74 ±0.28	1.63 ±0.52
			Day 7-14 1.60 ±0.26	1.57 ±0.20	1.53 ±0.18	1.54 ±0.19	1.51 ±0.22	1.61 ±0.20
			Day 14-20 3.09 ±0.36	3.14 ±0.32	3.08 ±0.33	3.21 ±0.29	3.13 ±0.47	2.66 ±0.66
		TBT intake (µg/kg)	Day 0-20 0.00 ±0.00	10.77 ±0.59	32.75 ±2.16	105.47 ±3.47	322.22 ±22.35	2153.89 ±158.11

H or H : Significantly higher than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

L or L : Significantly lower than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued -1)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of pregnant females			3	3	3	3	3	3
F0	Absolute organ weights	Brain (g)	1.940 ±0.069	1.920 ±0.040	1.967 ±0.012	1.967 ±0.090	1.953 ±0.040	1.933 ±0.071
		Pituitary gland (mg)	11.40 ±0.50	10.40 ±0.78	12.20 ±1.93	11.93 ±1.43	10.60 ±1.47	9.50 ±0.20
		Thyroid (mg)	20.50 ±1.35	18.30 ±1.83	20.73 ±3.09	20.87 ±2.50	17.77 ±2.67	17.77 ±1.42
		Thymus (mg)	355.3 ±150.6	319.3 ±90.5	258.7 ±114.0	298.3 ±91.1	280.0 ±52.0	216.0 ±12.2
		Liver (g)	16.020 ±1.326	16.023 ±0.255	15.773 ±0.750	15.850 ±2.298	16.343 ±2.823	16.860 ±2.212
		Spleen (g)	0.803 ±0.050	0.753 ±0.131	0.763 ±0.087	0.757 ±0.232	0.687 ±0.051	0.727 ±0.110
		Kidney (g)	1.930 ±0.111	1.883 ±0.081	1.903 ±0.178	1.900 ±0.252	1.927 ±0.257	1.820 ±0.190
		Adrenal (mg)	62.0 ±9.5	65.0 ±10.8	56.3 ±4.0	59.0 ±12.1	67.3 ±6.7	57.3 ±9.2
		Ovary (mg)	146.0 ±17.3	130.7 ±9.0	145.7 ±17.5	139.0 ±15.1	136.3 ±18.5	136.0 ±28.2
		Uterus (g)	4.567 ±0.327	4.350 ±0.130	4.580 ±0.267	4.493 ±0.525	4.427 ±0.468	4.347 ±0.397
F0	Relative organ weights	Brain (%)	0.500 ±0.000	0.493 ±0.021	0.517 ±0.025	0.517 ±0.032	0.513 ±0.042	0.513 ±0.025
		Pituitary gland ( $10^{-3}\%$ )	2.947 ±0.065	2.660 ±0.072	3.197 ±0.484	3.107 ±0.105	2.767 ±0.237	2.533 ±0.138
		Thyroid ( $10^{-3}\%$ )	5.293 ±0.150	4.680 ±0.429	5.430 ±0.718	5.517 ±1.152	4.717 ±1.198	4.573 ±0.351
		Thymus ( $10^{-3}\%$ )	91.883 ±38.077	81.263 ±21.136	66.947 ±26.392	77.670 ±23.534	72.760 ±7.322	57.703 ±6.260
		Liver (%)	4.140 ±0.339	4.103 ±0.178	4.143 ±0.327	4.123 ±0.341	4.250 ±0.368	4.470 ±0.301
		Spleen (%)	0.203 ±0.006	0.190 ±0.020	0.200 ±0.010	0.197 ±0.040	0.180 ±0.010	0.190 ±0.017
		Kidney (%)	0.500 ±0.035	0.480 ±0.035	0.497 ±0.045	0.493 ±0.021	0.507 ±0.065	0.483 ±0.035
		Adrenal ( $10^{-3}\%$ )	16.093 ±3.059	16.560 ±1.943	14.780 ±0.940	15.447 ±3.465	17.627 ±1.111	15.240 ±2.053
		Ovary ( $10^{-3}\%$ )	37.677 ±3.463	33.403 ±0.376	38.113 ±2.698	36.240 ±1.930	35.547 ±1.810	36.023 ±5.799
		Uterus (%)	1.183 ±0.120	1.117 ±0.055	1.203 ±0.059	1.173 ±0.087	1.157 ±0.012	1.157 ±0.081
Observation at terminal sacrifice (GD 20)	Number of corpora lutea	16.0 ±1.7	16.3 ±2.1	17.7 ±1.5	16.7 ±1.5	17.0 ±1.0	16.3 ±2.3	
	Number of implants	15.7 ±1.5	16.3 ±2.1	17.0 ±1.0	16.3 ±1.5	16.3 ±0.6	16.0 ±1.7	
	Implantation index (%)	98.04 ±3.40	100.00 ±0.00	96.39 ±3.13	98.04 ±3.40	96.19 ±3.31	98.25 ±3.04	
	Fetal mortality (%)	6.13 ±6.25	3.81 ±3.31	9.95 ±9.43	10.37 ±10.02	6.25 ±6.25	10.00 ±5.77	
	Gross findings	-	-	-	-	-	-	

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L or L : Significantly lower than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued - 2)**

Generation			Dam: F0			Offspring: F1	
Dose(ppm)		0	0.15	0.45	1.5	4.5	30.0
Number of litters		3	3	3	3	3	3
F1	Fetal Findings	Number of live male fetuses	5.0 ±1.0	9.3 ±2.1	9.0 ±2.6	8.3 ±2.1	8.0 ±1.0
		Number of live female fetuses	9.7 ±0.6	6.3 ±0.6	6.3 ±3.5	6.3 ±3.5	7.3 ±2.3
		Body weights of male fetuses(g)	3.95 ±0.09	4.09 ±0.32	3.78 ±0.11	3.77 ±0.10	3.98 ±0.19
		Body weights of female fetuses (g)	3.81 ±0.15	3.76 ±0.44	3.43 ±0.06	3.47 ±0.08	3.71 ±0.14
	Urovaginal septa length	Male (mm)	-0.54 ±0.01	-0.59 ±0.05	-0.55 ±0.02	-0.65 ±0.02	-0.57 ±0.06
		Female (mm)	0.78 ±0.06	0.70 ±0.10	0.82 ±0.13	0.65 ±0.19	0.81 ±0.05
		Male (mm/body weight)	-0.14 ±0.01	-0.15 ±0.01	-0.14 ±0.01	-0.17 ±0.01	-0.15 ±0.02
		Female (mm/body weight)	0.21 ±0.03	0.19 ±0.03	0.25 ±0.05	0.19 ±0.04	0.23 ±0.01

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- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued - 3)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)		0	0.15	0.45	1.5	4.5	30.0	
Number of pregnant females		12	12	12	12	12	12	
Dead		0	0	0	0	0	0	
F0   Lactation period	Clinical findings	-	-	-	-	-	-	-
		Body weights (g)	Day 0	274.1 ±24.2	268.5 ±18.5	265.9 ±17.8	260.4 ±14.3	256.8 ±17.2
			Day 7	305.2 ±14.0	302.9 ±14.8	301.4 ±19.7	300.3 ±18.6	296.2 ±20.2
			Day 14	315.9 ±18.3	312.3 ±17.5	312.4 ±21.2	314.4 ±15.8	304.6 ±20.4
			Day 21	309.6 ±16.0	296.1 ±15.5	299.9 ±20.1	301.3 ±21.6	290.2 ±18.4
			Autopsy day	304.5 ±14.4	296.6 ±18.6	293.8 ±15.2	296.0 ±17.6	293.8 ±13.4
		Body weight gains (g)	Day 0-21	35.5 ±21.0	27.6 ±12.6	34.0 ±11.0	40.8 ±15.0	33.3 ±14.8
		Food consumption (g)	Day 0-7	33.5 ±4.4	32.8 ±5.0	35.4 ±3.5	35.0 ±2.1	35.5 ±2.6
			Day 7-14	55.6 ±7.5	53.3 ±5.9	54.6 ±4.4	53.7 ±4.9	54.7 ±6.7
			Day 14-21	62.7 ±11.0	69.9 ±7.3	70.0 ±6.7	66.3 ±9.8	73.5H ±7.5
D or I	Food efficiency		Day 0-7	0.92 ±0.49	1.05 ±0.37	1.00 ±0.43	1.14 ±0.32	1.13 ±0.50
			Day 7-14	0.19 ±0.21	0.17 ±0.30	0.20 ±0.27	0.26 ±0.22	0.14 ±0.32
	TBT intake (µg/kg)	Day 0-21	0.00 ±0.00	25.79 ±2.80	79.04 ±7.05	254.56 ±21.54	833.58 ±97.75	5335.11 ±874.62

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**Summary of results (continued - 4)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of pregnant females			12	12	12	12	12	12
F0	Absolute organ weights	Brain (g)	1.902	1.920	1.906	1.908	1.900	1.911
			±0.036	±0.051	±0.059	±0.037	±0.075	±0.053
		Pituitary gland (mg)	10.70	11.32	11.05	10.42	10.73	9.68
			±1.01	±1.42	±1.25	±1.42	±2.10	±0.96
		Thyroid (mg)	16.37	16.98	17.98	16.44	14.90	14.82
			±1.98	±2.63	±2.61	±2.74	±2.73	±2.13
		Thymus (mg)	212.6	195.3	161.2 L	169.8	162.2 L	123.0 L
			±59.7	±59.8	±32.5	±42.5	±37.7	±30.3
		Liver (g)	13.078	13.340	13.054	13.312	12.783	12.886
			±1.021	±0.723	±1.416	±2.745	±1.507	±1.057
F0	Relative organ weights	Spleen (g)	0.688	0.668	0.653	0.635	0.679	0.577 L
			±0.057	±0.084	±0.087	±0.066	±0.079	±0.076
		Kidney (g)	2.236	2.226	2.211	2.194	2.301	2.218
			±0.101	±0.184	±0.155	±0.133	±0.484	±0.115
		Adrenal (mg)	67.3	63.8	63.8	62.7	70.1	68.8
			±8.7	±8.1	±6.2	±6.5	±11.6	±8.3
		Ovary (mg)	83.5	81.0	85.6	81.5	82.7	63.8 L
			±15.8	±11.3	±16.4	±18.3	±17.6	±14.3
		Uterus (g)	0.369	0.362	0.382	0.342	0.298	0.215 L
			±0.129	±0.078	±0.180	±0.139	±0.059	±0.042
F0	Relative organ weights	Brain (%)	0.626	0.648	0.651	0.646	0.648	0.655
			±0.030	±0.038	±0.027	±0.033	±0.045	±0.044
		Pituitary gland ( $10^{-3}\%$ )	3.525	3.823	3.763	3.515	3.637	3.328
			±0.419	±0.458	±0.378	±0.406	±0.604	±0.401
		Thyroid ( $10^{-3}\%$ )	5.387	5.723	6.129	5.564	5.083	5.063
			±0.707	±0.779	±0.911	±0.923	±0.968	±0.579
		Thymus ( $10^{-3}\%$ )	69.560	65.417	54.958	57.163	55.111	41.881 L
			±18.077	±18.288	±11.405	±13.026	±11.963	±8.636
		Liver (%)	4.305	4.508	4.440	4.497	4.344	4.420
			±0.394	±0.253	±0.375	±0.880	±0.402	±0.371
F1	Relative organ weights	Spleen (%)	0.227	0.225	0.223	0.216	0.232	0.194 L
			±0.022	±0.021	±0.031	±0.022	±0.027	±0.020
		Kidney (%)	0.735	0.751	0.752	0.743	0.782	0.760
			±0.046	±0.038	±0.033	±0.038	±0.148	±0.049
		Adrenal ( $10^{-3}\%$ )	22.098	21.464	21.770	21.151	23.874	23.597
F1	Gross findings		±2.747	±2.068	±2.262	±1.474	±3.873	±2.784
		Ovary ( $10^{-3}\%$ )	27.360	27.390	29.133	27.327	28.074	21.885 L
			±4.602	±3.978	±5.477	±4.766	±5.445	±4.954
		Uterus (%)	0.121	0.123	0.130	0.116	0.101	0.073 L
F1	Gross findings	Kidney: Dilatation, renal pelvis	1	0	0	0	1	0

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D or I : Decreasing or increasing tendency.

**Summary of results (continued - 5)**

Generation			Dam: F0 Offspring: F1						
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0	
Number of litters			12	12	12	12	12	12	
F0	Delivery and maternal behavior	Fertility index (%)	100.0	100.0	100.0	100.0	100.0	100.0	
		Delivery index(%)	100.0	100.0	100.0	100.0	100.0	100.0	
		Gestation length (day)	22.1 ±0.3	22.2 ±0.4	22.1 ±0.3	22.0 ±0.0	22.1 ±0.3	22.1 ±0.3	
		Number of implantation sites	16.0 ±3.0	16.3 ±1.5	15.6 ±1.6	16.4 ±1.2	16.1 ±1.8	16.8 ±1.6	
		Number of pups delivered	14.6 ±2.5	15.0 ±2.0	14.3 ±2.1	15.4 ±1.7	15.3 ±1.7	15.3 ±2.7	
	Number of pups	LD 0	Male	88	86	83	80	102	
			Female	87	94	88	105	82	
F1	Sex ratio (Male/male + female)			0.515	0.472	0.492	0.431	0.553	0.502
	Clinical findings	Male	Dead/missing	4	6	0	4	6	10
			Loss, tail	0	0	0	0	0	1
		Female	Dead/missing	6	4	3	2	3	8
	Viability (%)	LD 0	Male	100.00	98.96	100.00	100.00	98.96	100.00
			Female	100.00	100.00	100.00	100.00	98.81	99.31
			Total	100.00	99.48	100.00	100.00	98.76	99.51
		LD 4	Male	97.78	97.42	100.00	100.00	94.17	87.11
			Female	95.63	96.84	96.64	98.13	95.74	93.31
			Total	97.25	96.77	98.28	98.84	96.61	91.33
		LD 21	Male	95.83	95.83	100.00	91.67	97.92	100.00
			Female	93.06	98.33	100.00	100.00	100.00	100.00
			Total	94.79	96.88	100.00	95.83	98.96	100.00
	Anogenital distances (mm)	LD 0	Male	2.88 ±0.17	2.93 ±0.23	2.81 ±0.19	2.70 ±0.15	2.76 ±0.27	2.85 ±0.15
			Female	1.18 ±0.14	1.22 ±0.09	1.21 ±0.06	1.19 ±0.40	1.19 ±0.10	1.52 ±0.94
		LD 4	Male	4.11 ±0.29	4.25 ±0.36	4.13 ±0.30	3.95 ±0.36	4.05 ±0.31	3.82 ±0.92
			Female	1.99 ±0.12	2.09 ±0.18	2.02 ±0.19	1.93 ±0.12	1.97 ±0.16	2.00 ±0.16
	Body weights (g)	Male	Day 0	5.87 ±0.55	5.98 ±0.50	6.08 ±0.43	5.83 ±0.28	5.78 ±0.46	5.57 ±0.61
			Day 4	8.50 ±1.40	8.88 ±1.09	9.06 ±1.27	8.30 ±0.87	8.43 ±0.95	8.62 ±1.20
			Day 21	45.30 ±3.37	47.16 ±2.95	46.63 ±4.35	43.89 ±4.33	43.07 ±3.33	40.94 ±4.34
			Autopsy day	50.94 ±4.59	50.69 ±5.03	50.41 ±4.75	48.07 ±4.87	47.66 ±4.22	46.98 ±4.51
		Female	Day 0	5.46 ±0.48	5.55 ±0.46	5.68 ±0.43	5.33 ±0.27	5.48 ±0.47	5.22 ±0.48
			Day 4	7.94 ±1.37	8.28 ±1.07	8.83 ±0.99	7.79 ±0.65	7.96 ±0.84	8.15 ±1.13
			Day 21	41.93 ±3.47	45.42 ±2.88	44.99 ±3.19	41.73 ±4.05	40.92 ±3.74	39.45 ±3.52
			Autopsy day	45.82 ±6.85	49.26 ±4.47	48.55 ±4.65	46.00 ±4.90	45.30 ±4.71	44.28 ±4.58

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**Summary of results (continued - 6)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			12	12	12	12	12	12
F1 Postnatal development (%)	Male	Pinna detachment (LD 4)	98.61	98.33	100.00	99.17	100.00	100.00
		Incisor eruption (LD 14)	100.00	97.92	100.00	100.00	100.00	100.00
		Eye opening (LD 18)	100.00	100.00	100.00	100.00	100.00	100.00
		Descending of testis (LD 22)	100.00	100.00	100.00	100.00	100.00	100.00
	Female	Pinna detachment (LD 4)	97.23	100.00	99.08	98.24	100.00	97.92
		Incisor eruption (LD 14)	100.00	100.00	100.00	100.00	100.00	100.00
		Eye opening (LD 18)	97.92	100.00	100.00	100.00	100.00	100.00
Reflex re-sponses (%)	Male	Surface righting (LD 4)	100.00	100.00	100.00	100.00	100.00	83.3
		Negative geotaxis (LD 10)	100.00	100.00	100.00	100.00	100.00	100.00
		Mid-air righting (LD 17)	100.00	100.00	100.00	100.00	83.3	90.9
	Female	Surface righting (LD 4)	100.00	100.00	100.00	100.00	100.0	100.00
		Negative geotaxis (LD 10)	100.00	91.7	100.00	100.00	100.0	90.9
		Mid-air righting (LD 17)	100.00	91.7	100.00	100.00	91.7	100.00
Gross Findings	Male		—	—	—	—	—	—
	Female		—	—	—	—	—	—
Histo-Patho-logical findings	Male		—	#	#	#	#	—
	Female	Pituitary gland: Remnant, Rathke's pouch	0	#	#	#	#	1

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— : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

#: Not examined.

**Summary of results (continued - 7)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			6	6	6	6	6	6
F1	Male	Absolute organ weights	Brain (g)	1.448 ±0.056	1.439 ±0.045	1.462 ±0.047	1.368 ±0.235	1.418 ±0.037
			Pituitary gland (mg)	1.84 ±0.37	1.90 ±0.40	1.85 ±0.41	1.90 ±0.65	1.90 ±0.44
			Thyroid (mg)	5.28 ±0.82	5.76 ±1.19	5.45 ±1.03	5.63 ±0.82	5.09 ±0.87
			Thymus (mg)	184.0 ±24.8	188.3 ±31.3	178.8 ±29.0	180.8 ±32.8	172.6 ±25.5
			Liver (g)	2.002 ±0.154	2.053 ±0.268	2.012 ±0.257	2.070 ±0.191	1.916 ±0.257
			Spleen (g)	0.163 ±0.020	0.151 ±0.029	0.149 ±0.030	0.135 L ±0.029	0.134 L ±0.020
			Kidney (g)	0.611 ±0.051	0.622 ±0.074	0.612 ±0.058	0.558 ±0.066	0.562 ±0.058
			Adrenal (mg)	15.2 ±2.6	15.9 ±2.3	16.6 ±2.7	14.4 ±2.0	15.5 ±2.2
			Testis (g)	0.207 ±0.034	0.211 ±0.030	0.228 ±0.035	0.196 ±0.019	0.201 ±0.023
			Epididymis (mg)	39.0 ±5.1	39.1 ±4.6	41.3 ±6.0	36.7 ±4.3	38.8 ±4.9
		Relative organ weights	Seminal vesicle (mg)	14.3 ±3.0	14.0 ±3.1	15.0 ±2.6	14.0 ±3.2	15.3 ±3.2
			Prostate (mg)	16.9 ±4.4	17.4 ±4.0	19.5 ±4.4	17.5 ±3.3	17.3 ±4.4
			Brain (%)	2.859 ±0.197	2.861 ±0.248	2.921 ±0.246	2.975 ±0.266	3.020 ±0.197
			Pituitary gland ( $10^{-3}\%$ )	3.629 ±0.696	3.793 ±0.984	3.657 ±0.708	3.967 ±1.431	4.033 ±1.102
			Thyroid ( $10^{-3}\%$ )	10.481 ±2.031	11.420 ±2.345	10.989 ±2.781	11.830 ±2.188	10.709 ±1.720
		Relative organ weights	Thymus ( $10^{-3}\%$ )	360.683 ±31.935	371.171 ±45.873	353.670 ±38.429	374.246 ±37.171	361.409 ±36.935
			Liver (%)	3.945 ±0.283	4.045 ±0.263	3.992 ±0.332	4.319 H ±0.295	4.015 ±0.340
			Spleen (%)	0.323 ±0.042	0.297 ±0.043	0.294 ±0.044	0.279 L ±0.039	0.282 L ±0.043
			Kidney (%)	1.202 ±0.061	1.226 ±0.047	1.216 ±0.061	1.163 ±0.084	1.181 ±0.084
			Adrenal ( $10^{-3}\%$ )	29.753 ±3.996	31.327 ±3.419	32.908 ±4.556	30.082 ±4.097	32.572 ±4.030
			Testis (%)	0.404 ±0.041	0.417 ±0.035	0.451 H ±0.047	0.408 ±0.033	0.422 ±0.034
			Epididymis ( $10^{-3}\%$ )	76.531 ±7.156	77.634 ±9.222	81.857 ±8.544	76.831 ±10.018	82.047 ±12.198
			Seminal Vesicle ( $10^{-3}\%$ )	28.170 ±6.233	27.830 ±7.038	29.666 ±4.317	29.315 ±6.982	32.380 ±8.211
			Prostate ( $10^{-3}\%$ )	33.059 ±7.531	34.325 ±7.395	38.825 ±8.662	36.461 ±6.116	36.274 ±8.373

H or H : Significantly higher than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

L or L : Significantly lower than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued - 8)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			6	6	6	6	6	6
F1	Female	Absolute organ weights	Brain (g)	1.359 ±0.089	1.389 ±0.055	1.403 ±0.046	1.351 ±0.042	1.393 ±0.063
			Pituitary gland (mg)	1.97 ±0.42	2.12 ±0.62	2.11 ±0.36	1.86 ±0.38	1.90 ±0.36
			Thyroid (mg)	5.53 ±0.93	5.82 ±1.05	5.41 ±0.84	5.75 ±0.81	5.33 ±1.18
			Thymus (mg)	179.2 ±35.9	181.2 ±31.0	185.4 ±36.4	178.6 ±35.2	180.9 ±35.4
			Liver (g)	1.815 ±0.250	1.996 ±0.247	2.034 ±0.211	1.974 ±0.169	1.847 ±0.226
			Spleen (g)	0.146 ±0.030	0.147 ±0.024	0.143 ±0.024	0.143 ±0.038	0.133 ±0.032
			Kidney (g)	0.577 ±0.083	0.607 ±0.062	0.603 ±0.063	0.557 ±0.062	0.550 ±0.069
			Adrenal (mg)	14.8 ±2.5	14.8 ±2.1	16.3 ±2.1	14.8 ±2.2	14.8 ±2.3
			Ovary (mg)	10.6 ±2.5	10.5 ±2.6	11.7 ±2.4	10.9 ±2.1	10.8 ±2.1
			Uterus (mg)	37.0 ±9.7	39.2 ±11.2	41.9 ±8.9	34.8 ±8.7	35.3 ±7.7
			Relative organ weights	Brain (%)	3.023 ±0.422	2.836 ±0.198	2.909 ±0.220	2.965 ±0.307
				Pituitary gland (10 <sup>-3</sup> %)	4.353 ±0.906	4.312 ±1.263	4.351 ±0.682	4.073 ±0.904
				Thyroid (10 <sup>-3</sup> %)	12.440 ±3.478	11.844 ±1.991	11.201 ±1.802	12.537 ±1.658
				Thymus (10 <sup>-3</sup> %)	388.445 ±52.325	366.744 ±45.363	380.712 ±53.579	386.677 ±52.304
				Liver (%)	3.984 ±0.335	4.043 ±0.224	4.196 ±0.277	4.308 H ±0.294
				Spleen (%)	0.317 ±0.041	0.299 ±0.039	0.296 ±0.040	0.307 ±0.060
				Kidney (%)	1.261 ±0.047	1.231 ±0.060	1.242 ±0.054	1.210 ±0.061
				Adrenal	32.479 ->4.105	30.141 ±3.726	33.636 ±3.709	32.079 ±3.449
				Ovary (10 <sup>-3</sup> %)	23.153 ±1.187	21.287 ±4.756	24.150 ±4.492	23.816 ±4.155
				Uterus (10 <sup>-3</sup> %)	81.760 ±21.179	79.737 ±21.863	86.188 ±16.623	75.212 ±15.266

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L or L : Significantly lower than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued - 9)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			6	6	6	6	6	6
F1	Reflex responses (5 weeks old) (%)	Male	Pupillary reflex	100.0	100.0	100.0	100.0	100.0
			Touch reflex	100.0	100.0	100.0	100.0	100.0
		Female	Auditory startle reflex	100.0	100.0	100.0	100.0	100.0
			Pain reflex	100.0	100.0	100.0	100.0	100.0
	Learning ability	Avoidance and escape index (%)	Pupillary reflex	100.0	100.0	100.0	100.0	100.0
			Touch reflex	100.0	100.0	100.0	100.0	100.0
		Female	Auditory startle reflex	100.0	100.0	100.0	100.0	100.0
			Pain reflex	100.0	100.0	100.0	100.0	100.0
Sexual development (day)	Male	Preputial separation	50.5	48.8	50.5	50.7	50.5	49.7
			±1.0	±1.2	±2.3	±2.4	±1.5	±2.2
	Female	Vaginal opening	34.0	33.5	33.0	33.2	36.2	34.7
			±2.1	±2.9	±1.1	±3.3	±2.4	±2.5
	Body weights (g)	Male	Day 28	78.5 ±7.1	84.6 ±6.6	81.3 ±6.4	77.5 ±9.6	77.4 ±7.0
			Day 35	122.6 ±10.4	133.4 H ±8.8	126.5 ±9.8	123.6 ±13.8	120.7 ±7.6
			Day 42	172.0 ±15.4	183.1 ±10.6	176.5 ±13.8	170.3 ±17.4	169.9 ±10.9
			Day 49	225.7 ±19.1	233.8 ±14.7	226.8 ±17.7	220.8 ±22.9	225.3 ±18.4
			Day 56	283.3 ±21.0	288.9 ±21.9	285.6 ±20.8	279.2 ±24.3	277.5 ±17.5
			Day 63	321.2 ±18.4	318.4 ±22.3	307.0 ±34.8	309.0 ±25.6	312.9 ±18.3
			Day 70	349.5 ±21.1	355.7 ±20.5	352.9 ±23.7	346.0 ±23.4	340.2 ±19.6
		Female	Day 28	71.2 ±5.1	76.9 ±6.9	75.6 ±3.9	71.5 ±7.0	69.0 ±5.9
			Day 35	109.2 ±8.1	116.3 ±9.6	115.8 ±5.5	109.7 ±9.6	104.8 ±7.1
		Female	Day 42	142.1 ±9.5	148.0 ±11.7	145.2 ±8.1	138.9 ±9.6	137.4 ±8.5
			Day 49	169.8 ±10.6	173.6 ±10.9	172.7 ±9.0	162.8 ±10.2	164.3 ±11.3
			Day 56	195.6 ±9.5	196.7 ±13.0	196.3 ±10.8	186.8 ±10.3	189.3 ±11.6
			Day 63	215.8 ±11.1	216.2 ±14.4	215.7 ±11.6	204.5 ±11.2	207.3 ±10.9
			Day 70	233.9 ±10.6	231.1 ±15.4	232.3 ±15.0	222.5 ±12.5	225.3 ±11.7
								217.9 L ±15.7

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D or I : Decreasing or increasing tendency.

**Summary of results (continued - 10)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			6	6	6	6	6	6
F1	Sperm examination	Number of epidermal sperm( $\times 10^6$ /g cauda)	568.66 ±85.04	580.88 ±56.62	584.90 ±91.80	554.03 ±84.11	573.95 ±95.07	558.64 ±74.52
		Motility(%)	53.1 ±14.7	49.2 ±14.1	51.1 ±11.2	57.1 ±14.4	49.3 ±16.5	45.8 ±14.9
		Abnormal sperm index (%)	3.12 ±1.59	3.31 ±1.42	2.81 ±1.26	3.27 ±2.30	3.48 ±1.71	2.90 ±1.62
	Estrus cycle	Normal estrus cycle index(%)	91.12 ±14.39	83.33 ±27.90	100.00 ±0.00	100.00 ±0.00	94.45 ±13.59	94.45 ±13.59
		Estrus cycle length (day)	4.4 ±0.4	4.4 ±0.4	4.1 ±0.1	4.2 ±0.1	4.3 ±0.3	4.2 ±0.2
		Male	Testosterone (ng/mL) ±0.33	1.05 ±0.42	0.94 ±0.33	0.89 ±0.54	0.73 ±0.63	1.10 ±0.17
	Hormone concentrations	FSH(ng/mL) ±2.94	13.51 ±0.78	13.17 ±1.51	13.54 ±1.97	13.66 ±1.97	13.82 ±3.17	13.33 ±1.58
		LH(ng/mL) ±0.21	1.59 ±0.59	1.53 ±0.44	1.47 ±0.22	1.60 ±0.22	1.42 ±0.46	1.58 ±0.41
		TSH(ng/mL) ±2.20	17.20 ±2.20	19.97 ±2.28	20.30 ±2.37	18.30 ±1.73	20.08 ±2.44	18.87 ±3.69
		T3(ng/mL) ±0.27	0.50 ±0.27	0.25 ±0.27	0.30 ±0.33	0.32 ±0.35	0.45 ±0.23	0.28 ±0.31
		T4(ng/mL) ±15.7	103.5 ±15.7	93.7 ±10.9	99.3 ±10.1	96.3 ±12.1	84.8 ±7.7	86.7 ±10.6
		Female	Estradiol (pg/mL) ±13.07	66.42 ±9.42	70.82 ±21.25	54.52 ±27.80	58.33 ±18.76	48.87 ±14.49
		FSH(ng/mL) ±0.48	4.10 ±0.87	5.09 ±0.92	4.73 ±0.92	4.30 ±0.63	4.26 ±0.61	3.95 ±0.35
		LH(ng/mL) ±0.27	1.45 ±0.32	1.32 ±0.37	1.45 ±0.37	1.48 ±0.35	1.52 ±0.30	1.10 ±0.21
		TSH(ng/mL) ±2.92	22.92 ±3.08	21.47 ±3.25	21.35 ±3.25	20.58 ±2.19	23.17 ±2.13	21.62 ±2.56
	mRNA expression (%)	T3(ng/mL) ±0.38	0.47 ±0.08	0.65 ±0.14	0.63 ±0.14	0.68 ±0.08	0.67 ±0.12	0.43 ±0.34
		T4(ng/mL) ±19.0	119.8 ±19.0	125.7 ±16.1	126.8 ±12.0	114.5 ±6.40	118.5 ±19.3	115.8 ±16.2
		Prostate	AR ±20.6	100.0 ±47.4	119.0 ±35.8	112.1 ±27.0	122.3 ±50.4	120.1 ±7.7
	Uterus	ER $\alpha$	100.0 ±12.3	73.5 ±5.8	71.4 ±4.0	94.5 ±15.8	87.7 ±20.9	58.8 ±10.2
		ER $\beta$	98.8 ±65.7	113.1 ±76.7	52.4 ±17.9	133.3 ±46.2	167.9 ±180.6	186.9 ±190.5

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- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued - 11)**

Generation		Dam: F0 Offspring: F1						
Dose(ppm)		0	0.15	0.45	1.5	4.5	30.0	
Number of litters		6	6	6	6	6	6	
F1	<b>Hematology</b>							
Male	WBC ( $10^2/\mu\text{L}$ )		119.2 ±25.4	111.3 ±13.9	115.2 ±13.6	112.7 ±20.9	109.2 ±12.9	108.5 ±26.2
	Differential count of WBC (%)	Neutrophil (stab)	1.7 ±0.8	2.8 ±1.8	2.7 ±1.6	3.0 ±1.5	2.8 ±0.8	3.2 ±1.0
		Neutrophil (seg)	4.0 ±1.5	6.2 ±2.4	6.3 ±2.7	6.8 ±3.0	8.5 H ±2.3	7.2 ±1.5
		Eosinophil	0.7 ±0.5	0.7 ±0.5	0.5 ±0.5	0.5 ±0.8	0.8 ±0.4	0.3 ±0.5
		Basophil	0.0 ±0.0	0.0 ±0.0	0.0 ±0.0	0.0 ±0.0	0.0 ±0.0	0.2 ±0.4
		Monocyte	1.0 ±0.6	1.3 ±0.8	1.7 ±0.8	1.2 ±0.4	1.7 ±0.5	1.5 ±0.5
		Lymphocyte	92.7 ±1.5	89.0 ±3.4	88.8 ±4.2	88.5 ±4.2	86.2 ±2.8	87.7 ±2.3
Female	WBC ( $10^2/\mu\text{L}$ )		127.2 ±23.7	110.2 ±18.6	87.3 ±35.5	104.0 ±23.0	107.8 ±20.0	106.0 ±12.38
	Differential count of WBC (%)	Neutrophil (stab)	3.3 ±1.6	2.7 ±2.0	4.3 ±2.4	4.5 ±2.1	4.0 ±1.5	2.5 ±1.9
		Neutrophil (seg)	9.3 ±5.0	8.5 ±5.5	10.0 ±4.1	10.3 ±6.0	9.7 ±3.0	7.3 ±3.4
		Eosinophil	1.2 ±0.8	1.0 ±1.1	0.7 ±0.8	0.5 ±0.5	0.7 ±0.5	0.7 ±0.5
		Basophil	0.0 ±0.0	0.0 ±0.0	0.0 ±0.0	0.0 ±0.0	0.0 ±0.0	0.0 ±0.0
		Monocyte	1.3 ±1.0	1.0 ±0.0	0.8 ±0.4	1.3 ±0.5	1.0 ±0.9	0.7 ±0.8
		Lymphocyte	84.8 ±6.9	86.8 ±7.2	84.2 ±5.6	83.3 ±8.0	84.7 ±4.3	88.8 ±4.9

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L or L : Significantly lower than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued - 12)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			6	6	6	6	6	6
F1	Gross findings	Male	Kidney: Dilatation, renal pelvis	0	1	0	1	0
			Urinary bladder: Thickening, mucosa	0	0	0	0	1
			Intra-abdominal Organs: Adhesion	0	0	0	0	1
		Female	Liver: Yellowish white region	0	1	0	0	0
			Kidney: Dilatation, renal pelvis	0	0	1	0	0
	Histo-pathological findings	Male	Urinary bladder: Calculus	1	0	0	0	1
			Urinary bladder: Thickening, mucosa	1	0	0	0	0
			Liver: Microgranuloma	0	#	#	#	1
			Liver: Necrosis, massive	0	#	#	#	1
		Female	Liver: Granulation, capsule	0	#	#	#	1
			Pituitary gland: Cyst, pars distalis	4	#	#	#	5
			Pituitary gland: Remnant, Rathke's pouch	0	#	#	#	2
		Male	Pituitary gland: Cyst, pars distalis	1	#	#	#	2
			Pituitary gland: Cyst pars nervosa	0	#	#	#	2

#: Not examined.

**Summary of results (continued - 13)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			6	6	6	6	6	6
F1	Male	Absolute organ weights	Brain (g)	1.955 ±0.070	1.979 ±0.070	1.955 ±0.073	1.961 ±0.079	1.941 ±0.047
			Pituitary gland (mg)	10.74 ±1.41	10.41 ±1.52	9.70 ±1.18	9.73 ±0.92	9.68 L ±1.80
			Thyroid (mg)	21.17 ±2.80	20.08 ±3.20	20.06 ±3.57	19.70 ±2.65	18.43 ±3.20
			Thymus (mg)	668.6 ±125.2	638.0 ±122.4	620.1 ±97.8	613.5 ±94.8	669.4 ±141.3
			Liver (g)	14.318 ±1.983	14.957 ±1.495	14.505 ±1.875	13.800 ±1.467	13.679 ±1.752
			Spleen (g)	0.801 ±0.090	0.822 ±0.107	0.800 ±0.118	0.787 ±0.073	0.841 ±0.244
			Kidney (g)	2.954 ±0.231	3.150 ±1.267	2.871 ±0.214	2.833 ±0.277	2.732 L ±0.212
			Adrenal (mg)	52.2 ±7.1	52.4 ±7.4	51.0 ±5.8	51.2 ±4.9	51.6 ±4.9
			Testis (g)	2.583 ±0.138	2.613 ±0.115	2.573 ±0.100	2.578 ±0.161	2.568 ±0.147
			Epididymis (mg)	0.740 ±0.063	0.745 ±0.047	0.743 ±0.063	0.751 ±0.061	0.738 ±0.047
	Female	Relative organ weights	Seminal vesicle (mg)	1.424 ±0.165	1.461 ±0.195	1.475 ±0.174	1.518 ±0.223	1.400 ±0.215
			Prostate (mg)	456.1 ±86.6	449.5 ±55.6	456.5 ±99.8	463.0 ±89.2	465.4 ±94.3
			Brain (%)	0.561 ±0.038	0.558 ±0.035	0.555 ±0.030	0.568 ±0.030	0.573 ±0.031
			Pituitary gland ( $10^{-3}\%$ )	3.081 ±0.416	2.919 ±0.309	2.760 L ±0.381	2.823 ±0.311	2.843 ±0.470
			Thyroid ( $10^{-3}\%$ )	6.060 ±0.748	5.643 ±0.818	5.679 ±0.916	5.704 ±0.753	5.420 ±0.875
			Thymus ( $10^{-3}\%$ )	191.666 ±36.105	179.469 ±33.614	175.745 ±25.765	177.766 ±28.410	196.946 ±41.002
			Liver (%)	4.084 ±0.391	4.202 ±0.323	4.104 ±0.395	3.987 ±0.295	4.016 ±0.414
			Spleen (%)	0.230 ±0.025	0.231 ±0.029	0.226 ±0.030	0.228 ±0.023	0.245 ±0.058
F1	Male	Relative organ weights	Kidney (%)	0.846 ±0.053	0.892 ±0.399	0.814 ±0.036	0.818 ±0.043	0.804 ±0.043
			Adrenal ( $10^{-3}\%$ )	14.982 ±2.141	14.706 ±1.738	14.478 ±1.560	14.827 ±1.525	15.197 ±1.517
			Testis (%)	0.741 ±0.054	0.737 ±0.051	0.733 ±0.051	0.745 ±0.037	0.756 ±0.041
			Epididymis ( $10^{-3}\%$ )	0.213 ±0.018	0.210 ±0.013	0.212 ±0.018	0.217 ±0.011	0.217 ±0.014
			Seminal vesicle ( $10^{-3}\%$ )	0.407 ±0.044	0.411 ±0.054	0.418 ±0.042	0.439 ±0.059	0.411 ±0.067
			Prostate ( $10^{-3}\%$ )	130.769 ±25.312	126.756 ±17.143	129.078 ±26.040	133.585 ±22.312	137.155 ±28.634

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- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.

**Summary of results (continued - 14)**

Generation			Dam: F0 Offspring: F1					
Dose(ppm)			0	0.15	0.45	1.5	4.5	30.0
Number of litters			6	6	6	6	6	6
F1	Female	Absolute organ weights	Brain (g)	1.825 ±0.046	1.865 ±0.054	1.857 ±0.066	1.841 ±0.058	1.815 ±0.049
			Pituitary gland (mg)	9.86 ±1.44	9.55 ±1.19	8.93 ±1.52	9.07 ±1.06	8.99 ±0.82
			Thyroid (mg)	16.88 ±2.02	17.23 ±2.10	15.73 ±4.57	18.15 ±2.13	16.66 ±2.64
			Thymus (mg)	610.6 ±115.7	544.5 ±71.5	555.4 ±108.4	516.3 ±94.1	571.8 ±77.8
			Liver (g)	9.767 ±0.748	9.721 ±1.108	9.960 ±1.484	9.554 ±0.765	9.408 ±0.801
			Spleen (g)	0.698 ±0.078	0.690 ±0.095	0.693 ±0.098	0.670 ±0.084	0.679 ±0.063
			Kidney (g)	1.753 ±0.134	1.790 ±0.145	2.135 ±1.848	1.740 ±0.129	1.670 ±0.110
			Adrenal (mg)	65.6 ±5.7	68.0 ±8.9	66.9 ±7.8	62.7 ±8.4	65.0 ±6.5
			Ovary (mg)	96.0 ±10.4	100.0 ±12.0	93.4 ±9.7	96.0 ±12.6	96.4 ±12.4
			Uterus (g)	0.583 ±0.166	0.587 ±0.181	0.585 ±0.227	0.550 ±0.159	0.544 ±0.175
	Relative organ weights	Relative organ weights	Brain (%)	0.780 ±0.033	0.798 ±0.061	0.785 ±0.041	0.815 ±0.037	0.807 ±0.043
			Pituitary gland ( $10^{-3}\%$ )	4.211 ±0.612	4.080 ±0.528	3.752 ±0.519	4.012 ±0.461	4.000 ±0.372
			Thyroid ( $10^{-3}\%$ )	7.216 ±0.953	7.359 ±0.938	6.656 ±1.987	8.036 ±0.942	7.422 ±1.253
			Thymus ( $10^{-3}\%$ )	260.538 ±48.445	232.118 ±27.428	233.775 ±40.560	228.425 ±41.094	253.618 ±29.145
			Liver (%)	4.165 ±0.232	4.138 ±0.319	4.195 ±0.558	4.223 ±0.256	4.176 ±0.232
	Relative organ weights	Relative organ weights	Spleen (%)	0.299 ±0.035	0.294 ±0.038	0.292 ±0.034	0.297 ±0.034	0.302 ±0.029
			Kidney (%)	0.749 ±0.063	0.764 ±0.050	0.894Å ±0.741	0.770 ±0.046	0.746 ±0.041
			Adrenal ( $10^{-3}\%$ )	28.040 ±2.628	29.013 ±3.489	28.243 ±3.264	27.704 ±3.283	28.860 ±2.480
			Ovary ( $10^{-3}\%$ )	41.027 ±4.510	42.742 ±5.342	39.440 ±4.128	42.483 ±5.577	42.855 ±5.452
			Uterus (%)	0.250 ±0.070	0.250 ±0.075	0.245 ±0.089	0.245 ±0.077	0.242 ±0.080

H or H : Significantly higher than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

L or L : Significantly lower than the control ( $p < 0.05$  and  $p < 0.01$ , respectively).

- : No treatment-related alterations.

D or I : Decreasing or increasing tendency.