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Jun Kanno, Ken-ichi Aisaki, Katsuhide Igarashi, Noriyuki Nakatsu, Atsushi Ono, Yukio Kodama, "Percellome" method application to the analysis of hormonally active compounds and its possible contribution to the ecotoxicogenomics. 環境ホルモン学会第7回研究発

表会、2004年12月15日、名古屋

H. 知的財産所有権の出願・登録状況（予定も含む）

1. 特許取得

なし

2. 実用新案登録

なし

その他

国内特許申請中（特願 2003-317031、特願 2004-219285）

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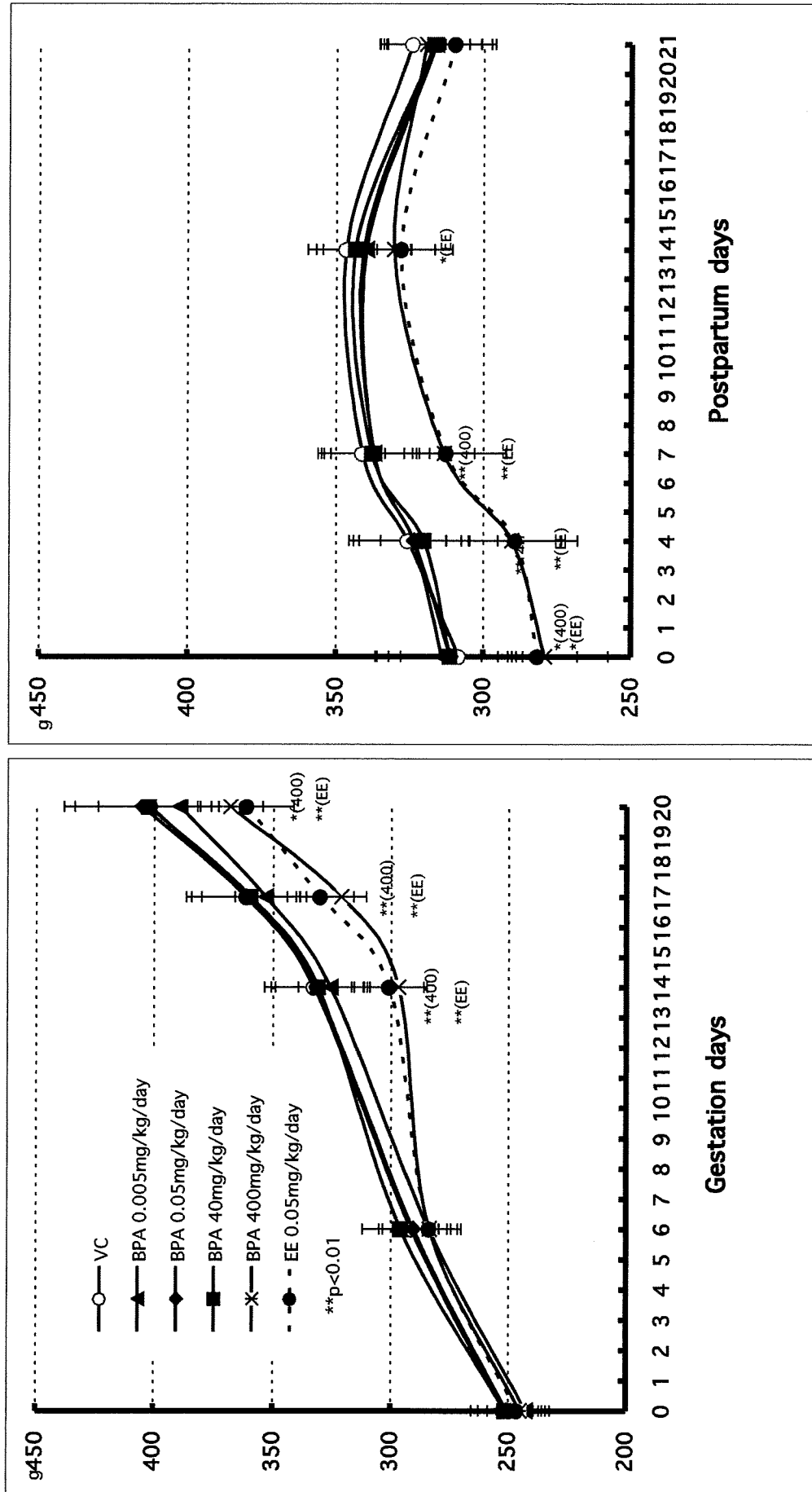


Figure 1 Mean body weights of dams

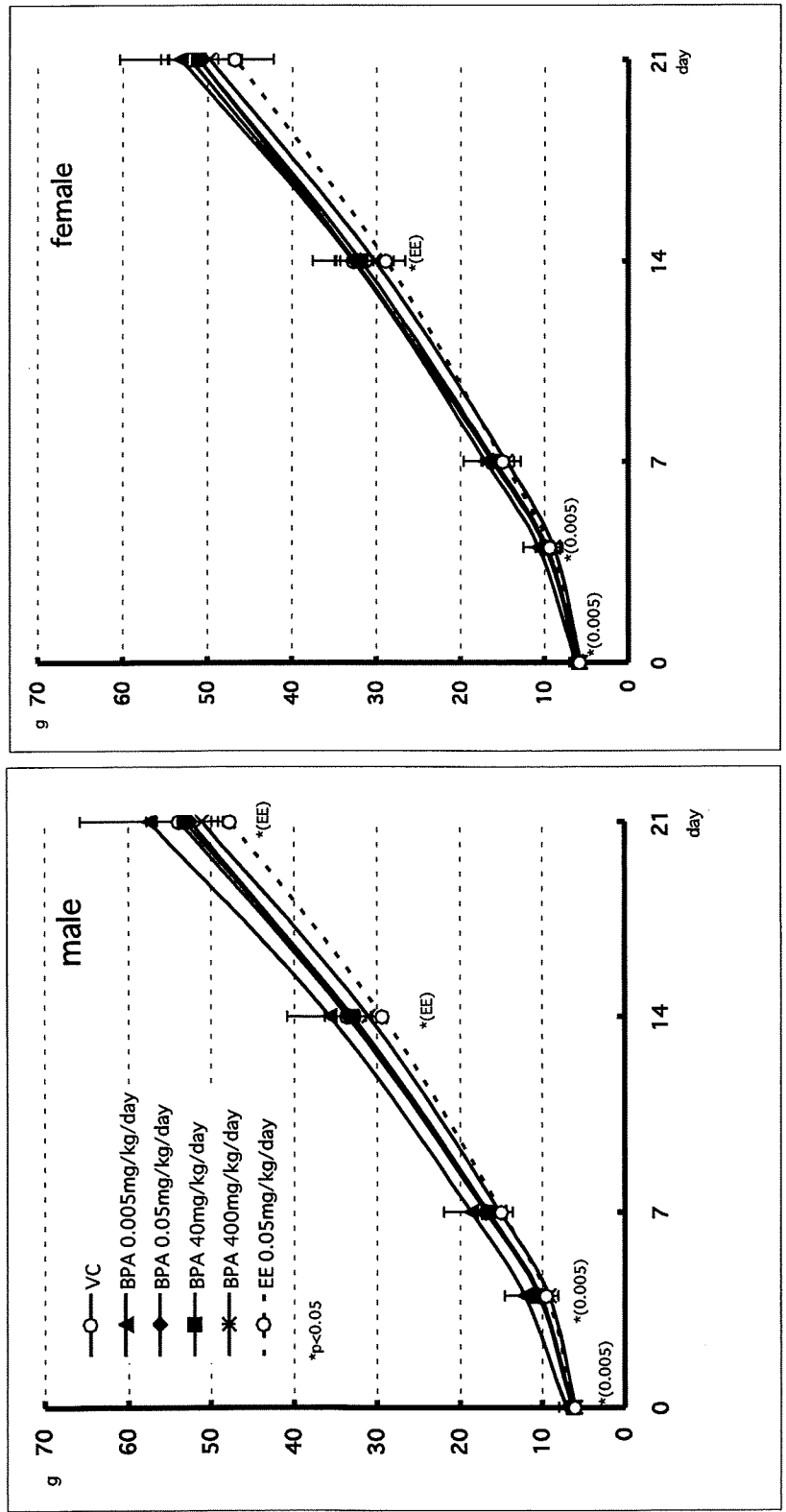


Figure 2 Mean body weights of offspring - birth to weaning

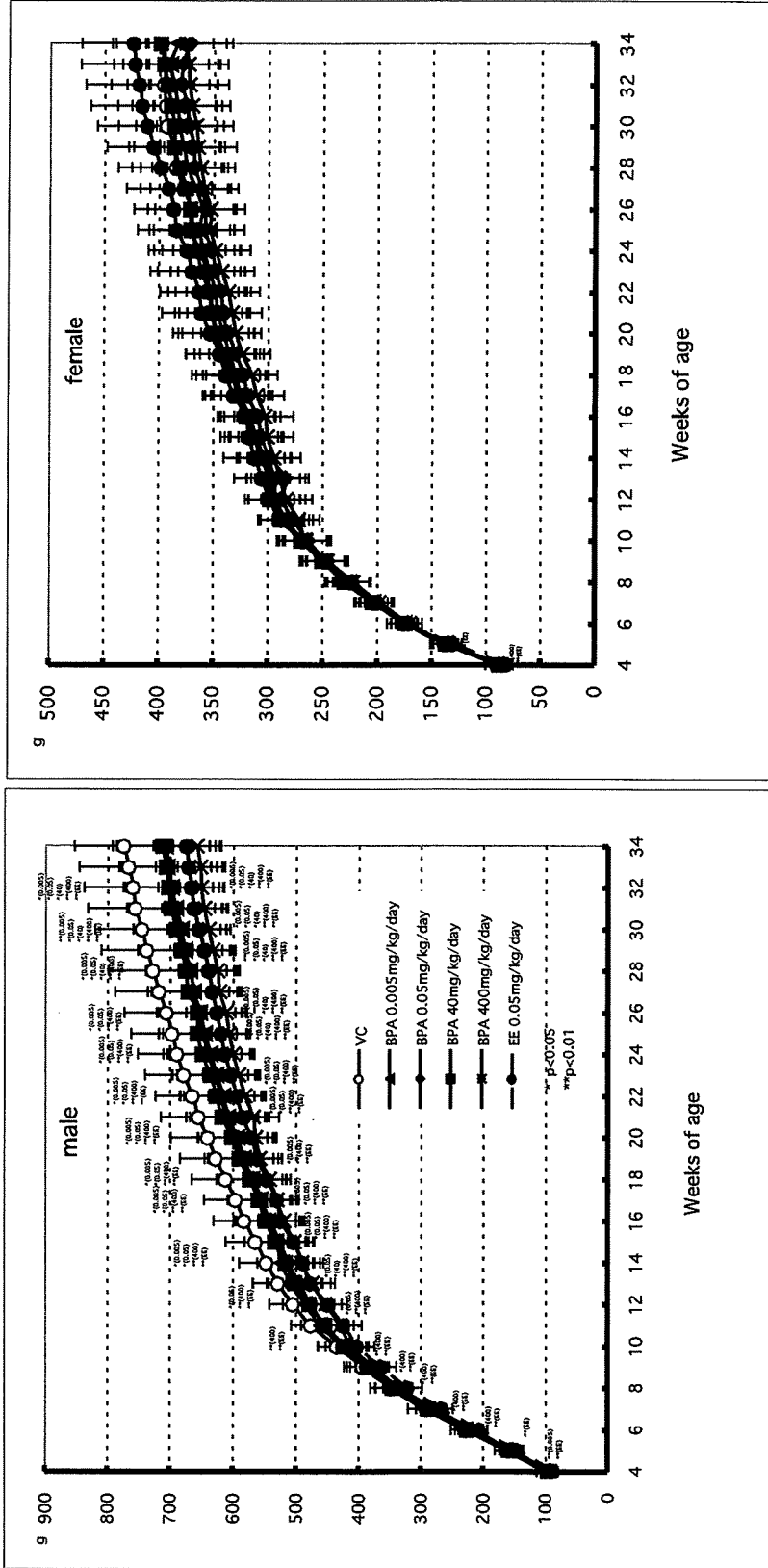


Figure 3 Mean body weights of offspring (4-34 weeks of age)

Table 1-1 Body weights of dams - group mean values

Exp. Group (mg/kg/day)	Gestational period (days)							Postpartum period (days)						
	0	6	14	17	20	0	4	7	14	21				
Vehicle control	Mean	251.8	291.5	332.9	361.4	401.8	308.4	325.7	340.9	346.6	324.4			
	S.D.	6.9	12.0	16.1	25.3	36.5	19.6	18.2	13.9	10.1	11.2			
	n	10	10	10	10	10	9 ^{a)}	9 ^{a)}	8 ^{b)}	8 ^{b)}	8 ^{b)}			
BPA 0.005	Mean	242.7	283.9	325.7	353.3	389.6	314.1	323.8	337.2	339.7	316.3			
	S.D.	10.3	12.2	13.8	12.9	16.3	22.5	11.1	14.5	14.7	18.9			
	n	10	10	10	10	10	10	10	10	10	10			
BPA 0.05	Mean	250.9	290.6	332.0	361.6	405.1	311.1	323.6	337.2	340.7	317.1			
	S.D.	11.7	14.6	21.8	22.9	28.7	21.0	18.5	18.8	16.1	16.2			
	n	10	10	10	10	10	10	10	10	10	10			
BPA 40	Mean	251.4	296.0	331.1	359.7	402.4	311.3	320.3	337.9	343.4	316.9			
	S.D.	14.4	16.1	19.7	20.7	21.4	24.8	25.3	16.0	16.2	15.9			
	n	10	10	10	10	10	10	10	10	10	10			
BPA 400	Mean	245.1	283.7	297.0 ^{**}	321.2 ^{**}	368.3 [*]	279.1 [*]	290.3 ^{**}	313.5 ^{**}	330.5	319.6			
	S.D.	9.4	9.2	12.1	10.7	13.8	21.3	22.2	10.6	13.8	14.5			
	n	10	10	10	10	10	10	10	9 ^{b)}	9 ^{b)}	9 ^{b)}			
EE 0.05	Mean	246.4	283.7	300.9 ^{**}	330.1 ^{**}	361.3 ^{**}	281.5 [*]	289.1 ^{**}	312.8 ^{**}	328.0 [*]	309.7			
	S.D.	12.3	13.5	14.8	14.2	19.6	13.4	15.6	20.6	17.3	13.7			
	n	10	10	10	10	10	10	10	10	10	10			

Unit; gram

a) One animal was sterile

b) One animal was neglect nursing

*p<0.05, **p<0.01 (Dunnett's test)

Table1-2 Body weights of offspring during postpartum period - group mean values

Exp. Group (mg/kg/day)	Postpartum period (days)											
	Male						Female					
	0	4	7	14	21	0	4	7	14	21		
Vehicle control	Mean	6.46	10.29	16.82	33.54	53.83	6.01	9.92	16.22	32.68	52.10	
	S.D.	0.55	1.06	1.42	2.77	3.90	0.45	0.99	1.32	2.26	3.37	
	n	9 (67)	9 (59)	8 (41)	8 (41)	8 (41)	9 (63) a)	9 (55) a)	8 (39) b)	8 (39) b)	8 (39) b)	
BPA 0.005	Mean	7.12 *	12.15 *	18.67	35.69	57.45	6.33 *	10.71 *	17.05	32.73	53.20	
	S.D.	0.95	2.43	3.29	5.16	8.35	0.74	1.86	2.56	4.78	7.17	
	n	10 (54)	10 (54)	10 (48)	10 (48)	10 (48)	10 (56)	10 (56)	10 (39)	10 (39)	10 (39)	
BPA 0.05	Mean	6.49	10.46	16.88	33.39	52.50	6.14	9.87	16.08	32.52	51.06	
	S.D.	0.65	1.28	1.52	2.01	3.97	0.67	1.19	1.42	2.17	3.52	
	n	10 (73)	10 (73)	10 (56)	10 (56)	10 (56)	10 (63)	10 (60)	10 (43)	10 (43)	10 (43)	
BPA 40	Mean	6.37	10.29	16.59	32.97	53.16	5.95	9.74	15.92	31.91	51.07	
	S.D.	0.55	1.21	1.63	2.33	4.02	0.55	1.04	1.42	2.33	3.60	
	n	10 (72)	10 (70)	10 (49)	10 (49)	10 (49)	10 (66)	10 (63)	10 (50)	10 (50)	10 (50)	
BPA 400	Mean	6.05	9.19	15.16	31.07	51.14	5.73	8.93	14.54	30.23	49.75	
	S.D.	0.38	1.05	1.55	1.78	2.60	0.37	1.06	1.71	1.91	2.97	
	n	10 (72)	10 (65)	9 (45)	9 (45)	9 (45)	10 (66)	10 (58)	9 (45) b)	9 (45) b)	9 (45) b)	
EE 0.05	Mean	6.02	9.51	15.00	29.39 *	47.69 *	5.83	9.37	14.93	28.86 *	46.71	
	S.D.	0.64	1.33	1.58	2.73	4.65	0.58	1.20	1.33	2.24	4.46	
	n	10 (67)	10 (67)	10 (50)	10 (50)	10 (50)	10 (66)	10 (66)	10 (50)	10 (50)	10 (50)	

Unit: gram

*p<0.05, **p<0.01 (Dunnett's test)

a) One animal was sterile

b) One animal was neglect nursing

n: The numbers without parenthesis represent number of dams and the numbers in parenthesis represent number of pups

Table1-3 Body weights of offspring (4-10 weeks of age) - group mean values

Exp. Group (mg/kg/day)	Postpartum period (weeks)														
	Male					Female									
	4	5	6	7	8	9	10	4	5	6	7	8	9	10	
Vehicle control	Mean	95.8	159.6	227.2	290.8	349.4	393.0	435.7	89.6	138.2	175.3	203.2	223.4	247.6	268.6
	S.D.	6.1	9.8	12.9	16.2	23.0	25.2	30.5	5.1	10.0	11.9	13.2	17.1	17.5	22.1
	n	41	41	41	41	41	41	41	39	39	39	39	39	39	39
BPA 0.005	Mean	102.0 **	164.2	229.6	293.6	350.2	388.9	426.5	89.8	136.6	174.7	203.4	225.8	248.5	267.0
	S.D.	12.0	17.3	22.2	26.7	31.4	35.1	38.2	10.4	14.2	16.2	17.8	19.8	21.3	23.5
	n	48	48	48	48	48	48	48	39	39	39	39	39	39	39
BPA 0.05	Mean	94.6	157.0	220.4	283.7	342.1	383.6	421.6	87.7	134.8	171.5	199.3	223.0	245.8	263.5
	S.D.	5.8	9.6	13.4	16.8	18.3	21.5	24.6	5.0	7.1	9.1	12.2	16.1	19.4	20.9
	n	56	56	56	56	56	56	56	43	43	43	43	43	43	43
BPA 40	Mean	96.4	159.2	226.3	287.7	345.9	386.3	424.1	88.1	136.9	174.4	204.3	229.9	250.6	269.9
	S.D.	7.4	14.2	18.4	20.4	27.3	27.2	28.9	6.7	12.2	12.6	14.9	18.1	20.4	21.9
	n	49	49	49	49	49	49	49	50	50	50	50	50	50	50
BPA 400	Mean	92.6	154.7	216.8 *	278.7 *	334.8 *	376.2 *	411.7 **	85.7 *	133.9	170.0	198.2	222.1	245.7	265.2
	S.D.	5.1	10.1	13.7	15.7	21.4	24.9	27.8	5.1	8.9	11.2	13.4	14.8	18.7	21.6
	n	45	45	45	45	45	45	45	45	45	45	45	45	45	45
EE 0.05	Mean	86.9 **	145.4 **	206.7 **	266.8 **	322.0 **	364.6 **	401.8 **	82.0 **	130.4 **	170.8	200.5	224.1	248.5	267.5
	S.D.	7.2	9.7	14.0	18.1	24.3	25.3	27.1	6.8	8.8	12.1	14.3	16.7	19.9	21.9
	n	50	50	50	50	50	50	50	50	50	50	50	50	50	50

Unit: gram

*p<0.05, **p<0.01 (Dunnnett's test)

Table1-4 Body weights of offspring (11 - 34 weeks of age) - group mean values

Exp.group (mg/kg/day)	Postpartum period (weeks)												
	11	12	13	14	15	16	17	18	19	20	21	22	
Vehicle control	Mean	476.1	505.4	528.3	547.5	582.4	596.0	611.8	627.5	640.4	655.1	664.3	
	S.D.	32.0	36.4	40.3	42.6	49.1	49.7	53.8	57.2	58.9	59.3	59.6	
	n	18	18	18	18	18	18	18	18	18	18	18	
BPA 0.005	Mean	462.0	486.7	507.4	523.8	531.1 *	556.7 *	569.7 *	583.2 *	593.5 *	607.4 *	615.8 *	
	S.D.	30.1	34.1	35.6	38.3	51.1	51.0	52.9	54.7	56.2	60.8	62.2	
	n	22	22	22	22	29	28	28	28	28	28	28	
BPA 0.05	Mean	453.7	477.1 *	495.0 *	511.8 *	526.8 *	556.2 *	568.4 *	584.0 *	595.8 *	611.4 *	619.8 *	
	S.D.	27.2	30.7	35.0	38.0	43.9	49.2	53.3	56.0	58.7	61.7	63.5	
	n	26	26	26	26	29	29	29	29	29	29	29	
BPA 40	Mean	453.5	479.8	502.0	516.6 *	533.1	559.5	573.9	590.6	601.6	617.7	626.0	
	S.D.	37.4	40.5	44.5	44.9	48.1	49.5	52.1	54.7	55.2	56.7	59.5	
	n	22	22	22	22	22	22	22	22	22	22	22	
BPA 400	Mean	429.2 **	453.5 **	475.0 **	491.2 **	503.1 **	519.8 **	530.2 **	542.4 **	557.4 **	564.4 **	581.6 **	
	S.D.	21.7	25.6	29.7	29.9	29.4	30.1	30.2	32.9	33.5	41.6	32.6	
	n	18	18	18	18	18	18	18	18	18	18	17	
EE 0.05	Mean	424.8 **	449.8 **	477.0 **	489.4 **	504.3 **	524.2 **	530.6 **	546.6 **	561.5 **	571.7 **	594.5 **	
	S.D.	29.5	31.2	38.8	32.8	33.1	36.9	34.6	37.7	39.3	42.0	44.4	
	n	22	22	22	22	22	22	22	22	22	22	22	

Unit; gram

*p<0.05, **p<0.01 (Dunnett's test)

Table1-4 Body weights of offspring (11 - 34 weeks of age) - group mean values

continued

Male

Exp.group (mg/kg/day)	Postpartum period (weeks)														
	23	24	25	26	27	28	29	30	31	32	33	34			
Vehicle control	Mean	678.2	688.9	697.5	705.9	717.9	727.1	737.1	745.2	756.1	759.9	766.9	774.4		
	S.D.	61.9	63.5	64.8	67.7	70.6	72.3	73.4	75.4	76.0	78.0	79.0	79.1		
	n	18	18	18	18	18	18	18	18	18	18	18	18		
BPA 0.005	Mean	626.2 *	636.1 *	645.4 *	653.4 *	662.3 *	668.3 *	676.6 *	682.3 **	690.7 **	697.6 *	705.2 *	708.2 *		
	S.D.	63.3	64.7	66.1	65.8	67.7	69.4	71.0	70.5	73.7	73.9	77.6	85.4		
	n	28	28	28	28	28	27	27	27	27	27	27	27		
BPA 0.05	Mean	630.5 *	639.2 *	648.1 *	653.7 *	663.4 *	667.4 **	677.9 *	685.4 *	694.0 *	699.1 *	702.0 **	707.8 *		
	S.D.	65.3	65.4	69.7	68.0	71.8	72.0	73.7	74.4	75.8	76.2	76.0	78.7		
	n	29	29	29	29	29	29	29	29	29	29	29	29		
BPA 40	Mean	636.5	649.2	657.0	656.7 *	671.3	675.0 *	681.9 *	690.0 *	698.8 *	702.9 *	706.4 *	712.7 *		
	S.D.	60.1	61.4	61.9	59.5	64.6	64.4	64.6	69.2	68.2	69.5	70.4	74.0		
	n	22	22	22	22	22	22	22	22	22	22	22	22		
BPA 400	Mean	591.3 **	600.3 **	607.2 **	611.8 **	621.1 **	624.7 **	632.3 **	639.2 **	646.0 **	650.7 **	651.5 **	657.8 **		
	S.D.	33.0	33.2	34.1	31.9	33.2	33.9	32.4	33.0	36.9	34.4	37.9	38.4		
	n	17	17	17	17	17	17	17	17	17	17	17	17		
EE 0.05	Mean	604.1 **	613.8 **	619.8 **	626.4 **	633.8 **	639.1 **	645.7 **	655.1 **	663.0 **	667.1 **	670.5 **	674.7 **		
	S.D.	44.2	45.0	45.9	48.0	47.1	48.5	48.4	49.9	50.9	52.1	53.1	52.4		
	n	22	22	22	22	22	22	22	22	22	22	22	22		

Unit; gram

*p<0.05, **p<0.01 (Dunnett's test)

Table 1-4 Body weights of offspring (11 - 34 weeks of age) - group mean values

Exp.group (mg/kg/day)	Postpartum period (weeks)												
	11	12	13	14	15	16	17	18	19	20	21	22	
continued Female Vehicle control	Mean	283.0	294.1	295.5	303.6	313.8	318.7	327.9	334.1	343.2	347.9	352.4	354.1
	S.D.	23.8	23.4	24.6	23.3	25.8	25.3	29.6	31.6	31.9	34.3	32.9	37.8
	n	17	17	16	16	16	16	16	16	16	16	16	16
BPA 0.005	Mean	285.3	294.7	293.2	302.9	311.4	316.8	325.4	330.1	335.4	341.3	347.0	348.4
	S.D.	22.5	23.4	22.3	23.3	23.2	23.1	24.7	26.9	27.2	28.1	27.1	26.5
	n	20	20	20	20	20	20	20	20	20	20	20	20
BPA 0.05	Mean	277.4	286.3	284.3	297.9	306.7	310.2	319.4	322.5	329.6	337.1	342.0	343.6
	S.D.	18.3	20.1	21.2	18.9	20.3	20.9	23.2	22.2	24.7	24.1	24.8	23.6
	n	19	19	19	19	19	19	19	19	19	19	19	19
BPA 40	Mean	288.3	298.5	298.6	307.6	313.3	320.0	328.6	332.0	339.4	347.1	351.0	353.6
	S.D.	19.6	19.5	20.6	21.4	23.0	22.9	24.1	27.8	27.9	31.9	30.9	31.6
	n	22	22	22	22	24	24	24	24	24	24	24	24
BPA 400	Mean	272.4	283.3	289.0	294.6	300.8	302.9	310.9	315.3	323.6	330.1	333.4	336.9
	S.D.	19.5	23.2	22.9	24.3	23.7	25.5	25.5	23.6	25.3	22.9	27.1	28.0
	n	18	18	18	18	18	18	18	18	18	18	18	17
EE 0.05	Mean	288.1	298.5	306.1	312.8	317.4	320.4	331.9	339.0	344.3	352.7	360.9	363.4
	S.D.	21.2	22.4	25.2	27.8	26.3	25.9	27.8	30.9	31.1	34.5	36.7	35.6
	n	22	22	22	22	22	22	22	22	22	22	22	22

Unit: gram

Table1-4 Body weights of offspring (11 - 34 weeks of age) - group mean values

Exp.group (mg/kg/day)		Postpartum period (weeks)												
		23	24	25	26	27	28	29	30	31	32	33	34	
Vehicle control	Mean	361.5	365.0	370.8	370.3	377.5	384.5	385.9	392.7	394.0	395.8	394.7	397.7	
	S.D.	39.9	39.4	38.6	40.6	39.8	40.9	42.0	44.9	44.3	48.4	47.5	45.8	
	n	16	16	16	16	16	16	16	16	16	16	16	16	
BPA 0.005	Mean	354.3	359.5	362.9	361.0	366.7	374.0	377.7	381.4	384.1	386.7	390.2	383.9	
	S.D.	28.3	28.0	27.5	30.2	29.6	32.8	32.1	33.7	35.5	31.8	34.5	44.3	
	n	20	20	19	19	19	19	19	19	19	19	19	19	
BPA 0.05	Mean	348.3	352.1	358.0	357.7	362.1	367.3	368.5	372.4	375.0	379.1	378.7	372.2	
	S.D.	26.1	25.8	26.1	25.1	27.2	29.4	27.9	30.4	31.3	31.3	33.8	38.3	
	n	19	19	19	19	19	19	19	19	19	19	19	19	
BPA 40	Mean	356.8	363.3	370.8	371.6	375.5	381.8	386.0	386.3	389.7	393.0	395.5	399.2	
	S.D.	32.4	34.1	34.2	32.5	33.2	35.9	37.4	35.6	35.9	36.8	38.2	40.5	
	n	24	24	24	24	24	24	24	24	24	24	24	24	
BPA 400	Mean	342.8	348.6	353.5	353.2	358.5	362.1	364.6	366.5	370.6	372.9	373.9	376.3	
	S.D.	29.2	31.6	30.8	31.1	30.2	30.6	34.8	33.2	34.6	35.6	36.2	36.9	
	n	17	17	17	17	17	17	17	17	17	17	17	17	
EE 0.05	Mean	369.9	374.5	384.0	386.8	391.1	398.2	404.9	410.7	415.8	418.4	421.7	423.5	
	S.D.	38.0	35.0	35.8	36.1	38.8	39.8	42.7	46.3	47.3	49.2	50.5	47.7	
	n	22	22	22	22	22	22	22	22	22	22	22	22	

Unit, gram

Table1-5 Body weights of offspring during gestation period in a reproduction test

Exp.group (mg/kg/day)	Gestation period (day)								
	P0	P4	P7	P14	P17	P20			
Vehicle control	Mean	313.8	336.9	350.8	386.6	417.0	466.6		
	S.D.	23.7	22.1	22.7	22.8	22.6	25.7		
	n	15	15	15	15	15	15		
BPA 0.005	Mean	297.0	319.3	330.3	360.8	389.9	435.1		
	S.D.	19.9	20.6	19.4	20.9	21.4	24.0		
	n	13	13	13	13	13	13		
BPA 0.05	Mean	296.9	318.7	330.8	363.0	391.3	440.0		
	S.D.	22.9	22.1	23.4	25.4	27.1	29.0		
	n	17	17	17	17	17	17		
BPA 40	Mean	310.5	334.6	347.8	379.6	409.3	456.5		
	S.D.	33.5	32.8	34.0	35.7	39.9	51.0		
	n	16	16	16	16	16	16		
BPA 400	Mean	303.4	323.6	334.9	368.1	397.0	442.7		
	S.D.	21.3	21.7	22.9	25.0	31.4	41.3		
	n	18	18	18	18	18	18		
EE 0.05	Mean	302.6	323.6	335.6	372.4	398.5	452.4		
	S.D.	32.2	35.1	35.7	44.2	44.7	47.7		
	n	14	14	14	14	14	14		

Unit: g

Table 2 Litter sizes and implantations - group mean values

Dams	Exp.group (mg/kg/day)		Vehicle control		BPA 0.005	
	Male	Female	Male	Female	Male	Female
Number of animals mated		10				10
Number of delivering animals ^{a)}		9 (90)				10 (100)
Number of dams delivering live newborns ^{a)}		9 (90)				10 (100)
Duration of pregnancy (days, mean ± SD)		21.9 ± 0.6				22.1 ± 0.6
Number of implantation sites		141 [15.7 ± 1.0]				115 [11.5 ± 4.1] **
Newborns	Sex	Male	Female	Total	Male	Female
Period I (Birth day)						
Number of newborns		67	65	132 [14.7 ± 0.7]	54	56 [5.6 ± 3.4]
Number of stillborns ^{b)}		0	2	2 (1.5)	0	0 (0.0)
Number of live newborns at birth ^{b)}		67	63	130 (98.5)	54	56 [110 (100)] **
Sex ratio of live newborns at birth (male/female)				106.3 (67/63)		96.4 (54/56)
Period II (From birth to day 4)						
Number of deads ^{c)}		8 (11.9)	8 (12.7)	16 (12.3)	0 (0)	0 (0)
Number of live newborns on day 4 ^{c)}		59 (88.1)	55 (87.3)	114 (87.7)	54 (100)	56 (100)
Period III (From day 4 to day 21)						
Number of live newborns just after culling		41	39	80 [8.0 ± 4.2]	48	39 [3.9 ± 1.7]
Number of deads ^{d)}		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Number of weanlings ^{d)}		41 (100)	39 (100)	80 (100)	48 (100)	39 (100)
Period IV (After weaning)						
Number of deads ^{e)}		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Number of live animals ^{e)}		41 (100)	39 (100)	80 (100)	48 (100)	39 (100)

EE, Ethinyl estradiol.

Value in brackets represents mean ± S.D.

a), Value in parenthesis represents the percentage to the number of animals mated.

b), Value in parenthesis represents the percentage to the number of implantation sites.

c), Value in parenthesis represents the percentage to the number of live newborns at birth.

d), Value in parenthesis represents the percentage to the number of live newborns just after culling.

e), Value in parenthesis represents the percentage to the number of weanlings.

*p<0.05, **p<0.01 (Dunnett's test)

Table 2 Litter sizes and implantations - group mean values
continued

Dams	Exp.group (mg/kg/day)		BPA 0.05		BPA 40		
	Sex	Male	Female	Total	Male	Female	Total
Newborns Period I (Birth day)	Number of animals mated		10			10	
	Number of delivering animals ^{a)}		10 (100)			10 (100)	
	Number of dams delivering live newborns ^{a)}		10 (100)			10 (100)	
	Duration of pregnancy (days, mean ± SD)		21.7 ± 0.5			21.6 ± 0.5	
Number of implantation sites		148 [14.8 ± 1.4]	148 [14.8 ± 1.0]		148 [14.8 ± 1.0]		
Period II (From birth to day 4)	Number of newborns	76 [7.6 ± 1.7]	64 [6.4 ± 2.5]	140 [14.0 ± 1.8]	72 [7.2 ± 1.7]	66 [6.6 ± 1.3]	138 [13.8 ± 1.8]
	Number of stillborns ^{b)}	3	1	4 (2.9)	0	0	0 (0)
	Number of live newborns at birth ^{b)}	73 [7.3 ± 1.7]	63 [6.3 ± 2.5]	136 (97.1)	72 [7.2 ± 1.7]	66 [6.6 ± 1.3]	138 (100)
	Sex ratio of live newborns at birth (male/female)			115.9 (73/63)			109.1 (72/66)
Period III (From day 4 to day 21)	Number of deads ^{c)}	0 (0.0)	3 (4.8)	3 (2.2)	2 (2.8)	3 (4.5)	5 (3.6)
	Number of live newborns on day 4 ^{c)}	73 (100)	60 (95.2)	133 (97.8)	70 (97.2)	63 (95.5)	133 (96.4)
Period IV (After weaning)	Number of live newborns just after culling	56 [5.6 ± 1.3]	44 [4.4 ± 1.3]	100 [10 ± 0.0]	49 [4.9 ± 1.1]	50 [5.0 ± 0.8]	99 [9.9 ± 0.3]
	Number of deads ^{d)}	0 (0)	1 (2.3)	1 (1)	0 (0)	0 (0)	0 (0)
	Number of weanlings ^{d)}	56 (100) [5.6 ± 1.3]	43 (97.7) [4.4 ± 1.3]	99 (99)	49 (100) [4.9 ± 1.1]	50 (100) [5.0 ± 0.8]	99 (100)
Period IV (After weaning)	Number of deads ^{e)}	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Number of live animals ^{e)}	56 (100)	43 (100)	99 (100)	49 (100)	50 (100)	99 (100)

EE, Ethinyl estradiol.

Value in brackets represents mean ± S.D.

a), Value in parenthesis represents the percentage to the number of animals mated.

b), Value in parenthesis represents the percentage to the number of implantation sites.

c), Value in parenthesis represents the percentage to the number of live newborns at birth.

d), Value in parenthesis represents the percentage to the number of live newborns just after culling.

e), Value in parenthesis represents the percentage to the number of weanlings.

*p<0.05, **p<0.01 (Dunnett's test)

Table 2 Litter sizes and implantations - group mean values continued

Dams	Exp.group (mg/kg/day)		BPA 400		EE 0.05		
	Male	Female	Male	Female	Male	Female	
Number of animals mated		10		10		10	
Number of delivering animals ^{a)}		10 (100)		10 (100)		10 (100)	
Number of dams delivering live newborns ^{a)}		10 (100)		10 (100)		10 (100)	
Duration of pregnancy (days, mean ± SD)		21.6 ± 0.5		21.6 ± 0.5		21.8 ± 0.4	
Number of implantation sites		148 [14.8 ± 1.0]		148 [14.8 ± 1.0]		142 [14.2 ± 1.3]	
Newborns	Sex	Male	Female	Total	Male	Female	Total
Period I (Birth day)	Number of newborns	73 [7.3 ± 1.3]	67 [6.7 ± 0.9]	140 [14.0 ± 1.6]	67 [6.8 ± 2.5]	67 [6.7 ± 1.9]	134 [13.5 ± 1.1]
	Number of stillborns ^{b)}	1	1	2 (1.4)	0	1	1 (0.7)
	Number of live newborns at birth ^{b)}	72	66	138 (98.6)	67	66	133 (99.3)
	Sex ratio of live newborns at birth (male/female)		[6.6 ± 0.8]	[13.8 ± 1.4]	[6.8 ± 2.5]	[6.6 ± 1.8]	[13.3 ± 1.2]
			109.1 (72/66)			101.5 (67/66)	
Period II (From birth to day 4)	Number of deads ^{c)}	7 (9.7)	8 (12.1)	15 (10.9)	0 (0)	0 (0)	1 (0.7)
	Number of live newborns on day 4 ^{c)}	65 (90.3)	58 (87.8)	123 (89.1)	67 (100)	66 (100)	133 (99.3)
Period III (From day 4 to day 21)	Number of live newborns just after culling	45 [5.0 ± 0.0]	45 [5.0 ± 0.0]	90 [9.0 ± 3.2]	50 [5.0 ± 0.9]	50 [5.0 ± 0.9]	100 [10 ± 0]
	Number of deads ^{c)}	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Number of weanlings ^{d)}	45 (100)	45 (100)	90 (100)	50 (100)	50 (100)	100 (100)
			[5.0 ± 0.0]	[5.0 ± 0.0]	[5.0 ± 0.9]	[5.0 ± 0.9]	
Period IV (After weaning)	Number of deads ^{e)}	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Number of live animals ^{e)}	45 (100)	45 (100)	90 (100)	50 (100)	50 (100)	100 (100)

EE, Ethinyl estradiol.

Value in brackets represents mean ± S.D.

a), Value in parenthesis represents the percentage to the number of animals mated.

b), Value in parenthesis represents the percentage to the number of implantation sites.

c), Value in parenthesis represents the percentage to the number of live newborns at birth.

d), Value in parenthesis represents the percentage to the number of live newborns just after culling.

e), Value in parenthesis represents the percentage to the number of weanlings.

*p<0.05, **p<0.01 (Dunnett's test)

Table 3 General appearance of offspring at birth - Summary

Exp-group (mg/kg/day)	Male					Female				
	Face/Mouth Eye/Ear	Palate	Abdomen	Tail Anogenital region	Head/Back	Face/Mouth Eye/Ear	Palate	Abdomen	Tail Anogenital region	Head/Back
VehicleControl	NAD(67)	NAD(67)	NAD(67)	NAD(67)	NAD(67)	NAD(63)	NAD(63)	NAD(63)	NAD(63)	NAD(63)
BPA 0.005	NAD(54)	NAD(54)	NAD(54)	NAD(54)	NAD(54)	NAD(56)	NAD(56)	NAD(56)	NAD(56)	NAD(56)
BPA 0.05	NAD(73)	NAD(73)	NAD(73)	NAD(73)	NAD(73)	NAD(63)	NAD(63)	NAD(63)	NAD(63)	NAD(63)
BPA 40	NAD(72)	NAD(72)	NAD(72)	NAD(72)	NAD(72)	NAD(66)	NAD(66)	NAD(66)	NAD(66)	NAD(66)
BPA 400	NAD(72)	NAD(72)	NAD(72)	NAD(72)	NAD(72)	NAD(66)	NAD(66)	NAD(66)	NAD(66)	NAD(66)
EE 0.05	NAD(67)	NAD(67)	NAD(67)	NAD(67)	NAD(67)	NAD(66)	NAD(66)	NAD(66)	NAD(66)	NAD(66)

NAD, No abnormalities detected

Value in parentheses of the number of offspring

Table 4-1 Physical development test; Anogenital distance (AGD) and body weights of male offspring on PND4 - group mean values

Exp.group (mg/kg/day)	AGD		RelativeAGD		Body weight g
	mm	Unit; AGD/3√b.w.	mm	Unit; AGD/3√b.w.	
vehicle control	Mean	4.75	2.20		10.29
	S.D.	0.36	0.18		1.06
	n	9 (59)	9 (59)		9 (59)
BPA 0.005	Mean	4.93	2.15		12.15 *
	S.D.	0.64	0.22		2.43
	n	10 (54)	10 (54)		10 (54)
BPA 0.05	Mean	4.66	2.13		10.46
	S.D.	0.53	0.24		1.28
	n	10 (73)	10 (73)		10 (73)
BPA 40	Mean	4.58	2.12		10.29
	S.D.	0.40	0.05		1.21
	n	10 (70)	10 (70)		10 (70)
BPA 400	Mean	4.68	2.24		9.19
	S.D.	0.57	0.29		1.05
	n	10 (65)	10 (65)		10 (65)
EE 0.05	Mean	5.09	2.41		9.51
	S.D.	0.39	0.15		1.33
	n	10 (67)	10 (67)		10 (67)

*p<0.05

n: The numbers without parenthesis represent number of dams and the numbers in parenthesis represent number of pups

Table 4-2 Physical Development test; Anogenital distance (AGD) and body weights of female offspring on PND4 - group mean values

Exp.group (mg/kg/day)	AGD		RelativeAGD		Body weight	
	mm	mm	AGD/ $\sqrt[3]{b.w.}$	g	g	g
vehicle control	Mean	2.28	1.06	9.92		
	S.D.	0.23	0.11	0.99		
	n	9 (55)	9 (55)	9 (55)		
BPA 0.005	Mean	2.31	1.05	10.71 *		
	S.D.	0.26	0.12	1.86		
	n	10 (56)	10 (56)	10 (56)		
BPA 0.05	Mean	2.20	1.03	9.87		
	S.D.	0.30	0.14	1.19		
	n	10 (60)	10 (60)	10 (60)		
BPA 40	Mean	2.29	1.07	9.74		
	S.D.	0.27	0.12	1.04		
	n	10 (63)	10 (63)	10 (63)		
BPA 400	Mean	2.21	1.07	8.93		
	S.D.	0.29	0.14	1.06		
	n	10 (58)	10 (58)	10 (58)		
EE 0.05	Mean	2.41	1.15	9.37		
	S.D.	0.22	0.11	1.20		
	n	10 (66)	10 (66)	10 (66)		

*p<0.05

n: The numbers without parenthesis represent number of dams and the numbers in parenthesis represent number of pups