Supporting Information for

Phorbasins G-K: New Cytotoxic Diterpenes from a Southern Australian Marine Sponge, *Phorbas* sp.

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Table S1 PharmaMar initial anticancer screening results[A] on *n*-BuOH partition*

#	A549	HT29	MDA-MB-231	Activity
n-BuOH	50 μg/mL: -84% 15 μg/mL: -45% 5 μg/mL: 46%	50 μg/mL: -86% 15 μg/mL: -73% 5 μg/mL: 67%	50 μg/mL: -85% 15 μg/mL: -76% 5 μg/mL: 47%	Active

[A] Growth percentage scale: < 0% highly active; 0 – 50% moderately active; > 50% limited activity observed.

Table S2 IMB initial anticancer bioassays (in μg/mL) on *n*-BuOH partition*

#		NFF	A549	HT29	MM96L	DU145	JAM	C180_13s	SkMe128
n-BuOH	GI_{50}	13	14	14	32	13	13	14	28
	TGI	15	16	17	37	15	15	16	34
	LC_{50}	20	20	22	43	20	20	20	42

* NFF – Neonatal Foreskin Fibroblast; A549 – carcinoma (lung); HT29 – colorectal adenocarcinoma (colon); MM96L – malignant melanoma (skin); DU145 – carcinoma (prostate); JAM – carcinoma (ovary); C180_13s – carcinoma (ovary); SkMe128 – malignant melanoma (skin). MDA-MB-231 – adenocarcinoma (mammary gland).

Table S3 NMR (600 MHz, $CDCl_3$) data for phorbasin G (**6**)

#	δ_H (m, *J* (Hz))	δ_C[A]	gCOSY	HMBC (^{1}H-^{13}C)	ROESY
1	4.34 (dd, 5.7, 3.2)	65.4	H-2, H-6, H-17	C-2, C-3, C-5	H-2, H-6, H-18
2	6.76 (dd, 5.7, 1.3)	142.5	H-1, H-17	C-1, C-4, C-6, C-17	H-1, H-17
3		135.3			
4		201.2			
5	4.65 (d, 12.2)	69.9	H-6	C-1, C-4, C-6, C-7	H-8, H-18[B]
6	2.62 (dd, 12.2, 3.2)	55.1	H-1, H-5	C-5, C-7, C-8, C-18[B]	H-1, H-8[B], H-18
7		131.5			
8	6.15 (br d, 10.7)	129.6	H-9, H-18	C-6, C-9, C-10, C-18	H-5, H-6[B]
9	6.30 (dd, 15.1, 10.7)	124.1	H-8, H-10	C-7, C-8, C-11	H-18
10	5.71 (dd, 15.1, 6.9)	140.6	H-9, H-11	C-8, C-11, C-12, C-19	
11	2.90 (m)	40.1	H-10, H-12, H-19	C-9, C-10, C-12, C-13, C-19	H-13[B], H-19
12	5.33 (dd, 15.4, 6.5)	135.2	H-11, H-13	C-10[B], C-11, C-13[B], C-14, C-19	H-14
13	5.38 (dt, 15.4, 6.8)	128.5	H-12, H-14	C-11, C-12, C-14, C-15[B]	H-11[B]
14	1.87 (t, 6.8)	42.2	H-13, H-15	C-13, C-15, C-16/20	H-12, H-15, H-16/20
15	1.58 (m)	28.6	H-14, H-16/20	C-13, C-14, C-16/20	H-14, H-16/20
16/20	0.86 (d, 6.6)	22.5	H-15	C-14, C-15	H-14, H-15
17	1.89 (s)	15.7	H-1, H-2	C-1, C-2, C-3, C-4	H-2
18	1.90 (s)	17.1	H-8	C-6, C-7, C-8	H-1, H-5[B], H-6, H-9
19	1.09 (d, 6.9)	20.8	H-11	C-10, C-11, C-12	H-11

[A] ^{13}C NMR assignments supported by gHSQC experiment. [B] Weak correlations.

Table S4 NMR (C_6D_6) data for phorbasin H (**7**)

#	δ_H[A] (m, *J* (Hz))	δ_C[BC]	gCOSY[A]	HMBC[B] (^{1}H-^{13}C)
1	5.29 (dd, 5.7, 3.7)	69.3	H-2, H-6, H-17[D]	C-3[D]
2	6.22 (dd, 5.7, 1.4)	139.5	H-1, H-17	C-6[D], C-17[D]
3		136.5		
4		201.0		
5	4.51 (d, 12.2)	71.0	H-6, OH-5[D]	C-6
6	2.41 (dd, 12.2, 3.7)	53.9	H-1, H-5	C-7[D], C-8[D]
7		132.8		
8	6.10 (br d, 10.7)	130.0	H-9, H-18	C-6[D], C-10[D]
9	6.44 (dd, 15.1, 10.7)	125.4	H-8, H-10	C-11[D]
10	5.70 (dd, 15.1, 6.9)	139.4	H-9, H-11[D]	C-8, C-11, C-19[D]
11	2.90 (m)	40.6	H-10[D], H-12[D], H-19	C-12, C-13[D]
12	5.43 (m)	136.1	H-11[D], H-13	C-11[D]
13	5.43 (m)	128.7	H-12, H-14	C-11[D]
14	1.90 (t, 6.2)	42.7	H-13, H-15	C-12, C-13, C-15, C-16/20
15	1.55 (m)	29.1	H-14, H-16/20	C-16/20
16/20	0.88 (d, 6.7)	22.8	H-15	C-14, C-15
17	1.61 (s)	15.7	H-1[D], H-2	C-2, C-3, C-4
18	1.88 (s)	16.4	H-8	C-6, C-7
19	1.11 (d, 6.9)	21.2	H-11	C-10, C-11, C-12
MeCO	1.59 (s)	20.6		MeCO
MeCO		169.6		
OH-5	3.62 (br s)		H-5[D]	C-6

[A] Measured on Bruker 600, [B] Measured on Varian 400. [C] ^{13}C NMR assignments supported by gHSQC experiment. [D] Weak correlations.

Table S5 NMR (C_6D_6) data for phorbasin I (**8**)

#	δ_H[A] (m, *J* (Hz))	δ_C[BC]	gCOSY[A]	HMBC[B] (^{1}H-^{13}C)
1	5.46 (dd, 5.7, 3.7)	68.8	H-2, H-6	C-2
2	6.92 (d, 5.7)	139.1	H-1, H-17b[D]	C-6[D]
3		137.6		
4		200.2		
5	4.56 (d, 12.2)	71.0	H-6, OH-5[D]	C-4, C-6
6	2.44 (dd, 12.2, 3.7)	53.8	H-1, H-5	C-5[D]
7		132.6		
8	6.09 (br d, 10.7)	130.0	H-9, H-18	C-6[D], C-10, C-18[D]
9	6.43 (dd, 15.1, 10.7)	125.4	H-8, H-10	
10	5.69 (dd, 15.1, 6.9)	139.5	H-9, H-11[D]	C-8
11	2.89 (m)	40.6	H-10[D], H-12[D], H-19	C-10[D], C-12[D], C-13[D]
12	5.42 (m)	136.1	H-11[D], H-13	
13	5.42 (m)	128.6	H-12, H-14	
14	1.89 (t, 6.2)	42.7	H-13, H-15	C-12, C-13, C-15, C-16/20
15	1.54 (m)	29.1	H-14, H-16/20	C-14[D], C-16/20
16/20	0.88 (d, 6.7)	22.8	H-15	C-14, C-15
17	a 4.13 (br d, 14.6)	66.9	H-17b	C-3
	b 4.05 (dd, 14.6, 1.6)		H-2[D], H-17a	C-2, C-3, C-17 O<u>C</u>H$_2$CH$_3$[D]
18	1.87 (s)	16.5	H-8	C-6, C-7, C-8
19	1.10 (d, 6.9)	21.2	H-11	C-10, C-11, C-12
<u>C</u>H$_3$CO	1.55 (s)	20.6		CH$_3$<u>C</u>O
CH$_3$<u>C</u>O		169.5		
OH-5	3.55 (br s)	67.1	H-5[D]	C-6
C-17 O<u>C</u>H$_2$CH$_3$	3.23 (q, 7.0)	15.6	C-17 OCH$_2$<u>C</u>H$_3$	C-17, C-17 OCH$_2$<u>C</u>H$_3$
C-17 OCH$_2$<u>C</u>H$_3$	1.03 (t, 7.0)	67.1	C-17 O<u>C</u>H$_2$CH$_3$	C-17 O<u>C</u>H$_2$CH$_3$

[A] Measured on Bruker 600, [B] Measured on Varian 400. [C] ^{13}C NMR assignments supported by gHSQC experiment. [D] Weak correlations.

Table S6 NMR (600 MHz, C_6D_6) data for phorbasin J (**9**)

#	δ_H (m, *J* (Hz))	δ_C [A]	gCOSY	HMBC (^{1}H-^{13}C)	ROESY
1	5.50 (m)	71.7	H-2, H-6	C-3, C-5	H-2, H-6, H-18[B], C-2 OCH_2CH_3a[B]
2	4.11 (t, 3.6)	78.4	H-1, H-3[B]	C-4, C-6[B], C-1′[B]	H-1, H-3, C-2 OCH_2CH_3b
3	2.94 (m)	49.2	H-2[B], H-17a, H-17b	C-5, C-17[B]	H-2, H-5, H-17a, H-17b
4		209.1			
5	4.33 (d, 11.7)	73.3	H-6	C-4, C-6, C-7	H-3, H-8, H-18
6	2.95 (m)	53.7	H-1, H-5	C-7, C-8, C-18	H-1, H-8, H-18
7		132.6			
8	6.20 (br d, 10.7)	129.2	H-9, H-18	C-6, C-9, C-10, C-18	H-5, H-6, H-10
9	6.44 (dd, 15.1, 10.7)	125.6	H-8, H-10	C-7[B], C-8, C-11	H-11[B], H-18
10	5.67 (dd, 15.1, 6.9)	139.1	H-9, H-11[B]	C-8, C-11, C-12, C-19	H-8
11	2.88 (m)	40.6	H-10[B], H-12, H-19	C-9[B], C-10, C-12, C-13, C-19[B]	H-9[B], H-12, H-13, H-19
12	5.40 m)	136.2	H-11, H-13	C-11, C-13[B], C-14	H-11, H-14
13	5.42 (m)	128.7	H-12, H-14	C-11, C-12[B], C-14	H-11, H-14
14	1.89 (t, 6.1)	42.7	H-13, H-15	C-12, C-13, C-15, C-16/20	H-12,H-13,H-15,H-16/20
15	1.55 (m)	29.1	H-14, H-16/20	C-13, C-14, C-16/20	H-14, H-16/20
16/20	0.88 (d, 6.7)	22.8	H-15	C-14, C-15	H-14, H-15
17	a 3.92 (dd, 9.3, 4.9)	65.5	H-3, H-17b	C-2, C-3, C-17 OCH_2CH_3	H-3, H-17b, C-17 OCH_2CH_3a
	b 3.82 (dd, 9.3, 9.3)		H-3, H-17a	C-2, C-3, C-4, C-17 OCH_2CH_3	H-3, H-17a, C-17 OCH_2CH_3b[B]
18	1.87 (s)	16.7	H-8	C-6, C-7, C-8	H-1[B], H-5, H-6, H-9
19	1.10 (d, 6.9)	21.2	H-11	C-10, C-11, C-12	H-11
CH_3CO	1.56 (s)	20.7		CH_3CO	
CH_3CO		169.5			
C-2 OCH_2CH_3	a 3.41 (m)	66.9	C-2 OCH_2CH_3b, C-2 OCH_2CH_3	C-2, C-2 OCH_2CH_3	H-1[B], C-2 OCH_2CH_3b, C-2 OCH_2CH_3
	a 3.27 (m)		C-2 OCH_2CH_3a, C-2 OCH_2CH_3	C-2, C-2 OCH_2CH_3'	H-2, C-2 OCH_2CH_3a, C-2 OCH_2CH_3
C-2 OCH_2CH_3	0.93 (t, 7.0)	15.8	C-2 OCH_2CH_3	C-2 OCH_2CH_3	C-2 OCH_2CH_3
C-17 OCH_2CH_3	b 3.34 (m)	67.1	C-17 OCH_2CH_3b, C-17 OCH_2CH_3	C-17, C-17 OCH_2CH_3	H-17a[B], C-17 OCH_2CH_3b, C-17 OCH_2CH_3
	b 3.27 (m)		C-17 OCH_2CH_3a, C-17 OCH_2CH_3	C-17, C-17 OCH_2CH_3	H-17b[B], C-17 OCH_2CH_3a, C-17 OCH_2CH_3
C-17 OCH_2CH_3	1.04 (t, 7.0)	15.7	C-17 OCH_2CH_3	C-17 OCH_2CH_3	C-17 OCH_2CH_3

[A] ^{13}C NMR assignments supported by gHSQC experiment. [B] Weak correlations.

Table S7 NMR (600 MHz, CD_3OD) data for phorbasin K (**10**)

#	δ_H (m, *J* (Hz))	δ_C [A]	gCOSY	HMBC (^1H-^{13}C)
1	4.14 (m)	70.2	H-2, H-6	C-2, C-3
2	5.82 (m)	125.2	H-1	C-4, C-6, C-17
3		143.2		
4	3.98 (br d, 7.8)	76.2	H-5	C-2, C-3, C-5
5	3.93 (dd, 11.8, 7.8)	71.6	H-4, H-6	C-4, C-6[B]
6	2.25 (dd, 11.8, 3.9)	55.4	H-1, H-5	C-4[B], C-5, C-7, C-8, C-18
7		136.4		
8	5.95 (br d, 10.8)	129.9	H-9, H-18	C-6, C-9[B], C-10, C-18
9	6.35 (ddd, 15.1, 10.8, 1.2)	126.4	H-8, H-10	C-8[B], C-11
10	5.56 (dd, 15.1, 6.9)	138.5	H-9, H-11[B]	C-8, C-11, C-12, C-19
11	2.88 (m)	41.2	H-10[B], H-12[B], H-19	C-9, C-10, C-12, C-13, C-19[B]
12	5.36 (dd, 15.3, 6.0	137.1	H-11[B], H-13	C-11, C-14
13	5.39 (dt, 15.3, 6.1)	129.0	H-12, H-14	C-11, C-14
14	1.89 (t, 6.1)	43.3	H-13, H-15	C-12, C-13, C-15, C-16/20
15	1.59 (m)	29.8	H-14, H-16/20	C-13[B], C-16/20
16/20	0.89 (d, 6.7)	22.8	H-15	C-14, C-15
17	a 4.21 (br d, 14.1)	63.2	H-17b	C-2, C-3
	b 4.16 (br d, 14.1)		H-17a	C-2, C-3, C-4
18	1.91 (s)	16.6	H-8	C-1, C-6, C-7, C-8
19	1.09 (d, 6.9)	21.3	H-11	C-10, C-11, C-12

[A] ^{13}C NMR assignments supported by gHSQC experiment. [B] Weak correlations.

Figure S1 ^{1}H NMR (600 MHz, $CDCl_3$) spectrum for phorbasin G (**6**)

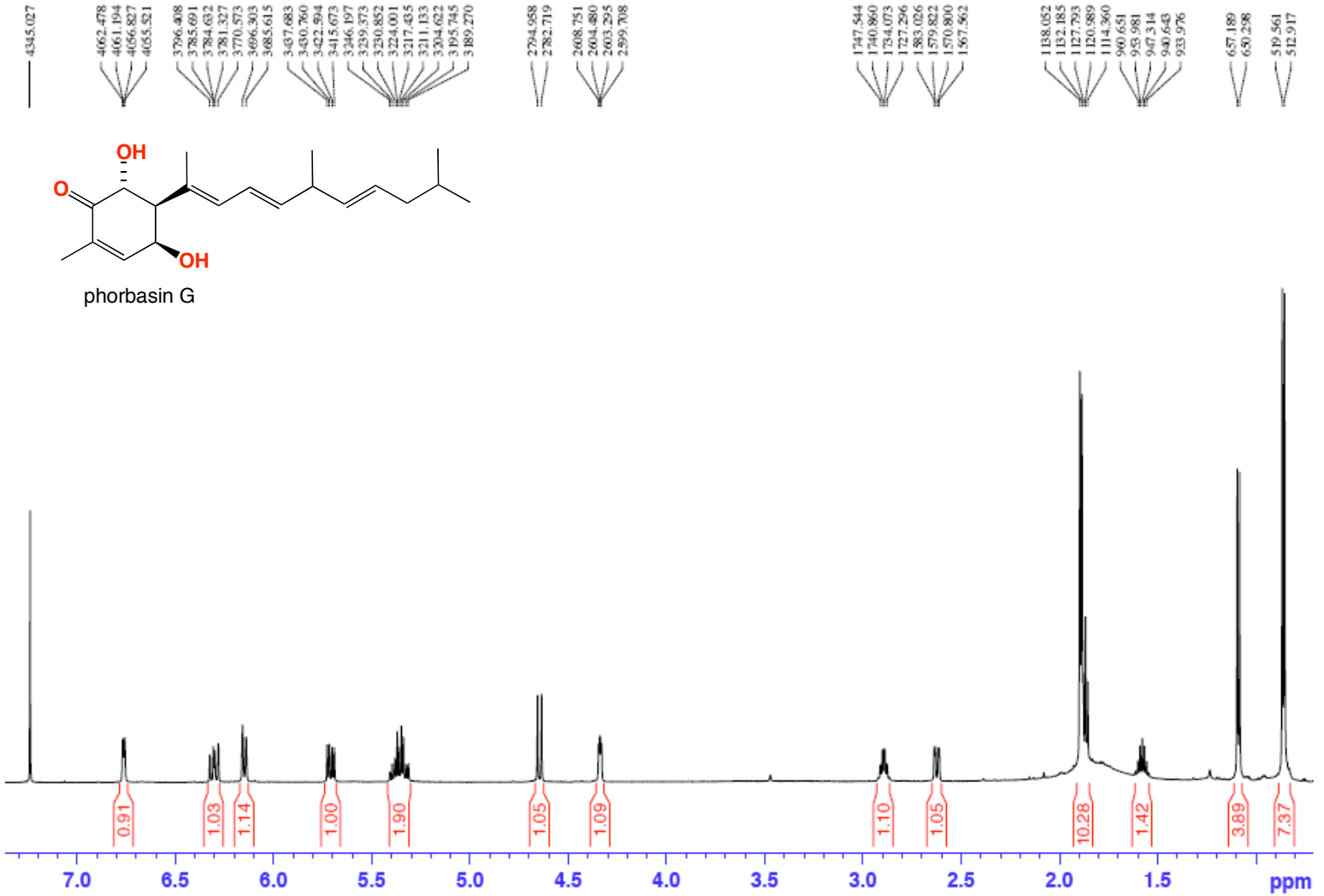


Figure S2 ^{1}H NMR (600 MHz, C_6D_6) spectrum for phorbasin H (**7**)

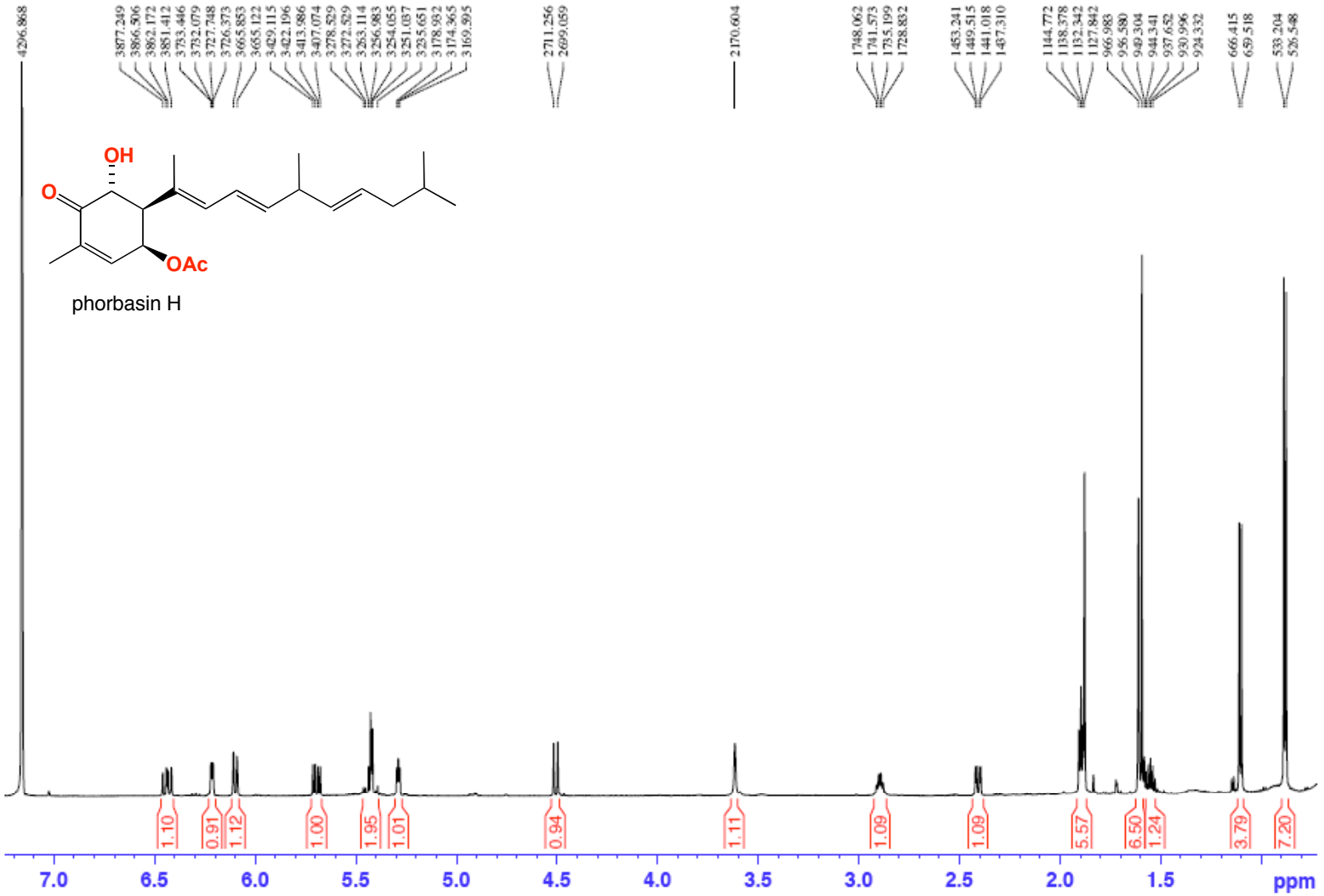


Figure S3 ^{1}H NMR (600 MHz, C_6D_6) spectrum for phorbasin I (**8**)

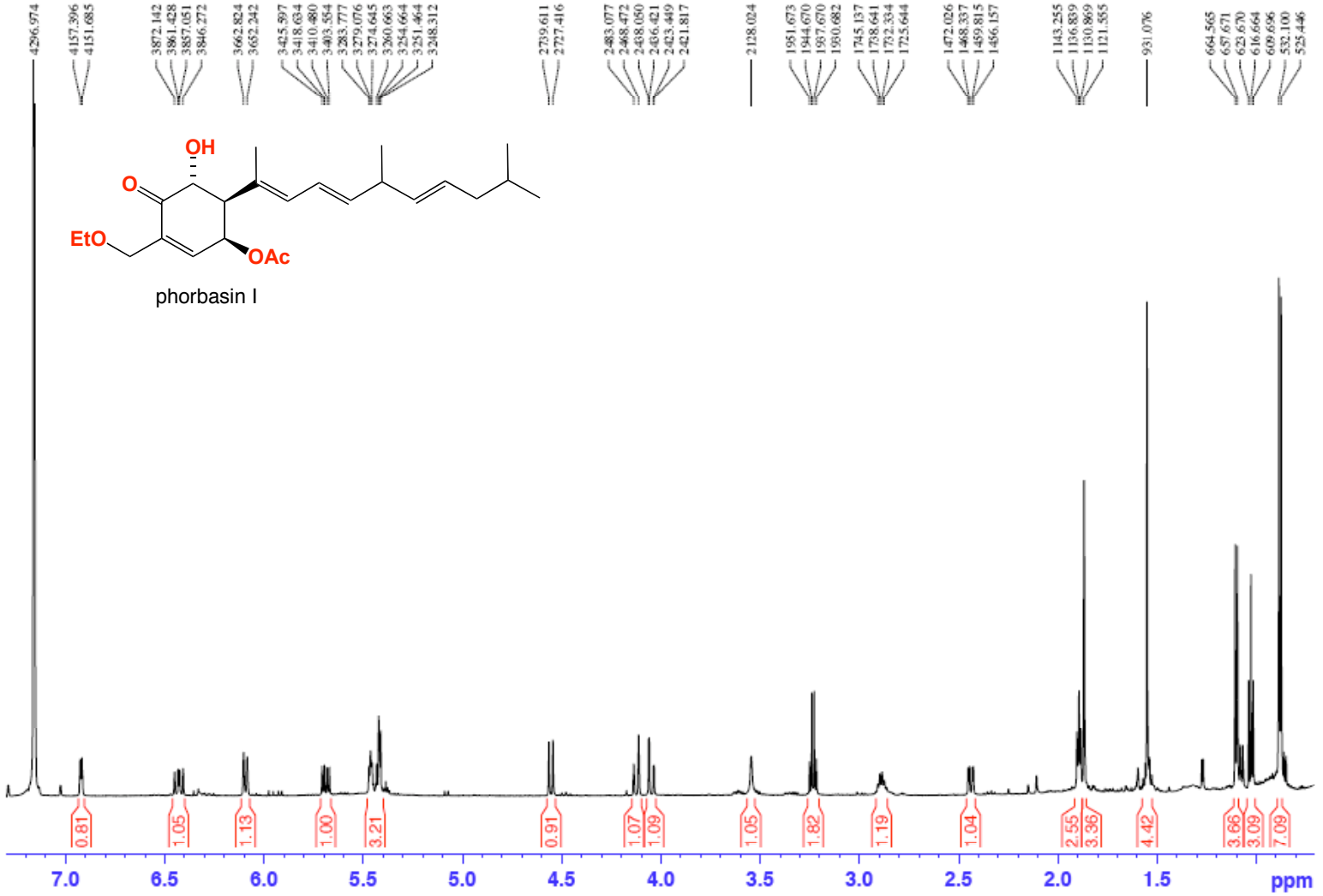


Figure S4 ^{1}H NMR (600 MHz, C_6D_6) spectrum for phorbasin J (**9**)

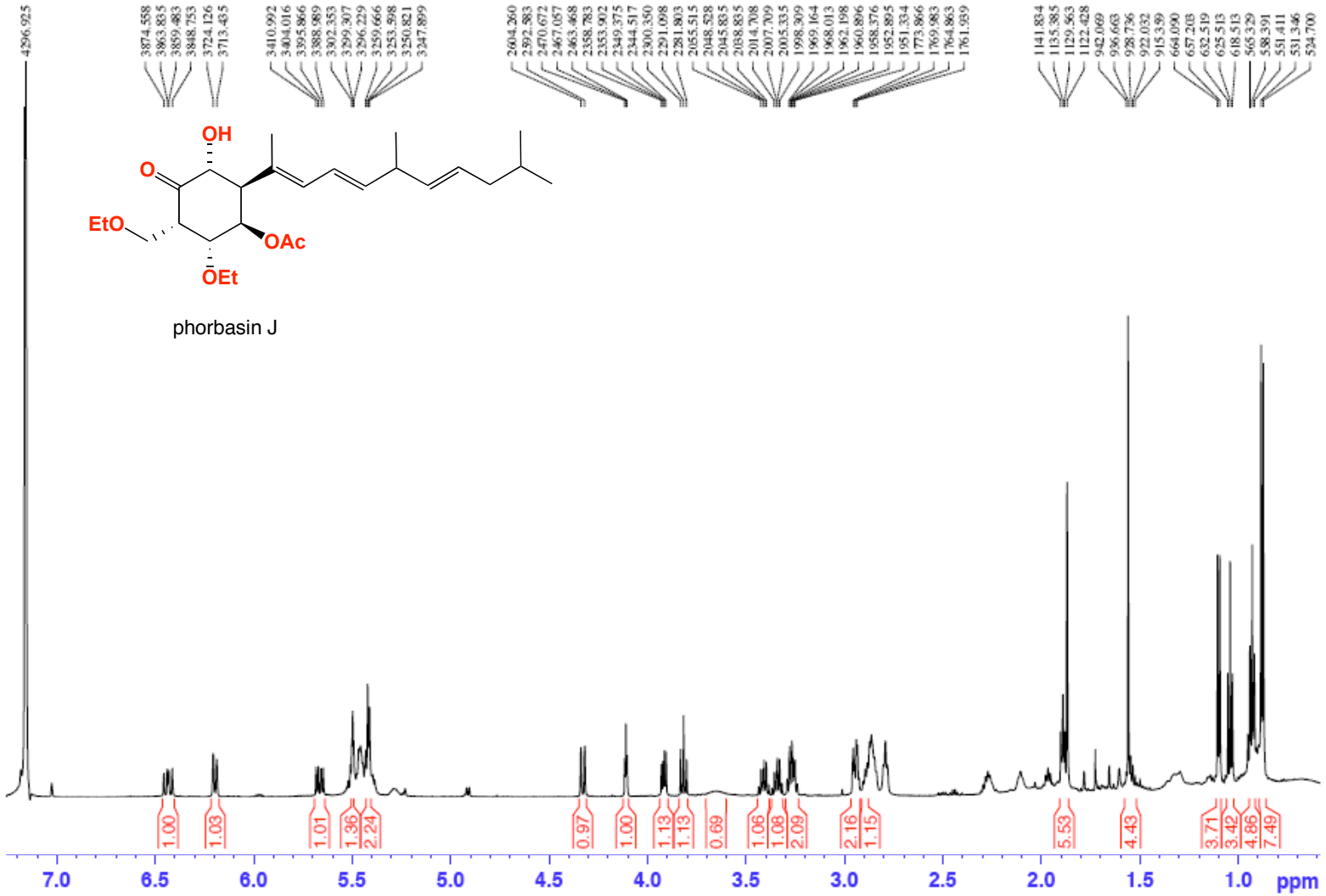


Figure S5 ^{1}H NMR (600 MHz, CD_3OD) spectrum for phorbasin K (**10**)

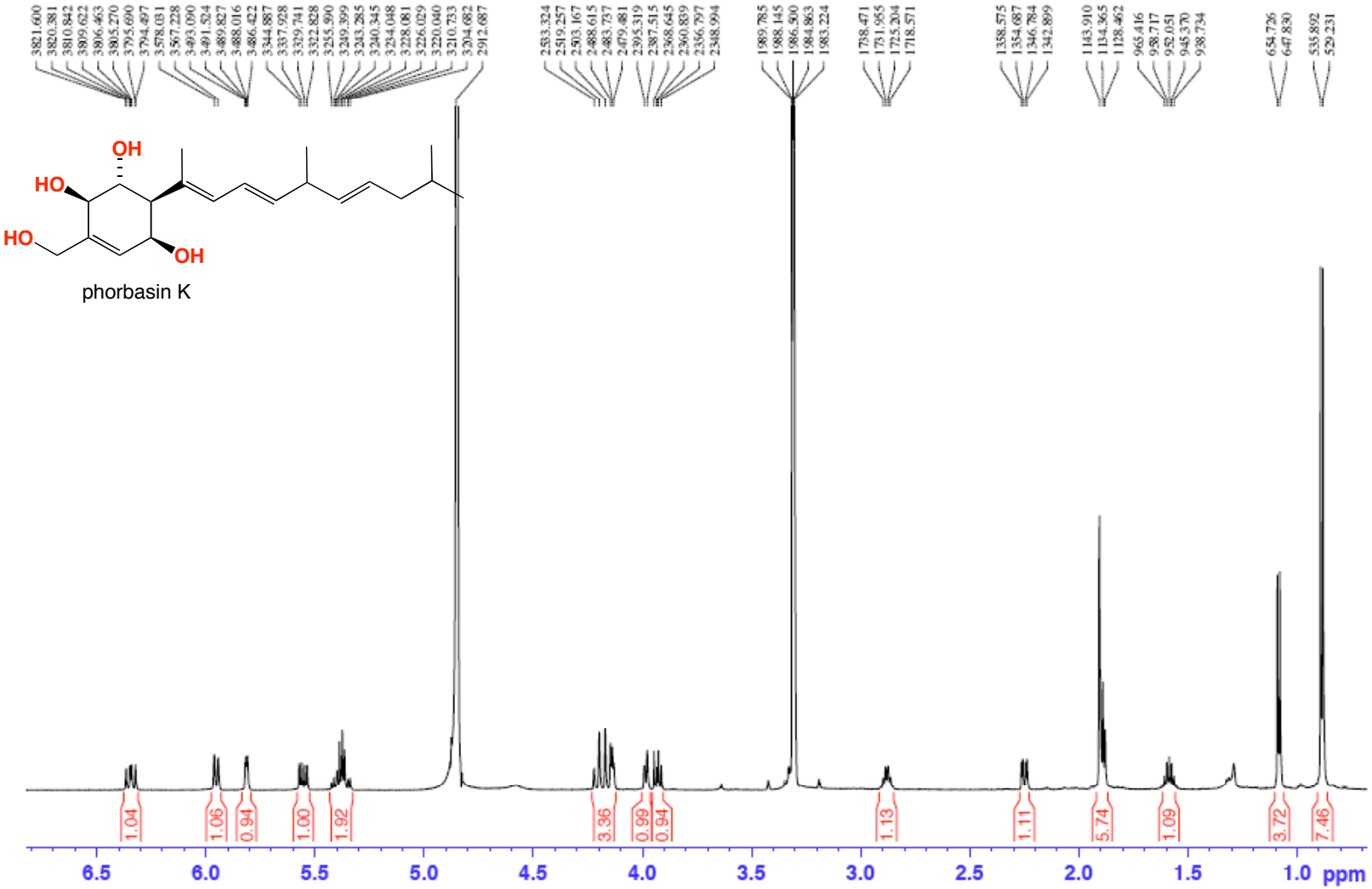
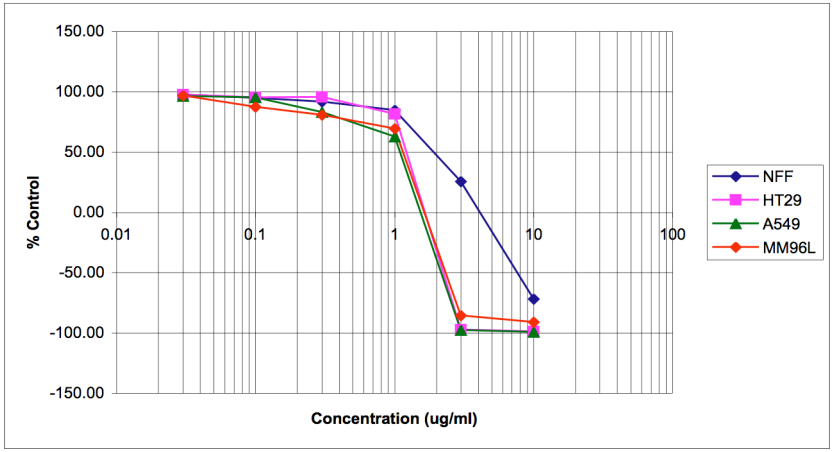
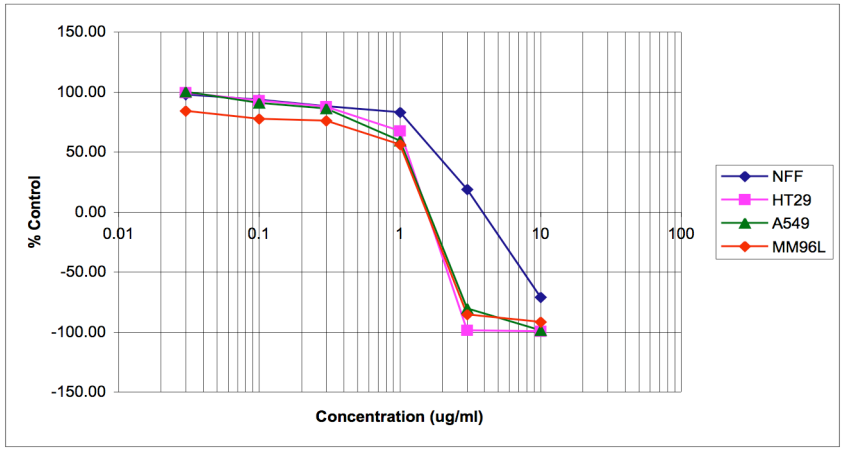


Figure S6 Representative experiments (n=2) determining GI_{50}, TGI and LC_{50} of phorbasins B-K (each point is the average of triplicate data).

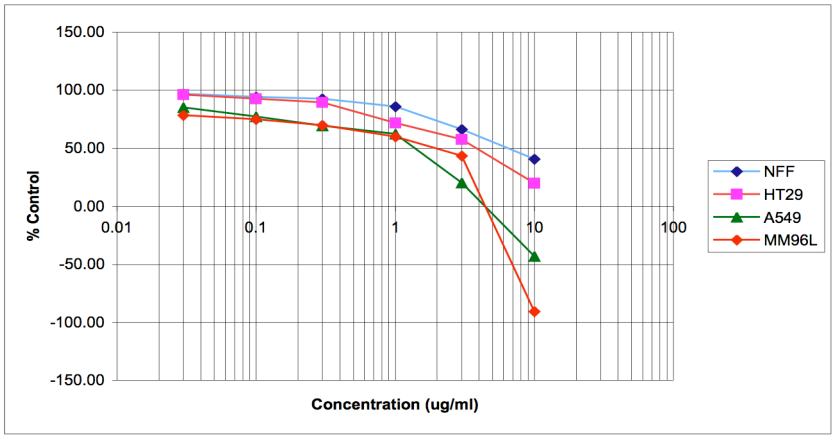
1. Phorbasin B (**1**)



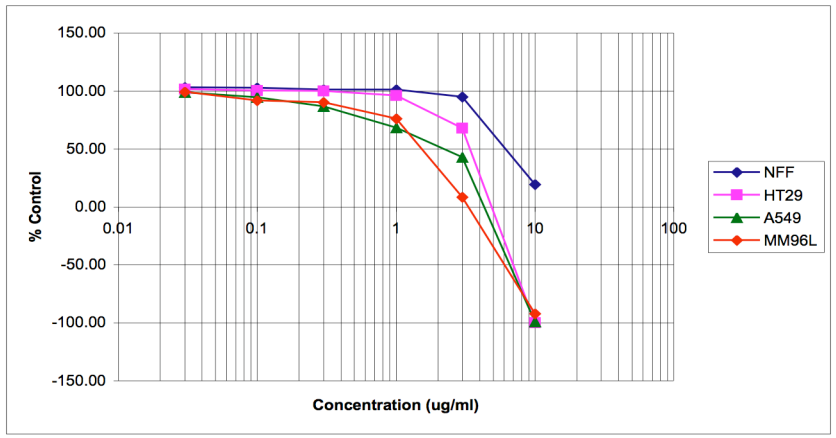
2. Phorbasin C (**2**)



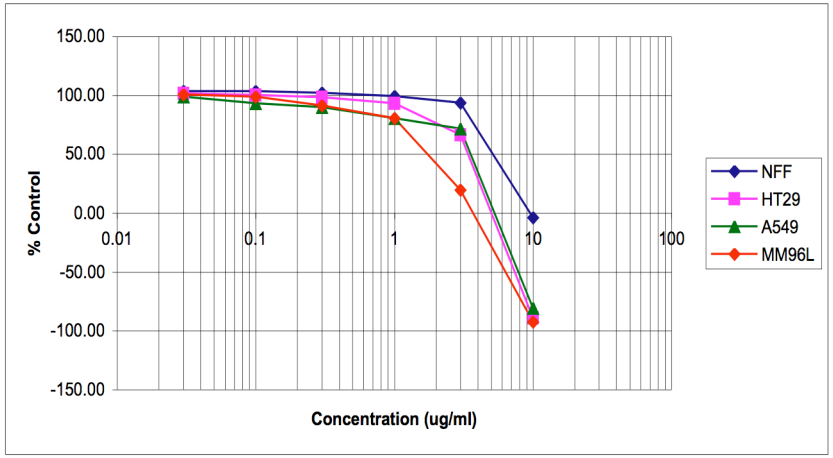
3. Phorbasin D (**3**)



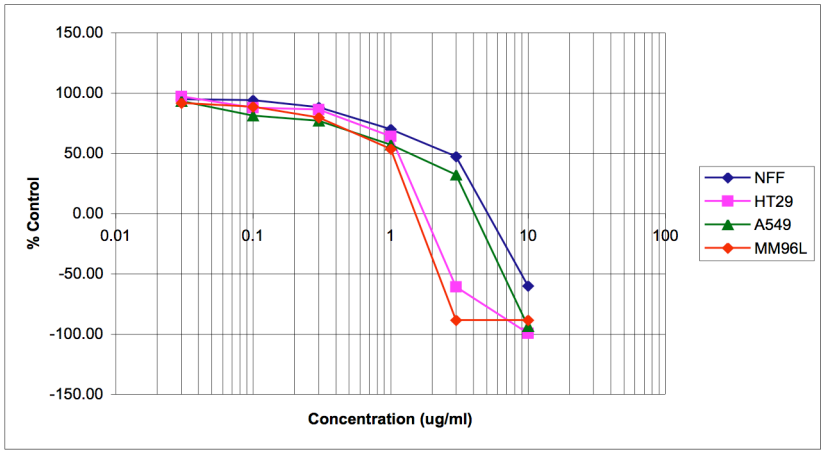
4. Phorbasin E (**4**)



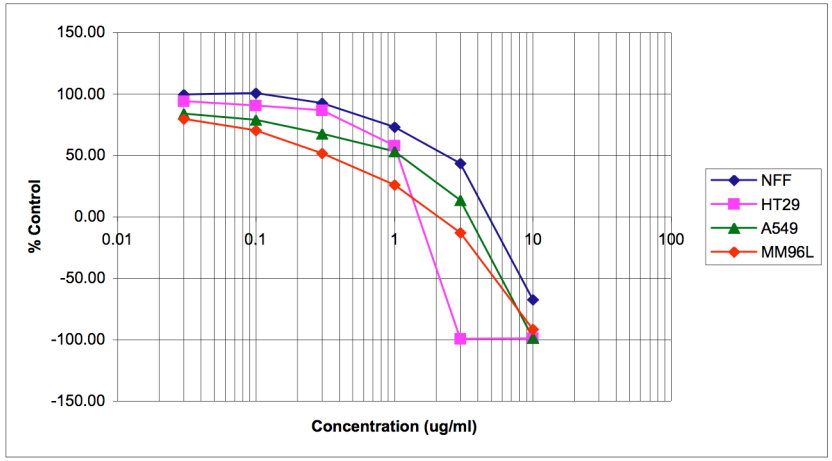
5. Phorbasin F (**5**)



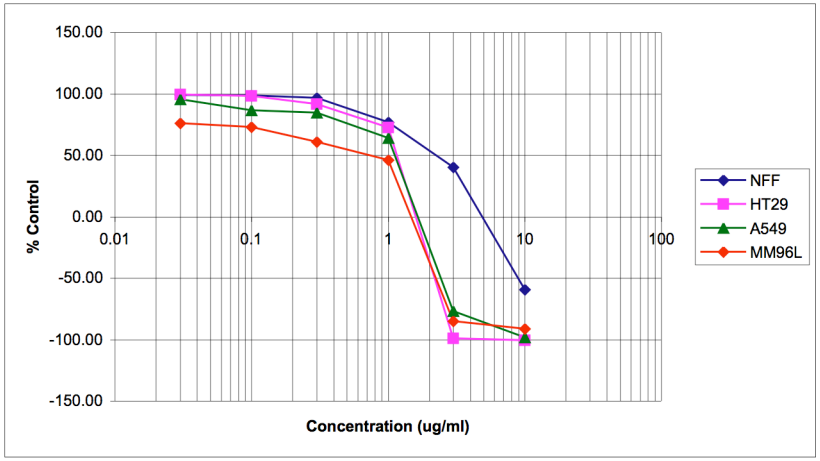
6. Phorbasin G (**6**)



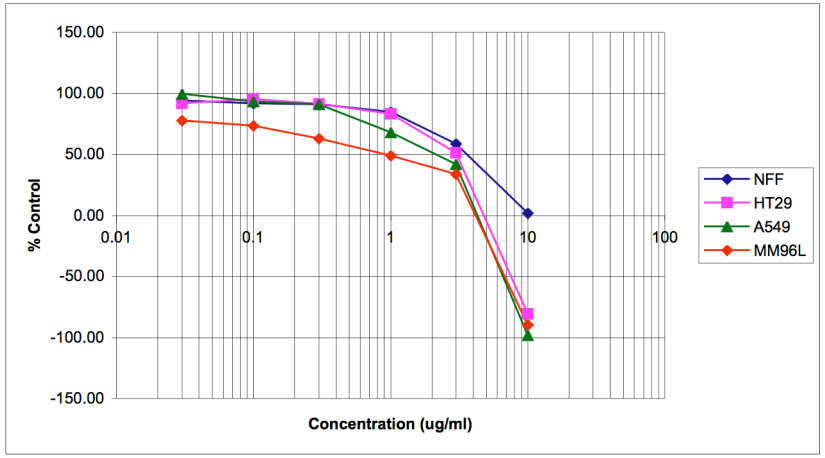
7. Phorbasin H (**7**)



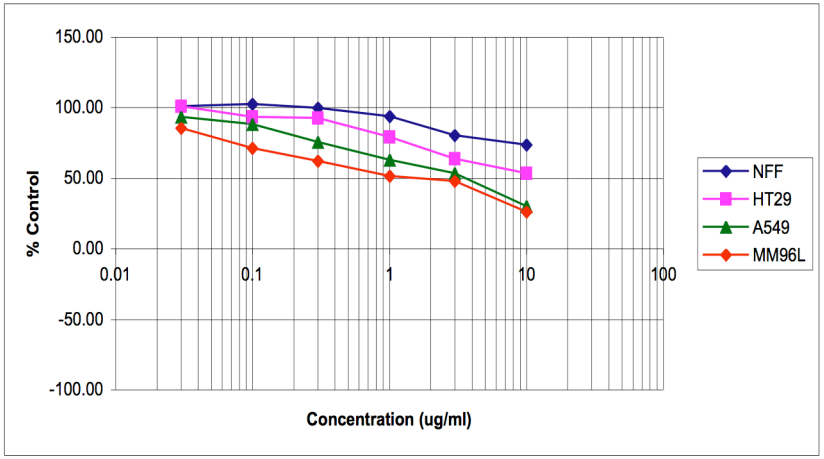
8. Phorbasin I (**8**)



9. Phorbasin J (**9**)



10. Phorbasin K (**10**)



S-(+)-carvone