Table 1. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl) bisbenzene in bacteria (dose-finding test)

With(+) or without(-) S9 mix	Compound concentration (μg/plate)	Number of revertants (number of colonies/plate)				
		Base-pair substitution type			Frameshift type	
		TA100	TA1535	WP2*uvrA*	TA98	TA1537
S9 mix (-)	Negative control	111	10	51	19	13
	0.305	136	17	48	17	3
	1.22	146	8	46	9	6
	4.88	125	16	35	17	9
	19.5	118	13	47	20	13
	78.1	137	17	44	13*	14*
	312.5	114*	10*	33	22*	8*
	1250#	126*	13*	49	16*	7*
	5000#	125*	16*	48*	22*	6*
S9 mix (+)	Negative control	146	9	41	29	20
	0.305	137	16	36	26	15
	1.22	138	16	44	31	18
	4.88	154	14	49	32	19
	19.5	127	11	46	29	21
	78.1	137	17	40	28	19*
	312.5	139	7	42	17*	20*
	1250	123*	12	44	35*	10*
	5000##	137*	12*	36*	27*	4*
Positive control not requiring S9 mix	Name	AF-2	NaN_3	AF-2	AF-2	9AA
	Concentration (μg/plate)	0.01	0.5	0.01	0.1	80
	Number of colonies/plate	531	628	157	485	571
Positive control requiring S9 mix	Name	2AA				
	Concentration (μg/plate)	1	2	10	0.5	2
	Number of colonies/plate	957	312	843	352	187

Negative control : Dimethylsulfoxide.

AF-2 : 2-(2-furyl)-3-(5-nitro-2-furyl) acrylamide; NaN_3 : sodium azide; 9AA : 9-aminoacridine hydrochloride; 2AA : 2-aminoanthracene.

* : Bacterial growth inhibition was observed.

: Clear oily precipitations were observed on the surface of agar plate.

: White fine precipitations were observed on the surface of agar plate.

Table 2-1. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl) bisbenzene in bacteria (mutagenicity test I : -S9 mix)

Compund concentration (μg/plate)	Number of revertants (number of colonies/plate)				
	Base-pair substitution type			Frameshift type	
	TA100	TA1535	WP2*uvrA*	TA98	TA1537
Negative control	117 , 118 , 143 (126±14.7)	12 , 17 , 19 (16±3.6)	43 , 45 , 46 (45±1.5)	13 , 19 , 22 (18±4.6)	13 , 14 , 20 (16±3.8)
2.44				16 , 21 , 27 (21±5.5)	17 , 19 , 24 (20±3.6)
4.88				20 , 25 , 28 (24±4.0)	19 , 25 , 28 (24±4.6)
9.77	97 , 104 , 111 (104±7.0)	15 , 18 , 24 (19±4.6)		16 , 20 , 20 (19±2.3)	16 , 20 , 23 (20±3.5)
19.5	114 , 116 , 130 (120±8.7)	20 , 20 , 25 (22±2.9)		17 , 19 , 19 (18±1.2)	18 , 20 , 29 (22±5.9)
39.1	100 , 100 , 103 (101±1.7)	13 , 13 , 17 (14±2.3)		20*, 21*, 21* (21±0.6)	21*, 22*, 23* (22±1.0)
78.1	97 , 105 , 118 (107±10.6)	12 , 14 , 18 (15±3.1)		15*, 19*, 27* (20±6.1)	15*, 17*, 24* (19±4.7)
156.3	88*, 101*, 104* (98±8.5)	11*, 16*, 19* (15±4.0)	44 , 50 , 60 (51±8.1)		
312.5	90*, 109*, 109* (103±11.0)	15*, 16*, 17* (16±1.0)	39 , 47 , 51 (46±6.1)		
625			37 , 51 , 54 (47±9.1)		
1250#			54 , 58 , 67 (60±6.7)		
2500#			38 , 41 , 44 (41±3.0)		
5000#			46*, 55*, 61* (54±7.5)		
Positive control					
Name	AF-2	NaN_3	AF-2	AF-2	9AA
Concentration (μg/plate)	0.01	0.5	0.01	0.1	80
Number of colonies/plate	470 , 544 , 548 (521±43.9)	578 , 604 , 614 (599±18.6)	165 , 168 , 171 (168±3.0)	401 , 425 , 441 (422±20.1)	339 , 393 , 481 (404±71.7)

Negative control : Dimethylsulfoxide.

AF-2 : 2-(2-furyl)-3-(5-nitro-2-furyl)acrylamide; NaN_3 : sodium azide; 9AA : 9-aminoacridine hydrochloride.

( ) : Mean±S.D.

* : Bacterial growth inhibition was observed.

: Clear oily precipitations were observed on the surface of agar plate.

Table 2-2. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl) bisbenzene in bacteria (mutagenicity test I : +S9 mix)

Compund concentration (μg/plate)	Number of revertants (number of colonies/plate)				
	Base-pair substitution type			Frameshift type	
	TA100	TA1535	WP2*uvrA*	TA98	TA1537
Negative control	123 , 130 , 145 (133±11.2)	16 , 17 , 19 (17±1.5)	34 , 42 , 60 (45±13.3)	29 , 36 , 41 (35±6.0)	20 , 21 , 21 (21±0.6)
2.44					21 , 33 , 36 (30±7.9)
4.88					28 , 33 , 38 (33±5.0)
9.77				25 , 37 , 44 (35±9.6)	24 , 29 , 32 (28±4.0)
19.5				22 , 26 , 27 (25±2.6)	24 , 30 , 32 (29±4.2)
39.1	108 , 126 , 131 (122±12.1)			36 , 36 , 42 (38±3.5)	25 , 26 , 29 (27±2.1)
78.1	122 , 123 , 128 (124±3.2)			35 , 36 , 41 (37±3.2)	30*, 32*, 33* (32±1.5)
156.3	118 , 124 , 124 (122±3.5)	13 , 18 , 20 (17±3.6)	43 , 51 , 53 (49±5.3)	29 , 30 , 41 (33±6.7)	
312.5	101 , 111 , 114 (109±6.8)	9 , 10 , 14 (11±2.6)	41 , 46 , 51 (46±5.0)	19*, 26*, 35* (27±8.0)	
625	98*, 101*, 114* (104±8.5)	18 , 18 , 21 (19±1.7)	28 , 37 , 58 (41±15.4)		
1250	82*, 86*, 97* (88±7.8)	7 , 13 , 18 (13±5.5)	42 , 45 , 54 (47±6.2)		
2500##		14*, 22*, 27* (21±6.6)	51 , 56 , 57 (55±3.2)		
5000##		15*, 17*, 19* (17±2.0)	42*, 53*, 69* (55±13.6)		
Positive control					
Name	2AA				
Concentration (μg/plate)	1	2	10	0.5	2
Number of colonies/plate	748 , 777 , 835 (787±44.3)	303 , 330 , 367 (333±32.1)	746 , 759 , 924 (810±99.2)	364 , 381 , 385 (377±11.2)	134 , 142 , 165 (147±16.1)

Negative control : Dimethylsulfoxide.

2AA : 2-Aminoanthracene.

( ) : Mean±S.D.

* : Bacterial growth inhibition was observed.

#: White fine precipitations were observed on the surface of agar plate.

Table 3-1. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl) bisbenzene in bacteria (mutagenicity test II : -S9 mix)

Compund concentration (μg/plate)	Number of revertants (number of colonies/plate)				
	Base-pair substitution type			Frameshift type	
	TA100	TA1535	WP2*uvrA*	TA98	TA1537
Negative control	119 , 119 , 124 (121±2.9)	11 , 12 , 13 (12±1.0)	42 , 49 , 54 (48±6.0)	20 , 21 , 21 (21±0.6)	10 , 16 , 19 (15±4.6)
2.44				12 , 18 , 19 (16±3.8)	20 , 22 , 25 (22±2.5)
4.88				17 , 23 , 30 (23±6.5)	25 , 26 , 28 (26±1.5)
9.77	106 , 114 , 120 (113±7.0)	14 , 16 , 19 (16±2.5)		19 , 21 , 24 (21±2.5)	18 , 20 , 24 (21±3.1)
19.5	126 , 127 , 130 (128±2.1)	13 , 13 , 16 (14±1.7)		16 , 22 , 25 (21±4.6)	17 , 21 , 21 (20±2.3)
39.1	118 , 136 , 137 (130±10.7)	12 , 14 , 19 (15±3.6)		20*, 22*, 25* (22±2.5)	20*, 21*, 27* (22±3.8)
78.1	118 , 120 , 122 (120±2.0)	10 , 14 , 17 (14±3.5)		18*, 21*, 25* (21±3.5)	20*, 23*, 27* (23±3.5)
156.3	119*,128*, 134* (127±7.5)	11*, 12*, 15* (13±2.1)	50 , 61 , 63 (58±7.0)		
312.5	97*, 109*, 118* (108±10.5)	9*, 11*, 12* (11±1.5)	47 , 55 , 57 (53±5.3)		
625			51 , 63 , 63 (59±6.9)		
1250#			53 , 64 , 72 (63±9.5)		
2500#			62 , 69 , 76 (69±7.0)		
5000#			56*, 58*, 62* (59±3.1)		
Positive control					
Name	AF-2	NaN_3	AF-2	AF-2	9AA
Concentration (μg/plate)	0.01	0.5	0.01	0.1	80
Number of colonies/plate	539 , 549, 595 (561±29.9)	588 , 604 , 621 (604±16.5)	153 , 169 , 174 (165±11.0)	377 , 387 , 459 (408±44.7)	377 , 435 , 482 (431±52.6)

Negative control : Dimethylsulfoxide.

AF-2 : 2-(2-furyl)-3-(5-nitro-2-furyl)acrylamide; NaN_3 : sodium azide; 9AA : 9-aminoacridine hydrochloride.

( ) : Mean±S.D.

* : Bacterial growth inhibition was observed.

: Clear oily precipitations were observed on the surface of agar plate.

Table 3-2. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl) bisbenzene in bacteria (mutagenicity test II : +S9 mix)

Compund concentration (μg/plate)	Number of revertants (number of colonies/plate)				
	Base-pair substitution type			Frameshift type	
	TA100	TA1535	WP2*uvrA*	TA98	TA1537
Negative control	107 , 116 , 140 (121±17.1)	10 , 12 , 13 (12±1.5)	48 , 50 , 52 (50±2.0)	30 , 37 , 38 (35±4.4)	20 , 20 , 27 (22±4.0)
2.44					26 , 31 , 32 (30±3.2)
4.88					23 , 33 , 35 (30±6.4)
9.77				29 , 31 , 32 (31±1.5)	25 , 30 , 37 (31±6.0)
19.5				28 , 32 , 37 (32±4.5)	32 , 34 , 41 (36±4.7)
39.1	144 , 155 , 164 (154±10.0)			33 , 35 , 42 (37±4.7)	25 , 28 , 36 (30±5.7)
78.1	128 , 151 , 159 (146±16.1)			35 , 39 , 39 (38±2.3)	31*, 34*, 37* (34±3.0)
156.3	115 , 136 , 141 (131±13.8)	8 , 12 , 19 (13±5.6)	47 , 53 , 61 (54±7.0)	29 , 38 , 40 (36±5.9)	
312.5	123 , 131 , 142 (132±9.5)	8 , 10 , 11 (10±1.5)	60 , 64 , 67 (64±3.5)	25*, 38*, 38* (34±7.5)	
625	109*,137*, 151* (132±21.4)	9 , 10 , 12 (10±1.5)	50 , 56 , 60 (55±5.0)		
1250	116*,124*, 137* (126±10.6)	7 , 9 , 16 (11±4.7)	45 , 51 , 61 (52±8.1)		
2500##		10*, 11*, 11* (11±0.6)	34 , 46 , 47 (42±7.2)		
5000##		7*, 10*, 12* (10±2.5)	48*, 56*, 59* (54±5.7)		
Positive control					
Name	2AA				
Concentration (μg/plate)	1	2	10	0.5	2
Number of colonies/plate	818 , 903 , 914 (878±52.5)	297 , 317 , 338 (317±20.5)	822 , 832 , 910 (855±48.2)	375 , 376 , 399 (383±13.6)	147 , 153 , 162 (154±7.5)

Negative control : Dimethylsulfoxide.

2AA : 2-Aminoanthracene.

( ) : Mean±S.D.

* : Bacterial growth inhibition was observed.

#: White fine precipitations were observed on the surface of agar plate.

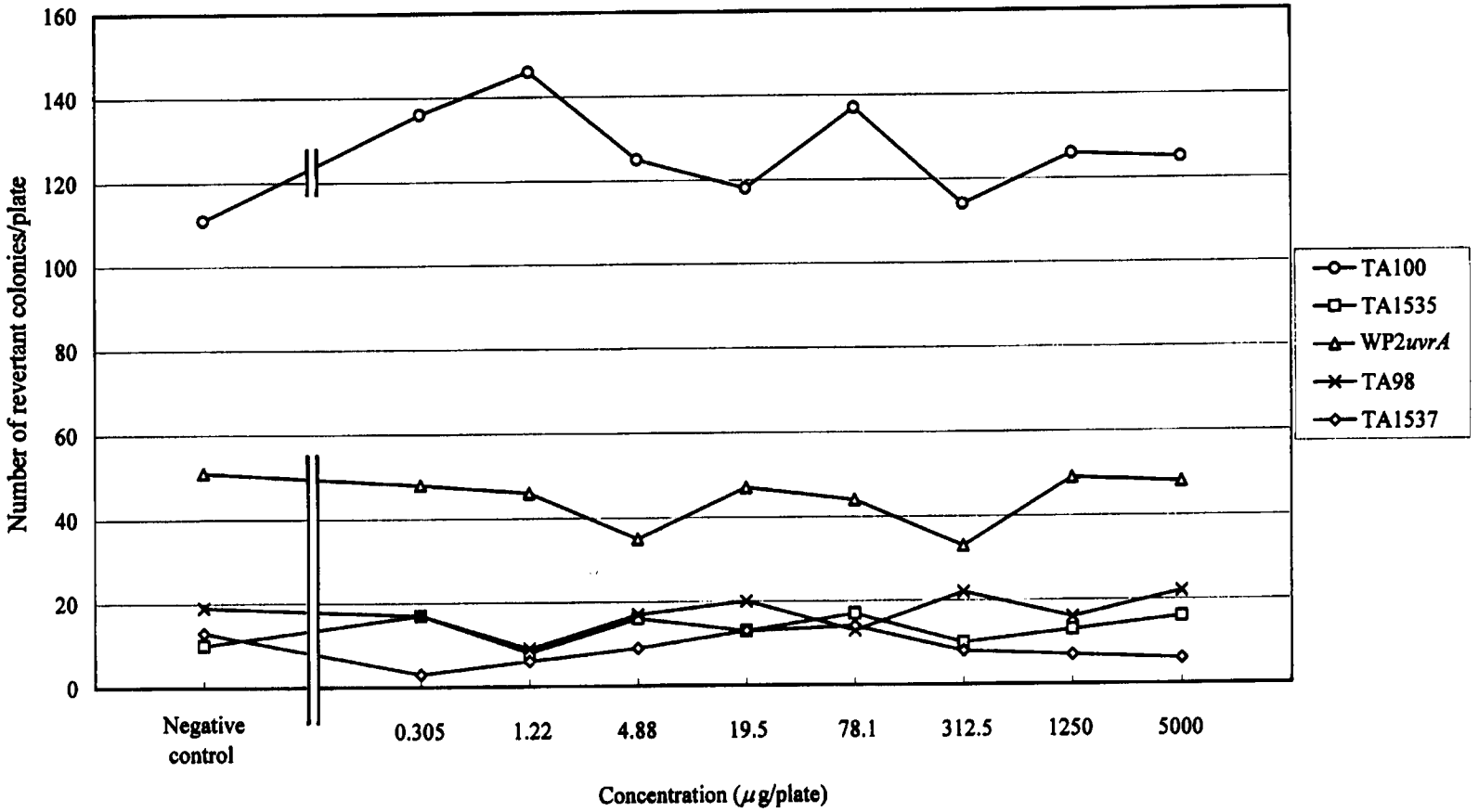


Figure 1-1. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bisbenzene in bacteria (dose-finding test: -S9 mix).

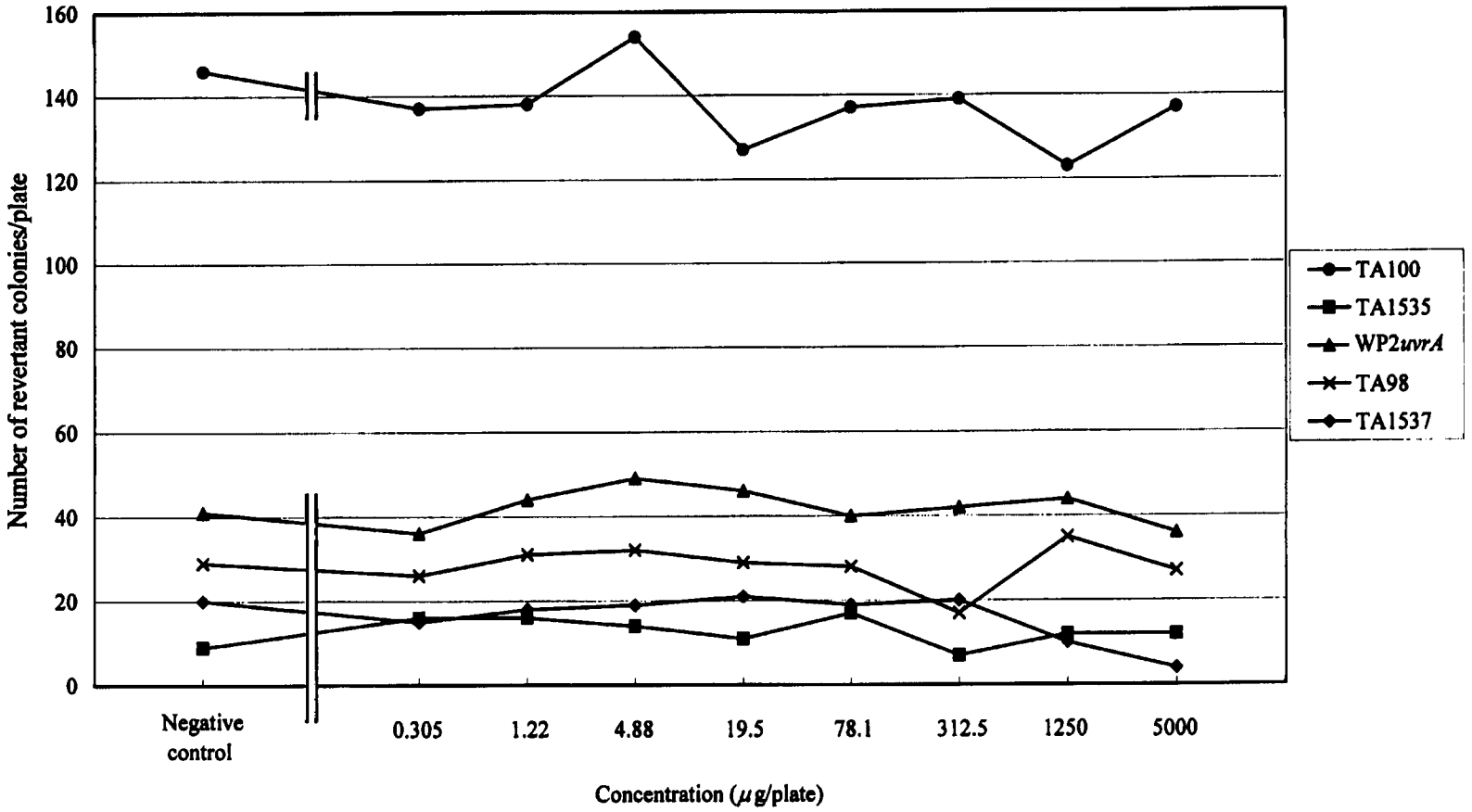


Figure 1-2. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bisbenzene in bacteria (dose-finding test: +S9 mix).

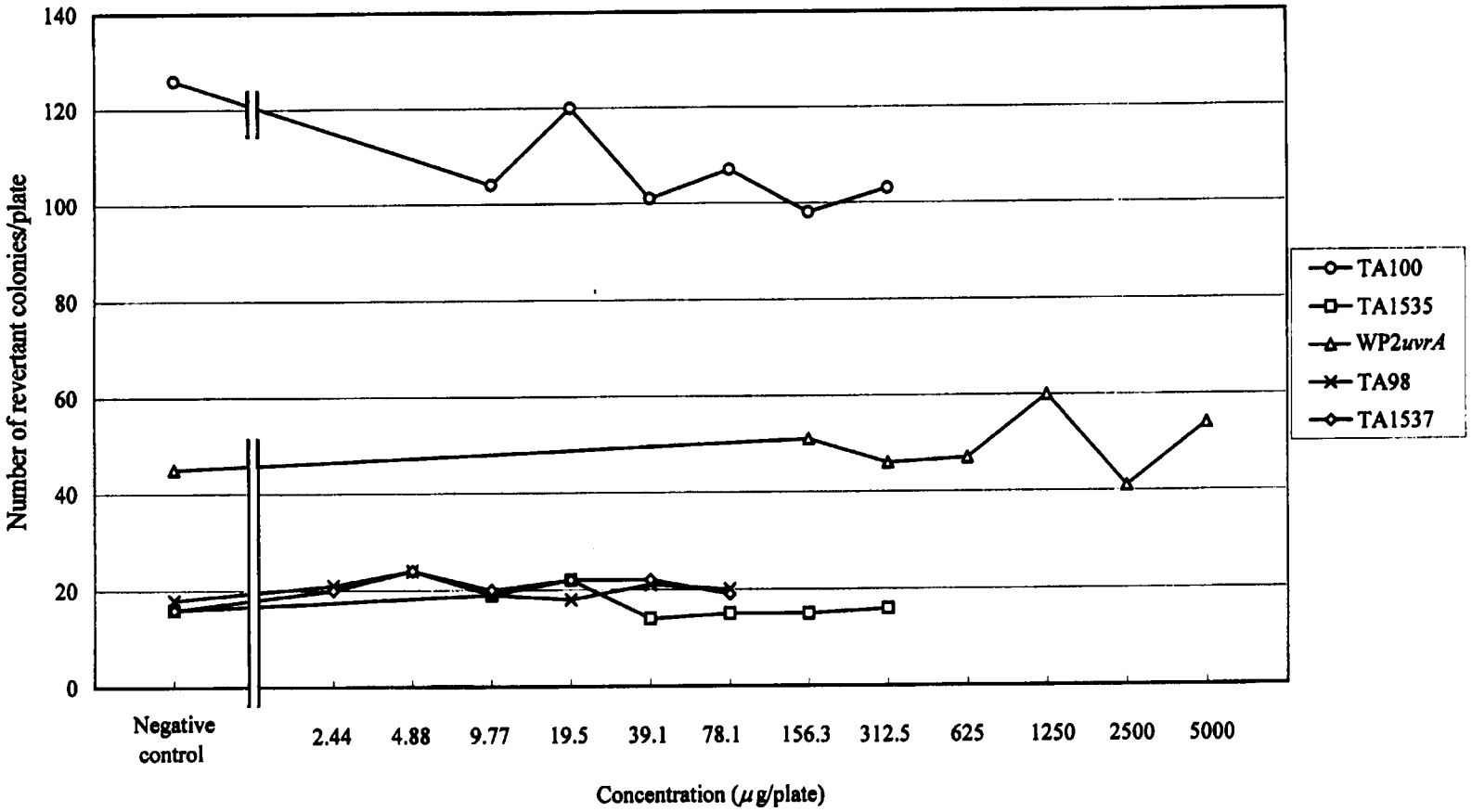


Figure 2-1. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bisbenzene in bacteria (mutagenicity test I: -S9 mix).

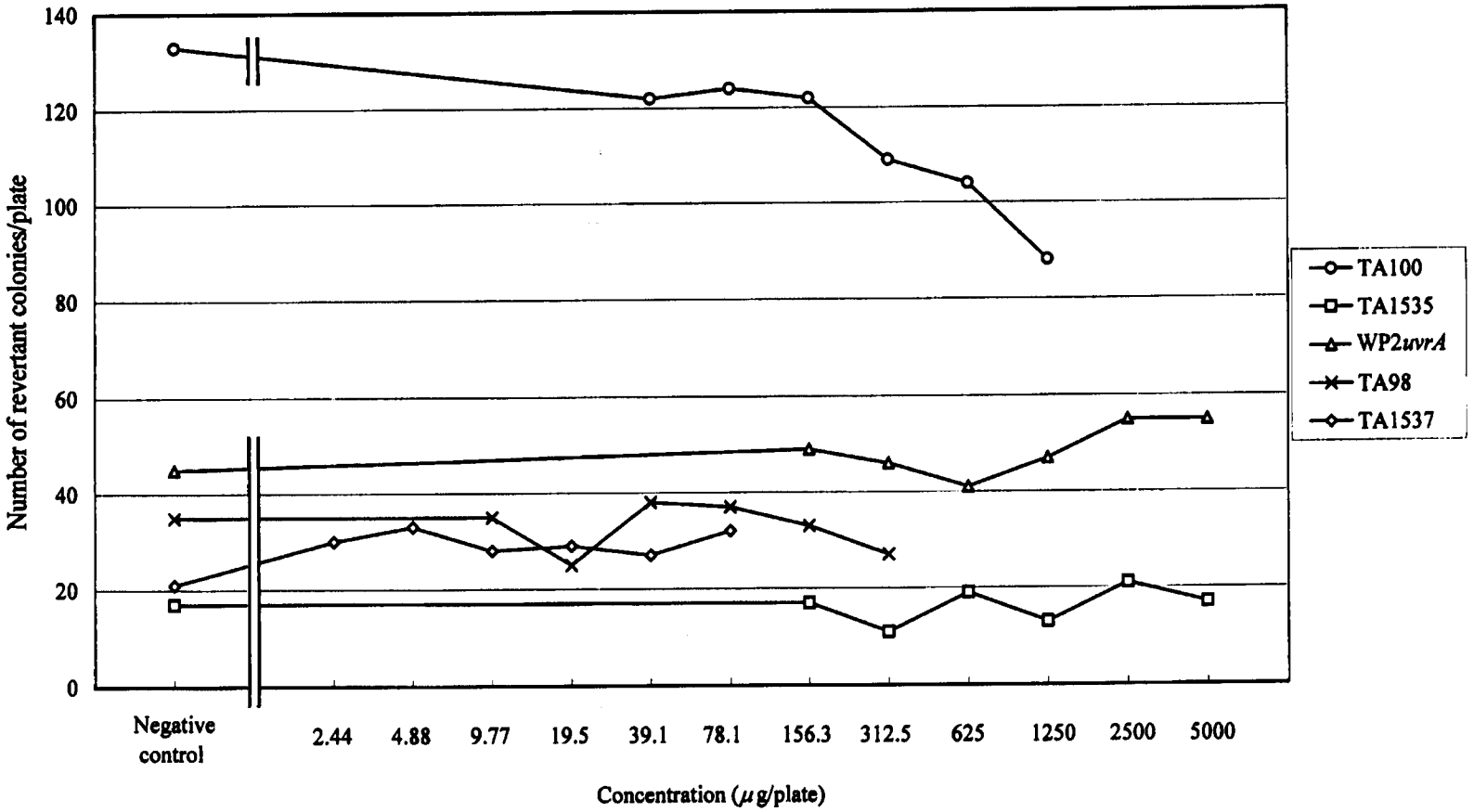


Figure 2-2. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bisbenzene in bacteria (mutagenicity test I: +S9 mix).

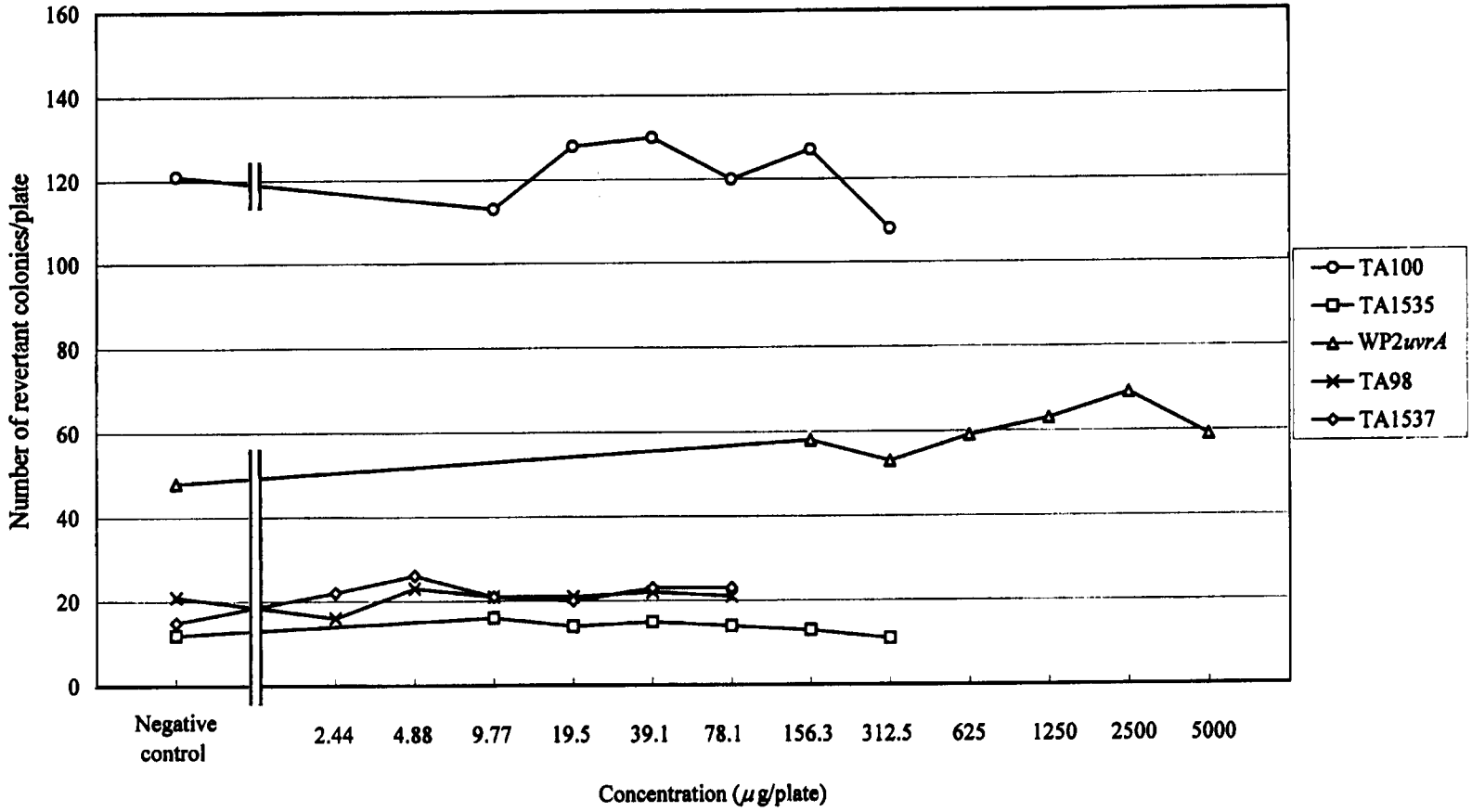


Figure 3-1. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bisbenzene in bacteria (mutagenicity test II: -S9 mix).

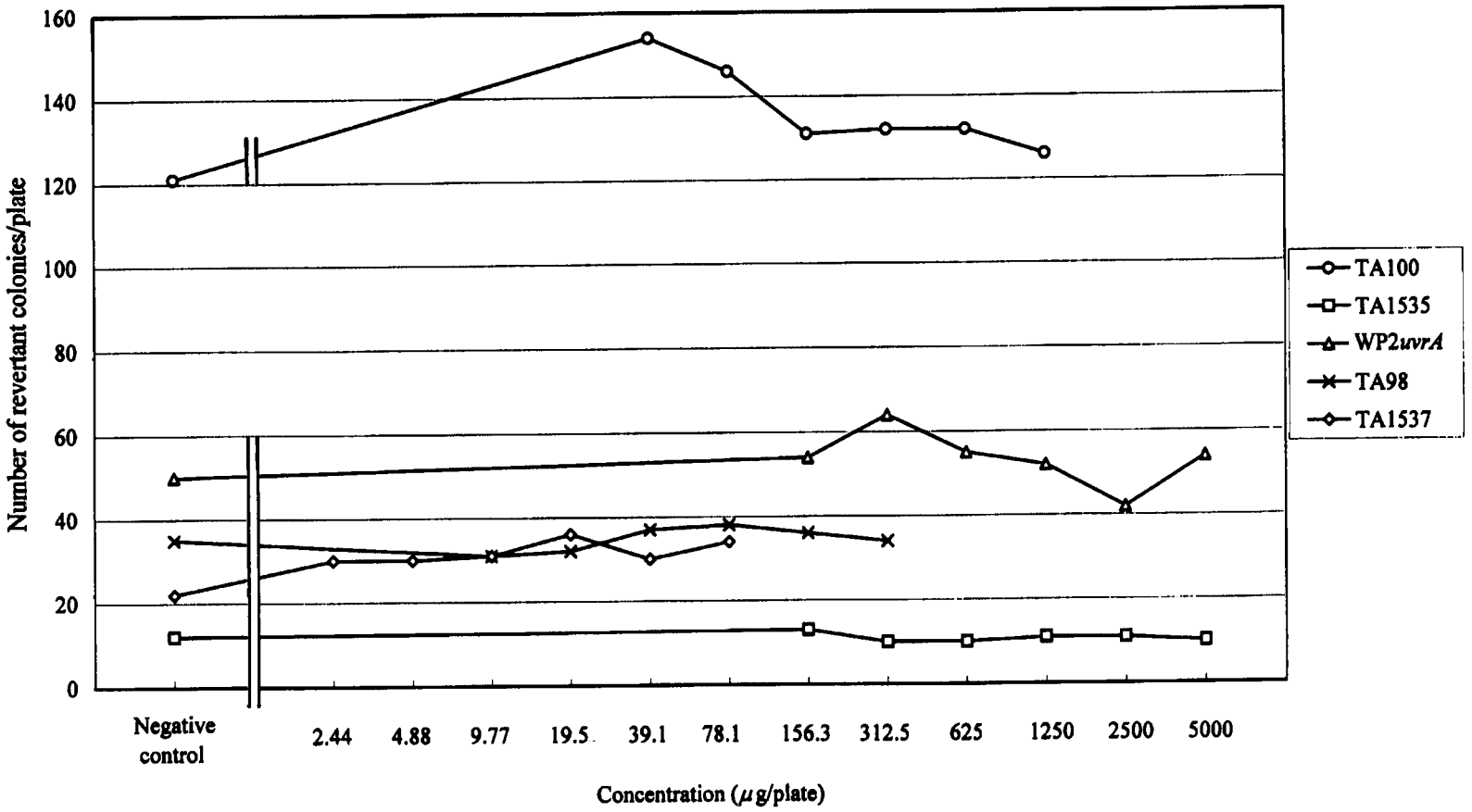
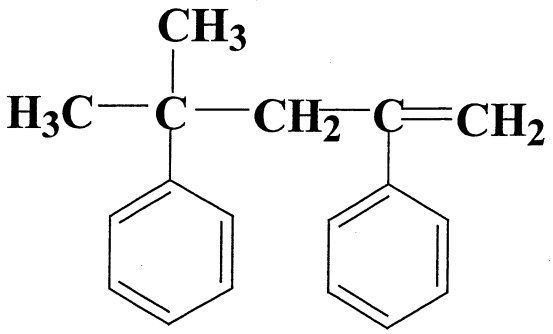


Figure 3-2. Reverse mutation test of 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bisbenzene in bacteria (mutagenicity test II: +S9 mix).

ほ乳類培養細胞を用いる染色体異常試験結果報告書

1. 一般的事項

新規化学物質の名称（IUPAC命名法による）	2,4-ジフェニル-4-メチル-1-ペンテン
別名	1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl) bisbenzene
CAS番号	6362-80-7
構造式又は示性式（いずれも不明の場合は，その製法の概要）	
分子量	236.36
試験に供した新規化学物質の純度	96.97 %
試験に供した新規化学物質のロット番号	412220
不純物の名称及び含有率	2,4-Diphenyl-4-methyl-2-pentene 2.54% 1,1,3-Trimethyl-3-phenylindan 0.24% α-MS 0.07%
蒸気圧	11 Pa (170℃)
対水溶解度	10 ppm
1-オクタノール/水分配係数	−
融点	-82℃
沸点	310℃
常温における性状	無色透明の液体でスチレン臭
安定性	常温・常圧で安定

溶媒に対する溶解度等	溶媒	溶解度	溶媒中の安定性
	DMSO	482.4 mg/mL以上*	**

備考
*：試験施設にて溶解度を確認
**：482.4 mg/mL DMSO溶液に発熱，発泡は認められず.

[備考] 物理化学的性状は，可能な限り記入すること.
1.「蒸気圧」の欄には，被験物質の蒸気圧を記入すること.
2.「安定性」の欄には，温度，光等に対する安定性を記入すること.
3.「溶媒に対する溶解度等」の欄には，被験物質の溶媒に対する溶解度及びその溶媒中での安定性を記入すること.