

試験結果概要表 (BBPの2世代繁殖試験)

被験物質投与期間	雄：交配前12週間、交配期間（最長2週間） および剖検前日まで 雌：交配前2週間、交配期間（最長1週間） および哺育21日まで F <sub>1</sub> ：離乳日（哺育22日）から剖検前日まで	
使用動物種・系統：ラット・Crj:CD(SD)IGS	1群の動物数 雄：25 雌：25	被験物質純度 98.0 wt % (東京化成工業、Lot No. GF02)
投与経路：強制経口投与		

検査項目		対照群 ♂/♀ ↑：傾向, Δ：5%有意差, ▲：1%有意差, -：変化なし	20 ♂/♀	100 ♂/♀	500 ♂/♀	(mg/kg)
一般状態	死亡/切迫屠殺	0/0	0/0	0/0	0/0	
	投与直後の流涎	0/0	0/0	18/10	25/25	
	脱毛	0/0	0/0	0/1	0/0	
	痂皮	1/0	1/0	0/1	2/0	
	腫瘤	0/0	0/0	0/0	0/1	
体重			-/-	-/-	▽/-	
摂餌量			-/-	-/-	-/-	
性周期	Not changed	24	24	24	23	
	Changed	1	1	1	2	
交配成績	交尾率 (%)	96.0	96.0	96.0	100.0	
	受胎率 (%)	91.7	83.3	95.8	96.0	
	交尾までの日数	2.5	3.2	2.6	3.2	
F <sub>0</sub>	妊娠日数	21.9	22.0	21.7	22.0	
	着床数	14.3	15.1	15.9	15.2	
	分娩率	100.0	100.0	100.0	100.0	
剖検所見	精巢 小型	1/*	1/*	0/*	0/*	
	精巢上体 小型	1/*	1/*	0/*	0/*	
	卵巣 小型	*/*	*/*	*/*	*/*	
	子宮内腔 拡張	*/*	*/*	*/*	*/*	
	胸腺 小型	0/2	4/1	2/2	1/3	
器官重量 (実重量)	脳		-/-	-/-	-/-	
	心臓		-/-	-/-	-/-	
	肺		-/-	-/-	-/-	
	肝臓		-/-	-/-	-/-	
	脾臓		-/-	-/-	▲/-	
	腎臓		-/-	-/-	-/-	
	副腎		-/-	-/Δ	Δ/Δ	
	胸腺		-/-	-/-	-/-	
	精巢		-/*	-/*	-/*	
	精巢上体		-/*	-/*	-/*	
	前立腺		-/*	-/*	-/*	
	精嚢腺		-/*	-/*	-/*	
	卵巣		*/-	*/-	*/▽	
	子宮		*/-	*/-	*/-	
	甲状腺		-/-	-/-	-/-	
下垂体		-/-	-/-	-/-		

検査項目			対照群 ♂/♀	20 ♂/♀	100 ♂/♀	500 ♂/♀	(mg/kg)	
			↑: 傾向, Δ: 5%有意差, ▲: 1%有意差, -: 変化なし					
F <sub>0</sub>	組織所見	精巣	1 / *	* / *	* / *	0 / *		
		精巣上体	1 / *	* / *	* / *	0 / *		
		前立腺	4 / *	* / *	* / *	4 / *		
		肝臓	3 / 0	* / *	* / *	0 / 0		
		腎臓	7 / 0	* / *	* / *	5 / 0		
		卵巣	閉鎖卵胞の増加	8 / 2	* / *	* / *	8 / 5	
			卵胞嚢腫	* / 1	* / *	* / *	* / 1	
		乳腺	腺腫	* / 0	* / *	* / *	* / 1	
			好中球浸潤	0 / 0	* / *	* / *	0 / 1	
				0 / 1	* / *	* / *	0 / 1	
精子検査	運動精子率 (%)	96	94	94	95			
	前進精子率 (%)	83	80	78	81			
	精子数 (x10 <sup>6</sup> /g)	1790.2	1790.2	1700.3	1758.8			
血中ホルモン濃度	テストステロン		- / *	- / *	▼ / *			
	PRL		* / -	* / -	* / Δ			
	LH		▽ / -	- / -	- / -			
	FSH		- / -	▲ / -	▲ / -			
	TSH		- / Δ	▽ / -	- / -			
	T3		- / -	- / -	▼ / -			
	T4		- / -	- / -	▼ / ▼			
	エストラジオール		* / -	* / -	* / -			

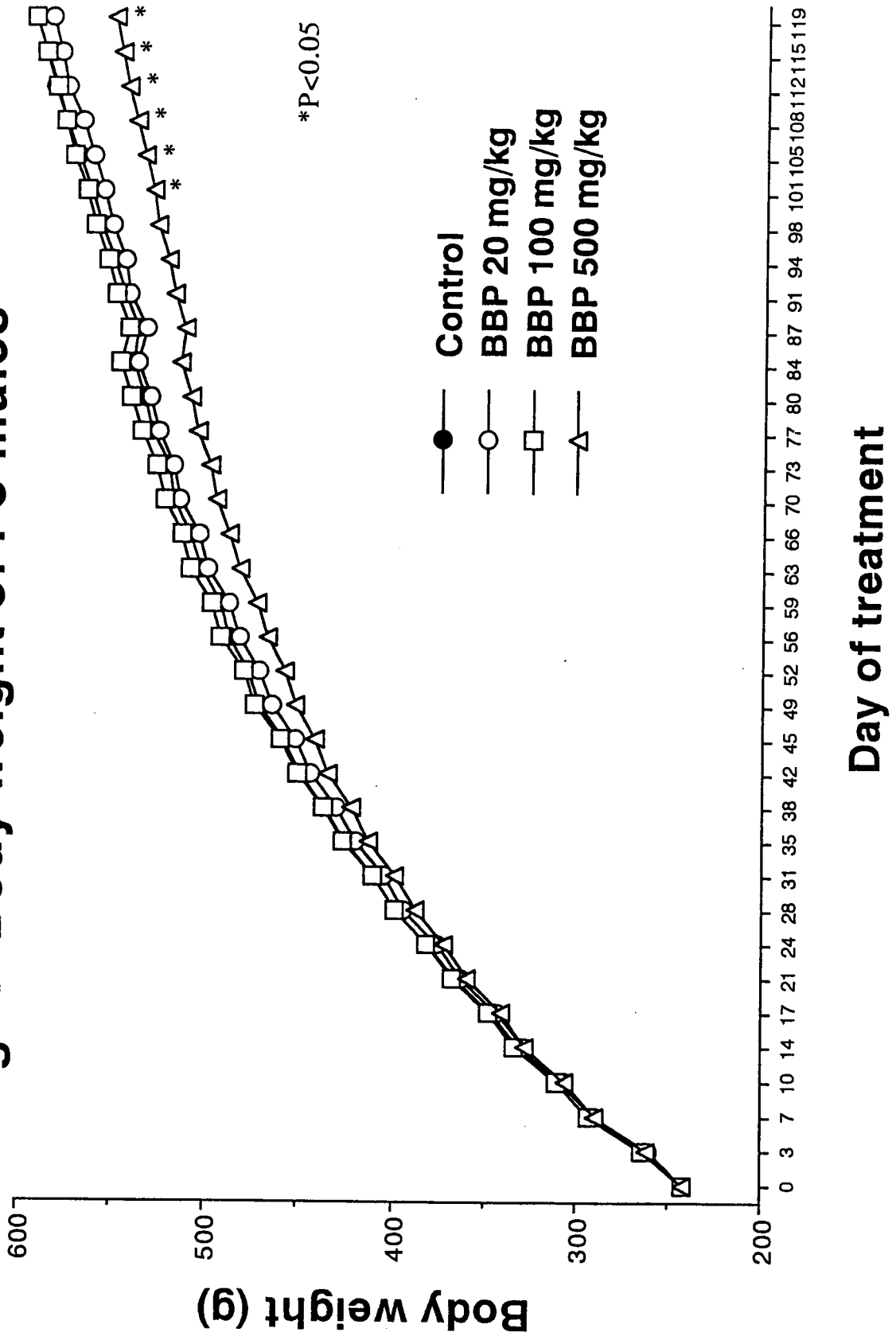
検査項目			対照群 ♂/♀	20 ♂/♀	100 ♂/♀	500 ♂/♀	(mg/kg)
			↑: 傾向, Δ: 5%有意差, ▲: 1%有意差, -: 変化なし				
F <sub>1</sub>	産児所見	総産児数	13.3	14.0	15.1	14.3	
		分娩率 (%)	93.0	92.8	95.4	94.0	
		哺育0日生児数	13.1	13.9	14.9	14.0	
		出生率 (%)	91.3	91.9	93.8	92.7	
		哺育4日生児数	13.1	13.7	14.8	13.5	
		哺育4日生存率 (%)	100.0	99.0	99.5	96.7 ▼	
		離乳率 (%)	99.4	100.0	100.0	100.0	
	体重 (g)	哺育0日		- / -	▽ / ▼	▼ / ▼	
		4日		- / -	- / -	↓ / ↓	
		7日		- / -	- / -	↓ / ↓	
14日			- / -	- / -	↓ / ↓		
		21日		- / -	▼ / ▼		
肛門生殖突起間距離 (哺育0日)		- / -	- / -	▼ / Δ			
行動発達 (完成日)	正向反射		- / -	- / -	- / -		
	断崖落下回避		- / -	▲ / -	- / -		
	背地走性		- / -	- / -	- / -		
身体発達 (完成日)	上顎切歯萌出		- / -	- / -	▼ / -		
	外耳道開通		▼ / ▼	▼ / ▼	- / -		
	眼瞼開裂		▼ / ▼	- / -	- / -		

検査項目		対照群 ♂/♀ ↑:傾向, △:5%有意差	20 ♂/♀	100 ♂/♀ ▲:1%有意差	500 ♂/♀ -:変化なし	(mg/kg)	
F <sub>1</sub>	異常児所見	全身浮腫 胸腺萎縮 肝臓・横隔膜癒着 精巣上体萎縮 腎盂拡張	0 0 0 0 0	0 0 0 0 0	1 0 0 0 1	0 1 1 3 0	
	器官重量(実重量) (生後22日)	精巣 精巣上体 前立腺+精囊 卵巣 子宮	-/* -/* -/* */- */-	-/* -/* -/* */- */-	-/* -/* -/* */- */-	▼/* ▽/* ↓/* *▼ */-	
	組織所見	精巣 精細管萎縮 精母細胞減少 精祖細胞減少	0/* 0/* 0/*	0/* 1/* 0/*	0/* 0/* 0/*	1/* 9▲/* 3/*	
	血中ホルモン濃度 (生後22日)	テストステロン PRL LH FSH TSH T3 T4 エストラジオール	-/* */- -/- -/- -/- ▲/*- -/- */-	-/* */- -/- -/- ▽/*- -/*▼ -/- */-	-/* */- -/- -/- ▽/*- -/*▼ -/- */-	-/* */- -/- -/- ▼/*- -/*▼ -/- */-	
	一般状態	死亡/切迫屠殺 投与直後の流涎 痂皮	0/0 0/0 0/0	0/0 0/0 0/0	0/0 0/0 0/0	0/0 48/48 1/0	
	体重 摂餌量		-/- -/-	-/- -/-	▽/*- -/-	▼▼/* ▼▼/*	
	オープンフィールド	潜時 移動距離 立ち上がり グルーミング 排糞 排尿	-/- -/- -/- -/- -/*▽ -/-	-/- -/- -/- -/- -/*▽ -/-	▽/*- ▲/*- -/- -/- -/- -/-	-/- -/- -/- -/- -/*▽ -/-	
	水迷路	エラー数 所要時間	-/- -/-	-/- -/-	-/- -/-	-/*▽ -/-	
	回転ケージ	回転数	-/-	-/-	-/-	-/*△	
	包皮分離/膈開口(完成日)		-/-	-/-	-/-	△/*-	
剖検所見 (10週齢)	精巣 精巣上体 精囊 腎盂拡張 水腎 子宮内腔 小型 小型 小型 拡張 拡張	0/* 0/* 0/* 1/0 0/0 */0	0/* 0/* 0/* 0/0 0/0 */0	0/* 0/* 0/* 2/0 0/0 */0	2/* 2/* 1/* 3/0 0/1 */1		

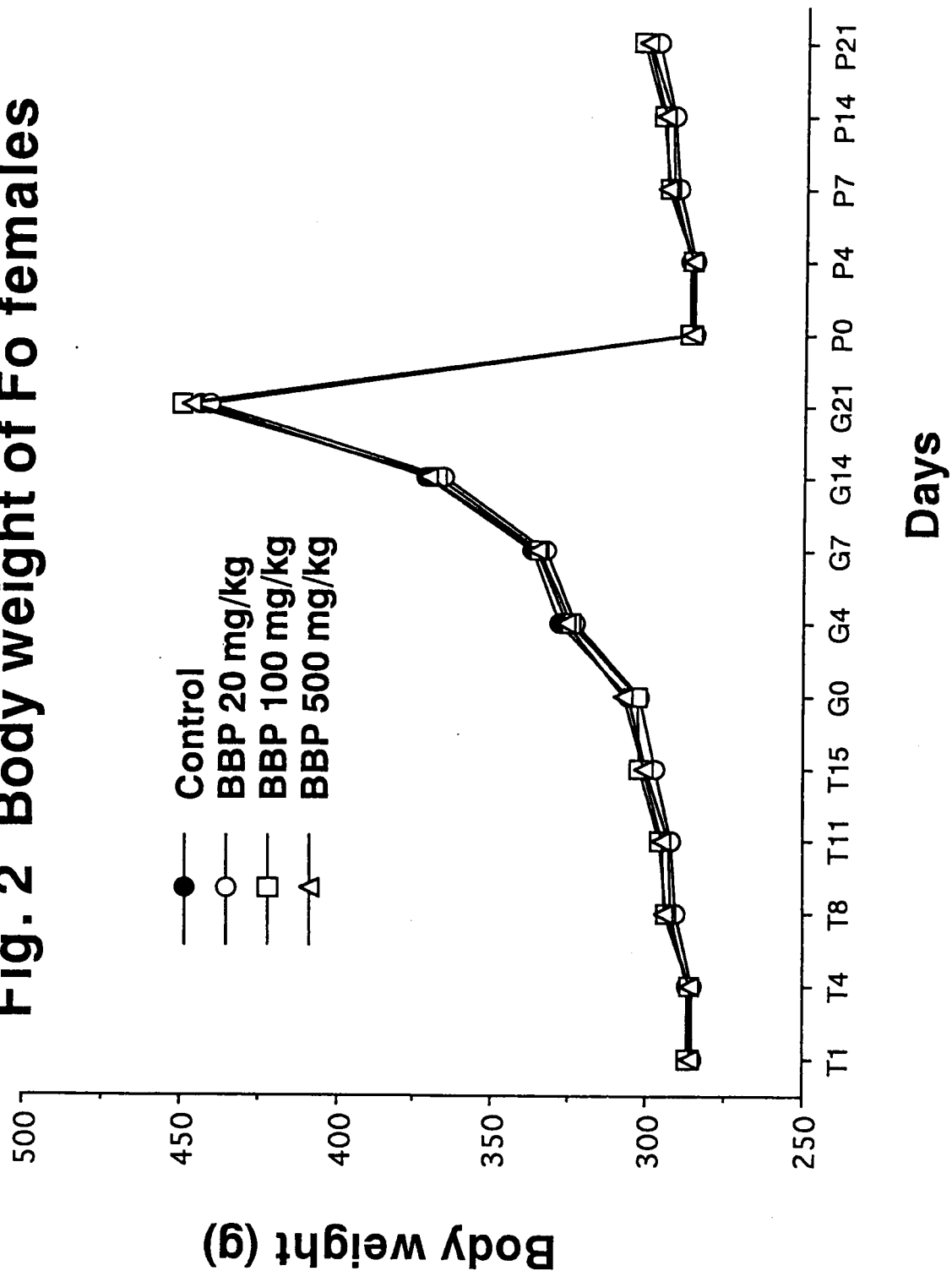
検査項目		対照群 ♂/♀	20 ♂/♀	100 ♂/♀	500 ♂/♀	(mg/kg)
		↑: 傾向, △: 5%有意差, ▲: 1%有意差, -: 変化なし				
F <sub>1</sub>	器官重量 (実重量) (10週齢)		-/*	-/*	↓/*	
	精巢		-/*	-/*	▼/*	
	精巢上体		-/*	-/*	-/*	
	前立腺		-/*	-/*	▼/*	
	精囊腺		*/-	*/-	*/*	
	卵巣		*/-	*/-	*/*	
子宮						
性周期	Regular	2 2	1 7	2 2	2 4	
	Monoestrus	0	2	1	0	
	Anestrus	0	1	0	0	
交配成績 (♂)	交尾率 (%)	100.0	94.7	91.3	91.7	
	受胎率 (%)	77.3	72.2	90.5	72.7	
	交尾までの日数	3.6	4.3	3.0	3.2	
交配成績 (♀)	交尾率 (%)	100.0	95.0	91.7	91.7	
	受胎率 (%)	77.3	73.7	90.9	72.7	
	交尾までの日数	3.6	4.3	3.0	3.2	
妊娠日数	妊娠日数	21.9	22.0	21.9	22.1	
	着床数	13.9	14.6	13.4	13.1	
	分娩率	100.0	100.0	100.0	100.0	
剖検所見	精巢	0/*	0/*	0/*	6/*	
	精巢上体	0/*	0/*	0/*	1/*	
	前立腺	0/*	0/*	0/*	4/*	
	腎盂拡張	2/2	2/1	0/1	1/1	
	胸腺	0/1	0/0	0/0	0/0	
	小型/欠損					
器官重量 (実重量)	脳	-/-	-/-	-/-	-/-	
	心臓	-/-	-/-	▽/-	▼/-	
	肺臓	-/-	-/-	-/-	-/-	
	肝臓	-/-	-/-	-/-	-/-	
	脾臓	-/-	-/-	-/-	-/-	
	腎臓	-/-	-/-	-/-	▼/-	
	副腎	-/-	-/-	-/-	-/-	
	胸腺	-/-	-/-	-/-	-/-	
	精巢	-/*	-/*	-/*	▼/*	
	精巢上体	-/*	-/*	-/*	▼/*	
	前立腺+精囊	-/*	-/*	-/*	▽/*	
	前立腺腹葉	-/*	-/*	-/*	▽/*	
	精囊腺	-/*	-/*	-/*	-/*	
	卵巣	*/-	*/-	*/-	*/-	
	子宮	*/-	*/-	*/-	*/-	
	甲状腺	-/-	-/-	-/-	-/-	
下垂体	-/-	-/-	-/-	-/-		

検査項目			対照群 ♂/♀ ↑:傾向	20 ♂/♀ △:5%有意差	100 ♂/♀ ▲:1%有意差	500 ♂/♀ -:変化なし	(mg/kg)
F <sub>1</sub>	組織所見	精巣					
		精細管萎縮	0/*	0/*	0/*	6▲/*	
		生殖細胞減少	0/*	0/*	0/*	4△/*	
		浮腫	0/*	0/*	0/*	4△/*	
		精巣上体	0/*	0/*	0/*	5△/*	
		前立腺	3/*	*/*	*/*	4/*	
		肝臓	0/1	*/*	*/*	0/0	
			2/0	*/*	*/*	0/0	
		腎臓	3/0	*/*	*/*	1/0	
			10/4	*/*	*/*	10/5	
精子検査	運動精子率 (%)	95	96	97	88		
	前進精子率 (%)	83	83	85	77		
	精子数 (x10 <sup>6</sup> /g)	1876.6	1708.0	1802.9	1710.1		
血中ホルモン濃度	テストステロン		-/*	-/*	▼/*		
	PRL		*/-	*/-	*/-		
	LH		-/-	-/-	▼/-		
	FSH		-/-	-/-	-/-		
	TSH		-/-	-/-	-/-		
	T3		△/-	△/-	-/-		
	T4		-/-	-/-	▼/-		
	エストロジオール		*/-	*/-	*/-		
F <sub>2</sub>	産児所見	総産児数	13.3	13.9	12.1	11.8	
		分娩率 (%)	95.8	95.0	90.0	90.1	
		哺育0日生児数	13.1	13.6	11.9	11.6	
		出生率 (%)	94.2	93.1	88.3	88.7	
		哺育4日生児数	12.8	12.9	11.8	11.4	
		哺育4日生存率 (%)	97.8	95.4	99.7	97.6	
		離乳率 (%)	100.0	100.0	100.0	98.5	
	体重 (g)	哺育0日		-/-	-/-	-/-	
		4日		-/-	-/-	-/-	
		7日		-/-	-/-	-/-	
14日			-/-	-/-	-/-		
21日			-/-	-/-	↓/↓		
異常児所見	矮小	0	0	0	1		
	索状尾&鎖肛	0	0	0	1		
	眼瞼開裂	2	0	0	0		
	精巣 小型化	1	0	1	1		
	腎盂拡張	4	3	7	0		
	胸腺赤色点	0	0	1	0		
分娩率 = (総産児数/着床数) × 100 出生率 = (哺育0日生児数/着床数) × 100 哺育4日生存率 = (哺育4日生児数/哺育0日生児数) × 100 離乳率 = (哺育21日生児数/淘汰後の哺育4日生児数) × 100							

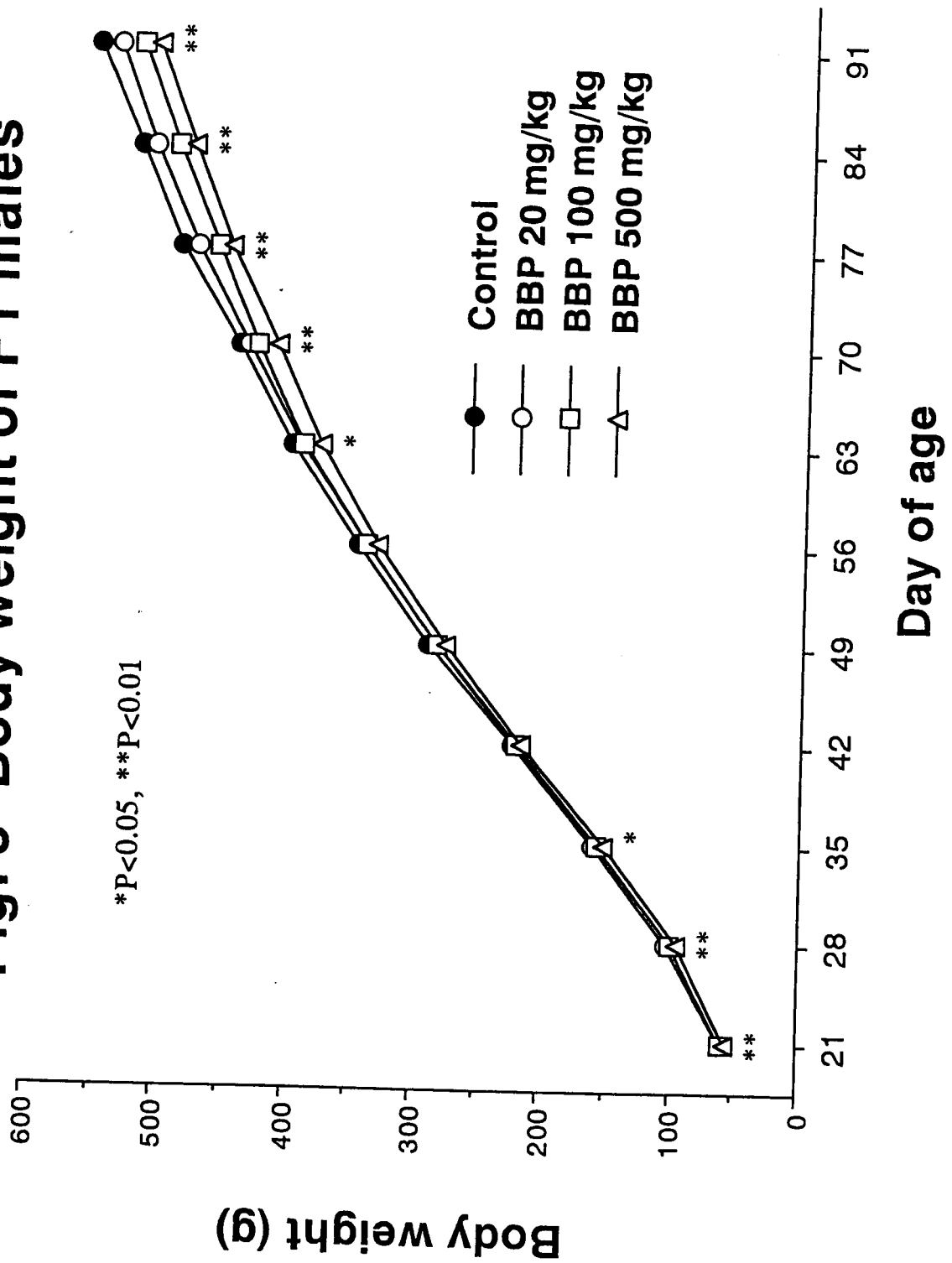
**Fig. 1 Body weight of Fo males**



**Fig. 2 Body weight of Fo females**

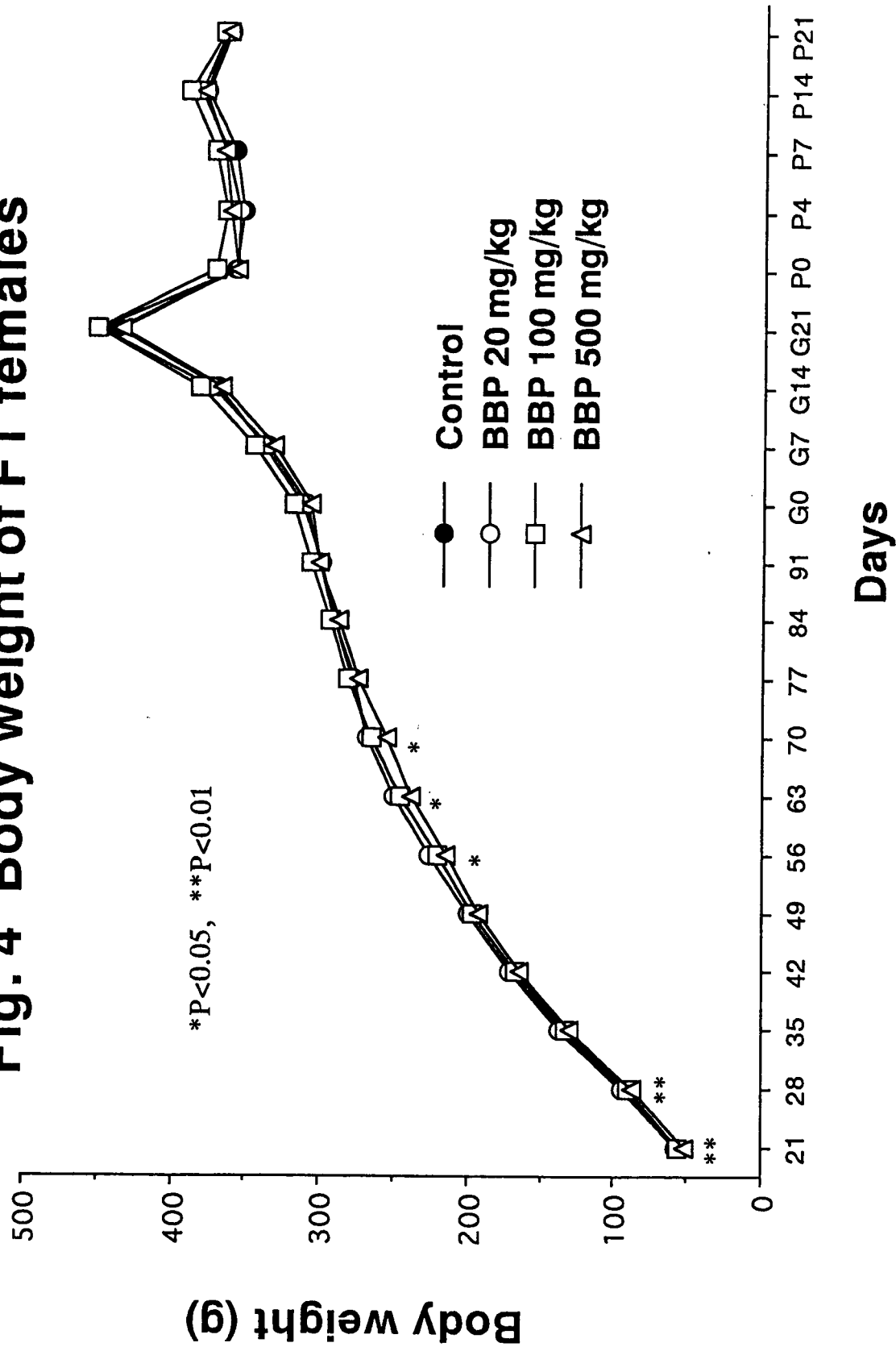


# Fig. 3 Body weight of F1 males





# Fig. 4 Body weight of F1 females



## Two generation reproductive toxicity study of BBP by oral administration in rats

Table No.	Table title
1	Body weight of F <sub>0</sub> males during treatment period
2	Body weight of F <sub>0</sub> females during pre-mating period
3	Body weight of F <sub>0</sub> females during gestation period
4	Body weight of F <sub>0</sub> females during lactation period
5	Food consumption of F <sub>0</sub> males during treatment period
6	Food consumption of F <sub>0</sub> females during pre-mating period
7	Food consumption of F <sub>0</sub> females during gestation period
8	Food consumption of F <sub>0</sub> females during lactation period
9	Estrous cycle of F <sub>0</sub> females
10	Reproductive performance of F <sub>0</sub> animals
11	Summary of macroscopic findings in F <sub>0</sub> males
12	Summary of macroscopic findings in F <sub>0</sub> females
13	Organ weight of F <sub>0</sub> males
14	Organ weight of F <sub>0</sub> females on day 22 of lactation
15	Summary of histopathological findings in F <sub>0</sub> males
16	Summary of histopathological findings in F <sub>0</sub> females
17	Epididymal sperm findings in F <sub>0</sub> males at 23 weeks of age
18	Serum concentrations of testosterone, luteinizing hormone(LH), follicle-stimulating hormone(FSH), thyroid-stimulating hormone(TSH), triiodothyronine(T3), thyroxine(T4) in F <sub>0</sub> males
19	Serum concentrations of prolactin(PRL), luteinizing hormone(LH), follicle-stimulating hormone(FSH), thyroid-stimulating hormone(TSH), triiodothyronine(T3), thyroxine(T4), estradiol in F <sub>0</sub> females
20	Development F <sub>1</sub> offspring up to weaning
21	Body weight of F <sub>1</sub> offspring up to weaning
22	Anogenital distance of F <sub>1</sub> pups at birth
23	Behavioral and physical development F <sub>1</sub> males offspring
24	Behavioral and physical development F <sub>1</sub> females offspring
25	Morphological observations of F <sub>1</sub> live pups at birth
26	Morphological observations of F <sub>1</sub> dead pups during lactation period
27	Morphological observations of F <sub>1</sub> pups culled on postnatal day 4
28	Morphological observations of F <sub>1</sub> weanlings
29	Organ weight of F <sub>1</sub> male weanlings
30	Organ weight of F <sub>1</sub> female weanlings
31	Summary of histopathological findings in F <sub>1</sub> male at weaning
32	Summary of histopathological findings in F <sub>1</sub> female at weaning
33	Serum concentrations of testosterone, luteinizing hormone(LH), follicle-stimulating hormone(FSH), thyroid-stimulating hormone(TSH), triiodothyronine(T3), thyroxine(T4) in F <sub>1</sub> male weanlings
34	Serum concentrations of prolactin(PRL), luteinizing hormone(LH), follicle-stimulating hormone(FSH), thyroid-stimulating hormone(TSH), triiodothyronine(T3), thyroxine(T4), estradiol in F <sub>1</sub> female weanlings
35	Body weight of F <sub>1</sub> males after weaning
36	Body weight of F <sub>1</sub> females after weaning
37	Body weight of F <sub>1</sub> females during gestation period
38	Body weight of F <sub>1</sub> females during lactation period
39	Food consumption of F <sub>1</sub> males after weaning
40	Food consumption of F <sub>1</sub> females after weaning
41	Food consumption of F <sub>1</sub> females during gestation period
42	Food consumption of F <sub>1</sub> females during lactation period

43	Open field test in F <sub>1</sub> males
44	Open field test in F <sub>1</sub> females
45	Water multiple T-maze test in F <sub>1</sub> males
46	Water multiple T-maze test in F <sub>1</sub> females
47	Spontaneous moter activity test in F <sub>1</sub> males
48	Spontaneous moter activity test in F <sub>1</sub> females
49	Sexual maturation of F <sub>1</sub> males
50	Sexual maturation of F <sub>1</sub> females
51	Organ weight of F <sub>1</sub> males at 10 weeks of age
52	Organ weight of F <sub>1</sub> females at 10 weeks of age
53	Estrous cycle of F <sub>1</sub> females
54	Reproductive performance of F <sub>1</sub> animals
55	Summary of macroscopic findings in F <sub>1</sub> male adult
56	Summary of macroscopic findings in F <sub>1</sub> female adult
57	Organ weight of F <sub>1</sub> males
58	Organ weight of F <sub>1</sub> females on day 22 of lactation
59	Summary of histopathological findings in F <sub>1</sub> male adult
60	Summary of histopathological findings in F <sub>1</sub> female adult
61	Epididymal sperm findings in F <sub>1</sub> males at 18-19 weeks of age
62	Serum concentrations of testosterone, luteinizing hormone(LH), follicle-stimulating hormone(FSH), thyroid-stimulating hormone(TSH), triiodothyronine(T3), thyroxine(T4) in F <sub>1</sub> adult males
63	Serum concentrations of prolactin(PRL), luteinizing hormone(LH), follicle-stimulating hormone(FSH), thyroid-stimulating hormone(TSH), triiodothyronine(T3), thyroxine(T4), estradiol in F <sub>1</sub> adult females
64	Development of F <sub>2</sub> offspring up to weaning
65	Body weight of F <sub>2</sub> offspring up to weaning
66	Morphological observations of F <sub>2</sub> live pups at birth
67	Morphological observations of F <sub>2</sub> dead pups during the lactation period
68	Morphological observations of F <sub>2</sub> pups culled on postnatal day 4
69	Morphological observations of F <sub>2</sub> weanlings

Table 1

Two generation reproductive toxicity study of BBP by oral administration in rats  
 Body weight of F<sub>0</sub> males during treatment period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate			
	0 <sup>a</sup>	20	100	500
Days of treatment				
1	241.2 ± 15.9 (25)	241.5 ± 15.6 (25)	242.1 ± 15.9 (25)	241.4 ± 15.8 (25)
4	260.8 ± 18.2 (25)	261.5 ± 18.1 (25)	263.8 ± 17.1 (25)	261.3 ± 17.8 (25)
8	289.8 ± 19.3 (25)	288.9 ± 19.3 (25)	292.6 ± 17.4 (25)	289.7 ± 20.1 (25)
11	308.2 ± 18.7 (25)	305.6 ± 21.4 (25)	309.9 ± 17.2 (25)	305.3 ± 21.1 (25)
15	331.2 ± 20.2 (25)	327.9 ± 23.2 (25)	333.3 ± 19.2 (25)	327.3 ± 25.0 (25)
18	345.9 ± 20.8 (25)	342.2 ± 25.5 (25)	347.0 ± 21.7 (25)	340.6 ± 27.2 (25)
22	366.2 ± 21.7 (25)	362.4 ± 27.3 (25)	367.1 ± 24.2 (25)	359.1 ± 29.3 (25)
25	381.3 ± 23.1 (25)	375.3 ± 28.8 (25)	380.5 ± 27.5 (25)	371.1 ± 31.6 (25)
29	398.6 ± 25.5 (25)	393.2 ± 31.6 (25)	398.3 ± 29.6 (25)	387.2 ± 33.5 (25)
32	409.6 ± 27.4 (25)	403.9 ± 32.7 (25)	409.9 ± 32.0 (25)	398.2 ± 34.3 (25)
36	425.4 ± 28.9 (25)	419.0 ± 34.8 (25)	426.3 ± 33.3 (25)	412.6 ± 37.1 (25)
39	436.6 ± 29.9 (25)	430.0 ± 35.2 (25)	437.0 ± 34.8 (25)	421.6 ± 36.7 (25)
43	449.4 ± 31.0 (25)	443.5 ± 35.6 (25)	450.7 ± 36.1 (25)	433.9 ± 37.9 (25)
46	458.2 ± 33.8 (25)	451.5 ± 37.4 (25)	460.1 ± 38.1 (25)	441.4 ± 40.3 (25)
50	471.2 ± 36.4 (25)	463.8 ± 38.4 (25)	473.3 ± 38.4 (25)	451.8 ± 40.8 (25)
53	477.4 ± 36.9 (25)	471.6 ± 38.2 (25)	479.8 ± 39.2 (25)	457.3 ± 42.4 (25)
57	487.5 ± 38.3 (25)	482.2 ± 39.7 (25)	491.6 ± 41.4 (25)	466.8 ± 42.9 (25)
60	492.3 ± 38.7 (25)	488.0 ± 39.7 (25)	496.9 ± 42.5 (25)	472.5 ± 43.7 (25)

a: vehicle control, corn oil (2 mL/kg)

Table 1 (continued)

Two generation reproductive toxicity study of BBP by oral administration in rats  
Body weight of Fo males during treatment period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate				
	Dose (mg/kg)	0 <sup>a</sup>	20	100	500
Days of treatment					
64	502.8 ± 40.5 (25)	498.7 ± 40.8 (25)	508.4 ± 43.2 (25)	481.3 ± 44.5 (25)	
67	508.0 ± 41.7 (25)	504.1 ± 42.2 (25)	512.9 ± 43.6 (25)	487.2 ± 44.7 (25)	
71	517.2 ± 43.2 (25)	514.6 ± 44.0 (25)	522.1 ± 44.1 (25)	494.6 ± 44.9 (25)	
74	520.4 ± 43.9 (25)	517.7 ± 44.6 (25)	527.3 ± 44.6 (25)	498.1 ± 45.0 (25)	
78	528.9 ± 45.2 (25)	525.8 ± 45.9 (25)	535.4 ± 45.8 (25)	505.0 ± 45.7 (25)	
81	533.8 ± 46.9 (25)	530.5 ± 46.6 (25)	540.3 ± 46.3 (25)	508.0 ± 45.4 (25)	
85	539.9 ± 48.0 (25)	537.3 ± 46.1 (25)	546.2 ± 46.9 (25)	514.3 ± 46.3 (25)	
88	536.9 ± 47.8 (25)	533.2 ± 44.3 (25)	542.0 ± 45.6 (25)	511.5 ± 45.7 (25)	
92	544.9 ± 47.8 (25)	541.5 ± 46.4 (25)	549.2 ± 46.6 (25)	518.0 ± 46.8 (25)	
95	550.1 ± 48.4 (25)	544.0 ± 46.7 (25)	553.1 ± 47.8 (25)	521.0 ± 46.1 (25)	
99	557.5 ± 48.8 (25)	551.7 ± 48.2 (25)	560.7 ± 47.8 (25)	526.4 ± 47.3 (25)	
102	563.1 ± 50.5 (25)	555.5 ± 48.4 (25)	565.0 ± 47.8 (25)	529.2 ± 47.9 * (25)	
106	569.6 ± 51.2 (25)	562.1 ± 48.7 (25)	571.9 ± 49.6 (25)	534.3 ± 47.9 * (25)	
109	576.3 ± 52.1 (25)	567.6 ± 48.4 (25)	576.9 ± 48.9 (25)	538.2 ± 47.5 * (25)	
113	582.9 ± 53.8 (25)	575.1 ± 49.6 (25)	581.8 ± 49.4 (25)	543.1 ± 48.2 * (25)	
116	587.2 ± 55.0 (25)	579.0 ± 50.7 (25)	587.8 ± 51.7 (25)	546.8 ± 48.3 * (25)	
120	593.2 ± 55.8 (25)	584.0 ± 52.6 (25)	593.2 ± 52.6 (25)	550.3 ± 50.0 * (25)	

a: vehicle control, corn oil (2 mL/kg)

\*: significant difference from control, p<0.05

Table 2

Two generation reproductive toxicity study of BBP by oral administration in rats  
 Body weight of F<sub>0</sub> females during pre-mating period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate			
	0 <sup>a</sup>	20	100	500
Days of treatment				
1	287.1 ± 18.6 ( 25)	285.2 ± 15.5 ( 25)	287.2 ± 14.8 ( 25)	286.4 ± 17.1 ( 25)
4	286.6 ± 18.7 ( 25)	285.3 ± 15.6 ( 25)	286.5 ± 16.8 ( 25)	286.5 ± 17.9 ( 25)
8	292.1 ± 18.9 ( 25)	290.6 ± 17.0 ( 25)	293.3 ± 17.3 ( 25)	293.9 ± 17.1 ( 25)
11	292.8 ± 18.2 ( 25)	292.2 ± 18.1 ( 25)	295.8 ± 17.9 ( 25)	295.1 ± 16.6 ( 25)
15	300.5 ± 20.7 ( 25)	296.9 ± 19.1 ( 25)	302.4 ± 18.5 ( 25)	300.9 ± 16.5 ( 25)

a: vehicle control, corn oil (2 mL/kg)

Table 3

Two generation reproductive toxicity study of BBP by oral administration in rats  
Body weight of F<sub>0</sub> females during gestation period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate			
	0 <sup>a</sup>	20	100	500
Days of gestation				
0	305.8 ± 22.1 ( 22)	302.6 ± 21.0 ( 20)	303.2 ± 15.3 ( 23)	307.3 ± 18.1 ( 24)
4	327.9 ± 25.3 ( 22)	322.7 ± 21.0 ( 20)	324.6 ± 17.4 ( 23)	325.6 ± 19.4 ( 24)
7	337.3 ± 26.2 ( 22)	332.9 ± 21.8 ( 20)	334.6 ± 17.5 ( 23)	335.5 ± 20.1 ( 24)
14	371.7 ± 26.5 ( 22)	366.0 ± 22.8 ( 20)	368.3 ± 18.7 ( 23)	370.8 ± 21.4 ( 24)
20	443.9 ± 30.2 ( 22)	441.1 ± 27.2 ( 20)	449.9 ± 23.1 ( 23)	446.6 ± 23.6 ( 24)

a: vehicle control, corn oil (2 mL/kg)

Table 4

Two generation reproductive toxicity study of BBP by oral administration in rats  
 Body weight of F<sub>0</sub> females during lactation period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate				
	0 <sup>a</sup>	20	100	500	
Days of lactation					
0	356.6 ± 36.0 ( 22)	346.4 ± 31.3 ( 20)	352.3 ± 24.4 ( 23)	356.8 ± 25.0 ( 24)	
4	361.3 ± 27.2 ( 22)	352.4 ± 18.6 ( 20)	357.0 ± 21.0 ( 23)	359.0 ± 23.9 ( 24)	
7	365.4 ± 26.1 ( 22)	358.4 ± 16.1 ( 20)	360.3 ± 20.1 ( 23)	360.8 ± 23.6 ( 24)	
14	374.4 ± 27.2 ( 22)	369.8 ± 17.9 ( 20)	372.3 ± 19.5 ( 23)	372.6 ± 21.9 ( 24)	
21	354.5 ± 24.3 ( 22)	352.1 ± 21.7 ( 20)	356.2 ± 17.5 ( 23)	359.0 ± 20.2 ( 24)	

a: vehicle control, corn oil (2 mL/kg)



Table 5

Two generation reproductive toxicity study of BBP by oral administration in rats  
 Food consumption of F<sub>0</sub> males during treatment period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate			
	0 <sup>a</sup>	20	100	500
Days of treatment				
1-2	24.7 ± 2.7 ( 25)	24.6 ± 2.3 ( 25)	25.1 ± 2.3 ( 25)	24.1 ± 1.8 ( 25)
4-5	24.9 ± 3.1 ( 25)	25.0 ± 2.3 ( 25)	25.8 ± 2.5 ( 25)	25.0 ± 1.7 ( 25)
8-9	25.5 ± 2.5 ( 25)	25.2 ± 2.2 ( 25)	26.6 ± 2.0 ( 25)	25.7 ± 2.1 ( 25)
11-12	24.6 ± 2.0 ( 25)	25.3 ± 2.0 ( 25)	25.4 ± 2.3 ( 25)	25.5 ± 2.0 ( 25)
15-16	26.2 ± 2.7 ( 25)	24.8 ± 2.5 ( 25)	26.3 ± 2.7 ( 25)	26.0 ± 2.4 ( 25)
18-19	26.1 ± 2.4 ( 25)	25.0 ± 2.4 ( 25)	26.2 ± 2.7 ( 25)	25.9 ± 2.4 ( 25)
22-23	25.8 ± 2.4 ( 25)	25.1 ± 2.4 ( 25)	26.7 ± 2.9 ( 25)	26.4 ± 3.0 ( 25)
25-26	25.6 ± 3.1 ( 25)	25.5 ± 3.2 ( 25)	25.6 ± 3.5 ( 25)	26.2 ± 2.9 ( 25)
29-30	26.7 ± 2.9 ( 25)	26.0 ± 3.0 ( 25)	27.0 ± 2.9 ( 25)	27.0 ± 3.4 ( 25)
32-33	25.7 ± 2.6 ( 25)	25.2 ± 2.6 ( 25)	26.1 ± 2.9 ( 25)	25.6 ± 3.4 ( 25)
36-37	26.6 ± 2.5 ( 25)	25.7 ± 2.1 ( 25)	26.8 ± 2.6 ( 25)	26.5 ± 3.0 ( 25)
39-40	25.7 ± 2.2 ( 25)	25.8 ± 2.8 ( 25)	25.7 ± 3.3 ( 25)	25.2 ± 2.7 ( 25)
43-44	26.6 ± 2.4 ( 25)	25.2 ± 2.8 ( 25)	26.8 ± 2.8 ( 25)	26.5 ± 2.6 ( 25)
46-47	26.0 ± 2.5 ( 25)	25.6 ± 2.6 ( 25)	26.1 ± 2.6 ( 25)	25.2 ± 2.8 ( 25)
50-51	26.3 ± 2.9 ( 25)	25.5 ± 2.8 ( 25)	26.9 ± 3.2 ( 25)	26.2 ± 2.4 ( 25)
53-54	25.0 ± 3.0 ( 25)	25.6 ± 2.7 ( 25)	26.5 ± 3.2 ( 25)	26.4 ± 2.6 ( 25)
57-58	26.1 ± 2.6 ( 25)	25.6 ± 2.7 ( 25)	26.6 ± 3.2 ( 25)	26.7 ± 2.4 ( 25)

a: vehicle control, corn oil (2 mL/kg)

Table 5 (continued)

Two generation reproductive toxicity study of BBP by oral administration in rats  
 Food consumption of F<sub>0</sub> males during treatment period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate				
	Dose (mg/kg)	0 <sup>a</sup>	20	100	500
Days of treatment					
60-61	25.0 ± 2.4 (25)	25.1 ± 2.7 (25)	26.2 ± 2.8 (25)	26.2 ± 2.5 (25)	
64-65	25.9 ± 2.8 (25)	25.9 ± 2.1 (25)	26.7 ± 2.7 (25)	26.5 ± 3.2 (25)	
67-68	24.9 ± 3.0 (25)	24.8 ± 3.7 (25)	26.3 ± 3.3 (25)	25.8 ± 3.1 (25)	
71-72	25.6 ± 3.2 (25)	24.9 ± 3.1 (25)	26.0 ± 2.9 (25)	25.5 ± 3.2 (25)	
74-75	24.7 ± 2.7 (25)	25.0 ± 2.8 (25)	25.0 ± 2.8 (25)	25.0 ± 3.9 (25)	
78-79	24.5 ± 2.7 (25)	24.4 ± 2.5 (25)	25.3 ± 2.2 (25)	25.1 ± 2.2 (25)	
81-82	24.3 ± 3.1 (25)	24.3 ± 2.8 (25)	24.4 ± 2.9 (25)	24.5 ± 3.6 (25)	
99-100	24.2 ± 2.7 (25)	23.4 ± 2.5 (25)	23.6 ± 2.2 (25)	24.2 ± 2.9 (25)	
102-103	24.6 ± 2.3 (25)	24.8 ± 2.2 (25)	25.2 ± 3.1 (25)	24.7 ± 3.1 (25)	
106-107	24.3 ± 2.6 (25)	24.3 ± 2.4 (25)	24.8 ± 2.8 (25)	24.9 ± 4.7 (25)	
109-110	24.7 ± 2.2 (25)	25.3 ± 2.9 (25)	25.6 ± 2.9 (25)	25.3 ± 2.8 (25)	
113-114	24.3 ± 2.3 (25)	24.6 ± 2.6 (25)	25.1 ± 2.8 (25)	24.5 ± 2.9 (25)	
116-117	25.3 ± 3.5 (25)	24.3 ± 2.7 (25)	25.5 ± 2.7 (25)	25.3 ± 3.0 (25)	

a: vehicle control, corn oil (2 mL/kg)

Table 6

Two generation reproductive toxicity study of BBP by oral administration in rats  
 Food consumption of F<sub>0</sub> females during pre-mating period; Mean±S.D. (N)

Compound	Butyl benzyl phthalate			
	0 <sup>a</sup>	20	100	500
Days of treatment				
1-2	18.3 ± 2.2 ( 25)	18.0 ± 3.3 ( 25)	19.3 ± 3.6 ( 25)	18.4 ± 2.6 ( 25)
4-5	18.2 ± 3.1 ( 25)	19.0 ± 2.5 ( 25)	19.3 ± 2.4 ( 25)	18.2 ± 2.8 ( 25)
8-9	19.0 ± 3.6 ( 25)	18.7 ± 2.6 ( 25)	19.1 ± 2.4 ( 25)	18.7 ± 2.7 ( 25)
11-12	18.7 ± 3.8 ( 25)	18.6 ± 2.6 ( 25)	20.1 ± 2.8 ( 25)	19.9 ± 2.3 ( 25)

a: vehicle control, corn oil (2 mL/kg)