

Supplementary materials:

1. NMR spectrums of 3 new α -glucosidase inhibitors isolated from methanolic extract of *Euonymus laxiflorus* Champ. trunk bark

1.1. NMR spectrums of Compound 1, Walterolactone A/B β -D-pyranoglucoside: Figure S1 – Figure S7

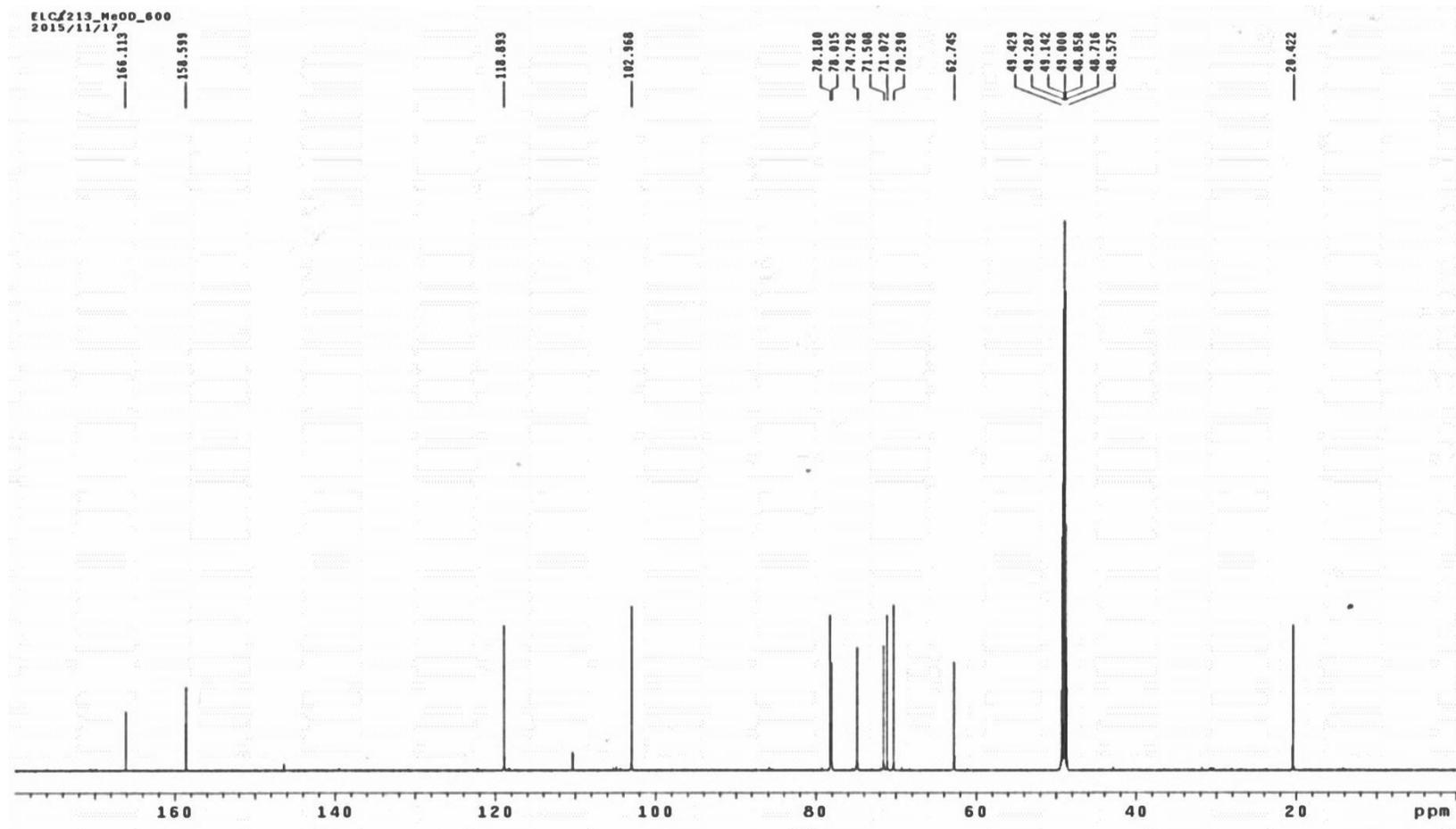


Figure S1. ¹³C-NMR spectrum of compound 1, measured in MeOH-*d*₄ at 150 MHz

ELC213_MeOD_600
2015/11/17

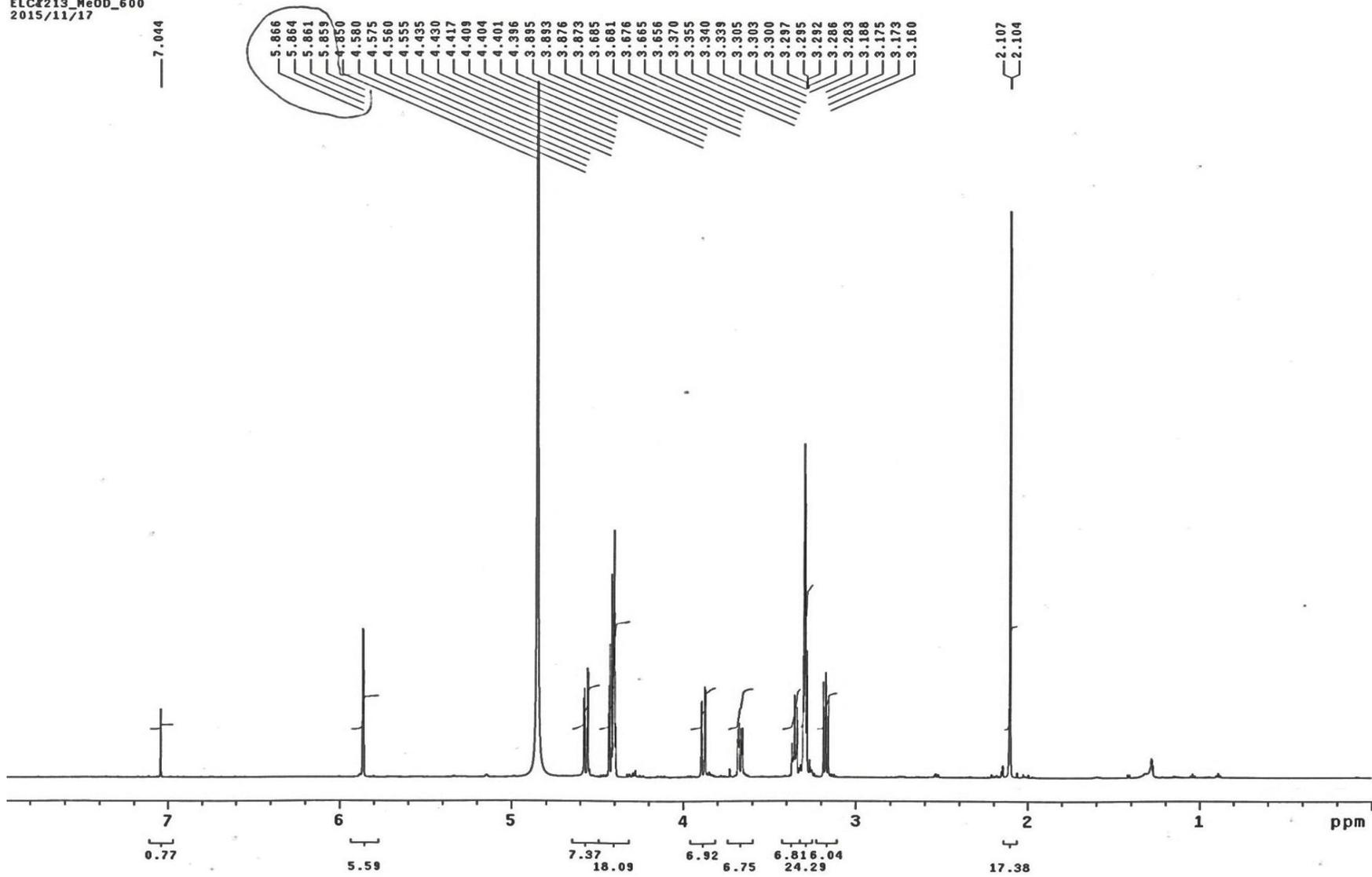


Figure S2. ^1H NMR spectrum of compound 1, measured in $\text{MeOH-}d_4$ at 600 MHz.

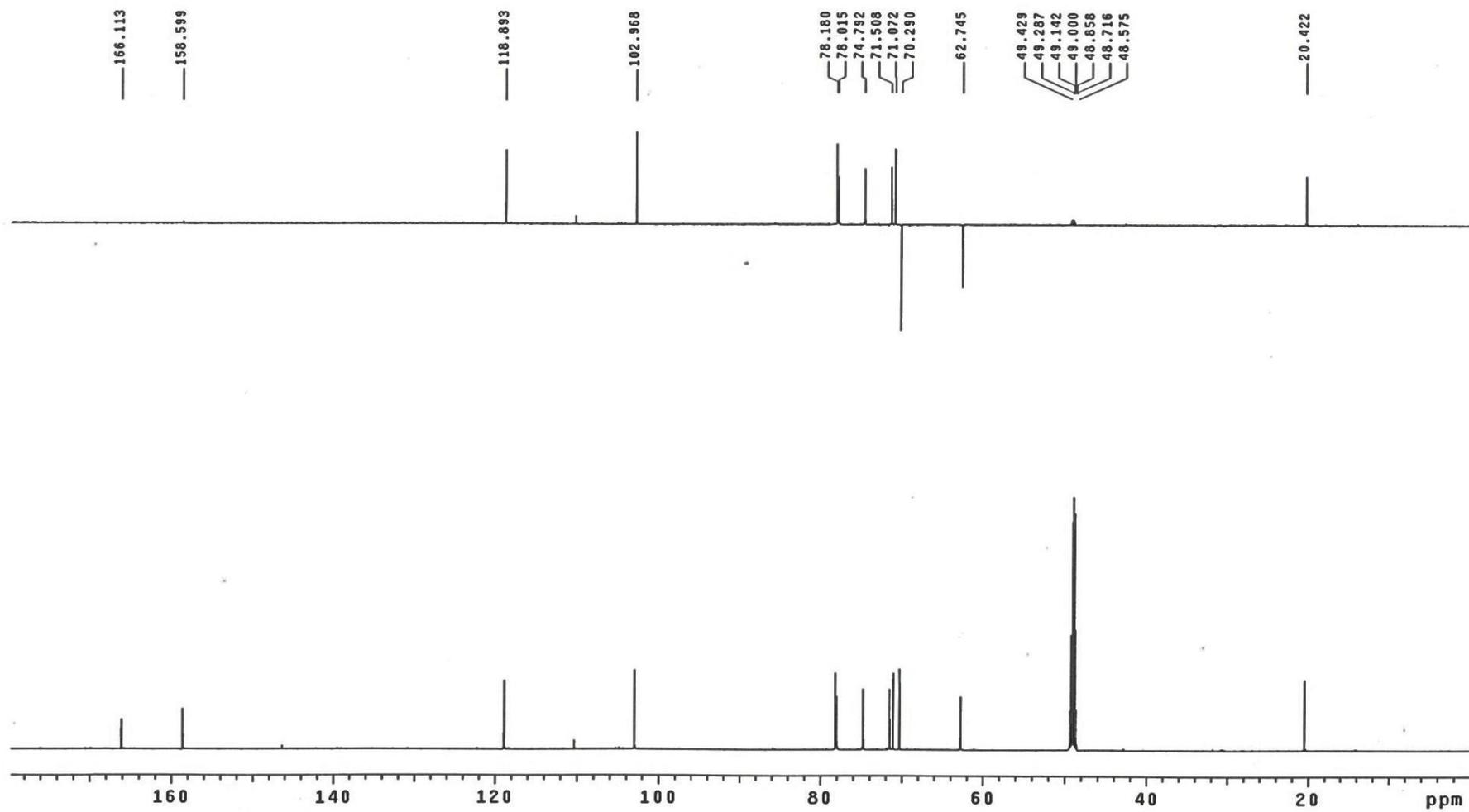


Figure S3. DEPT₁₃₅ spectrum of compound 1, measured in MeOH-*d*₄ at 150 MHz

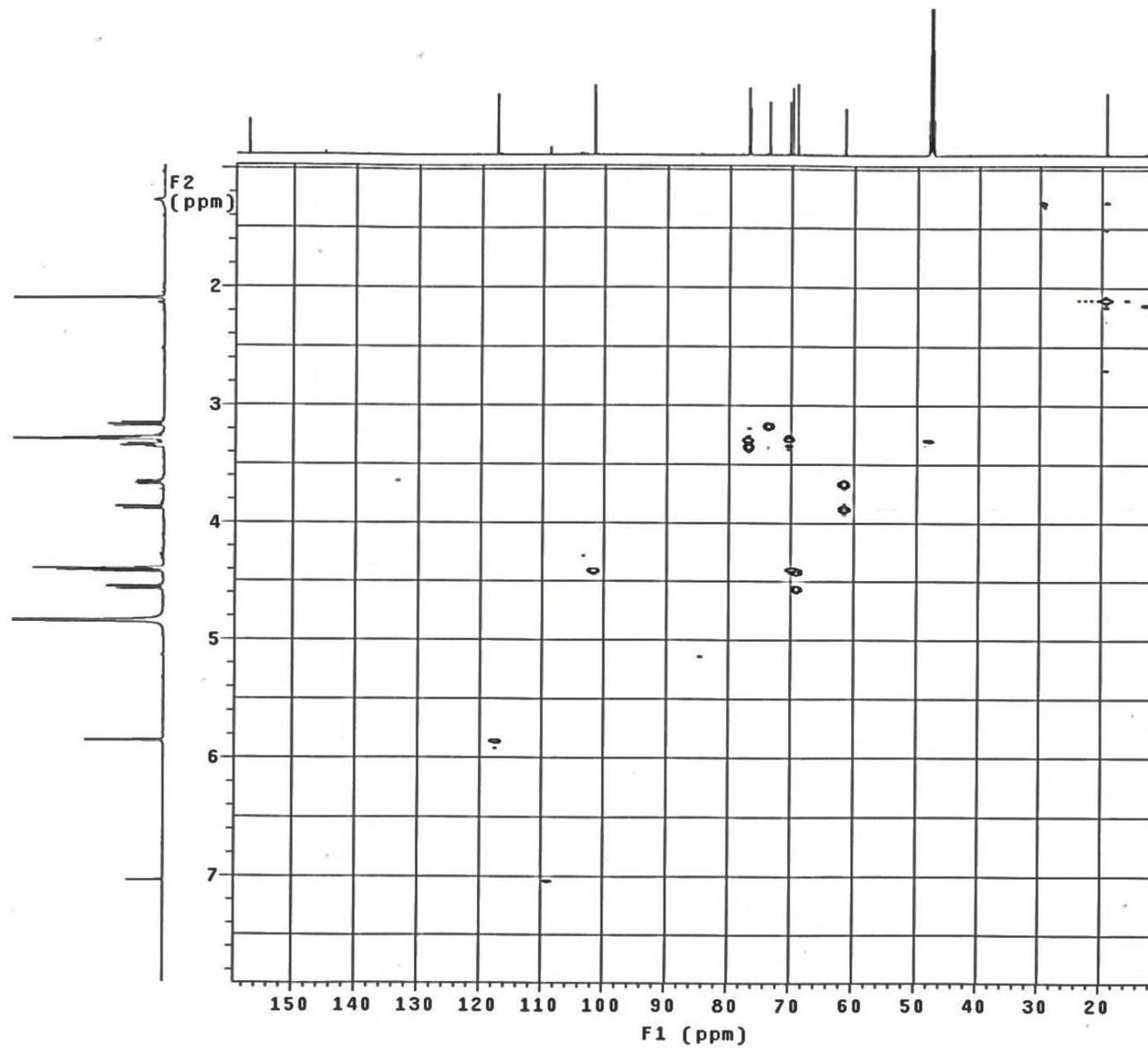


Figure S4. gHSQCAD spectrum of compound 1, measured in $\text{MeOH-}d_4$

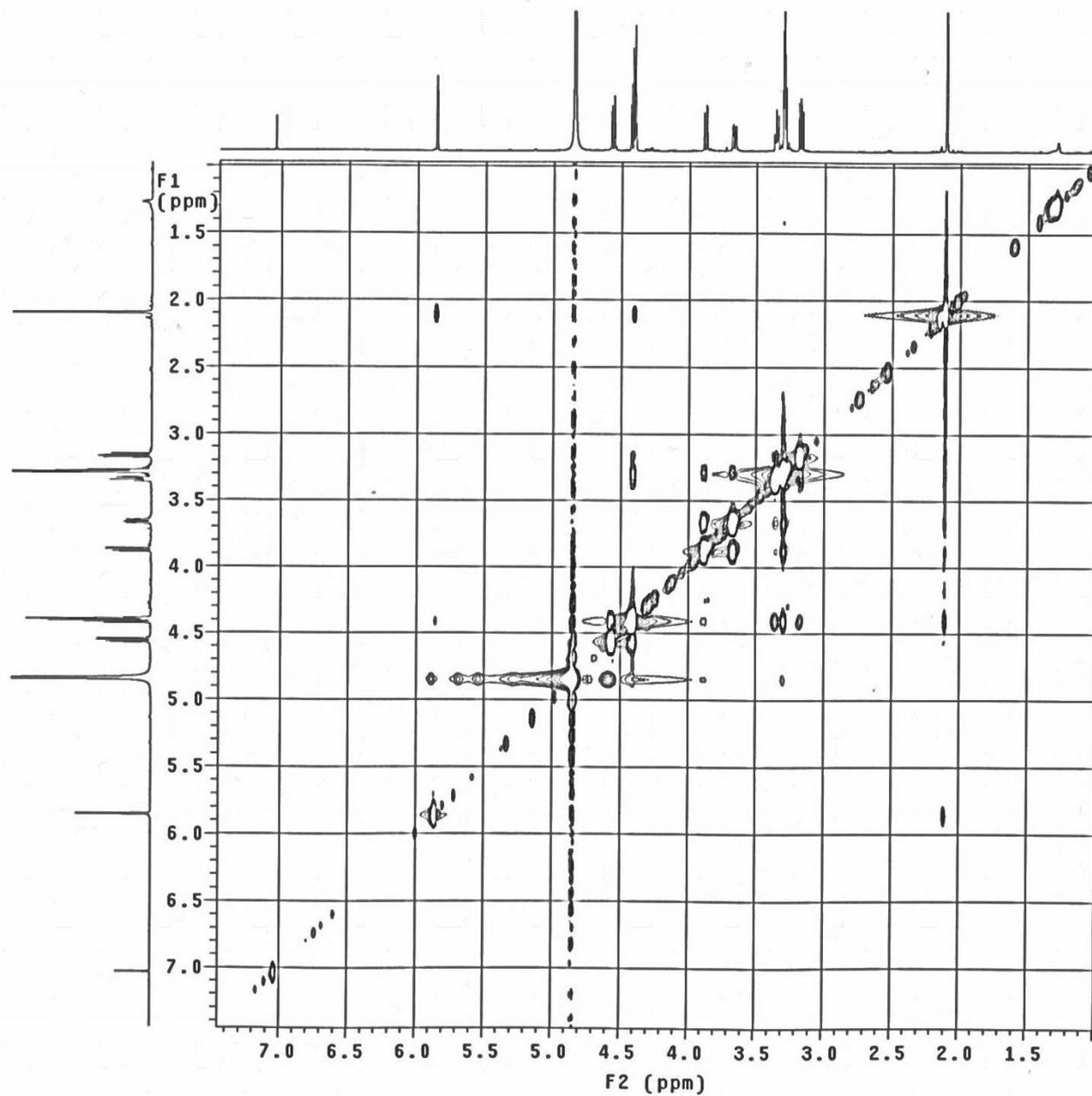


Figure S5. NOESY spectrum of compound 1, measured in $\text{MeOH-}d_4$

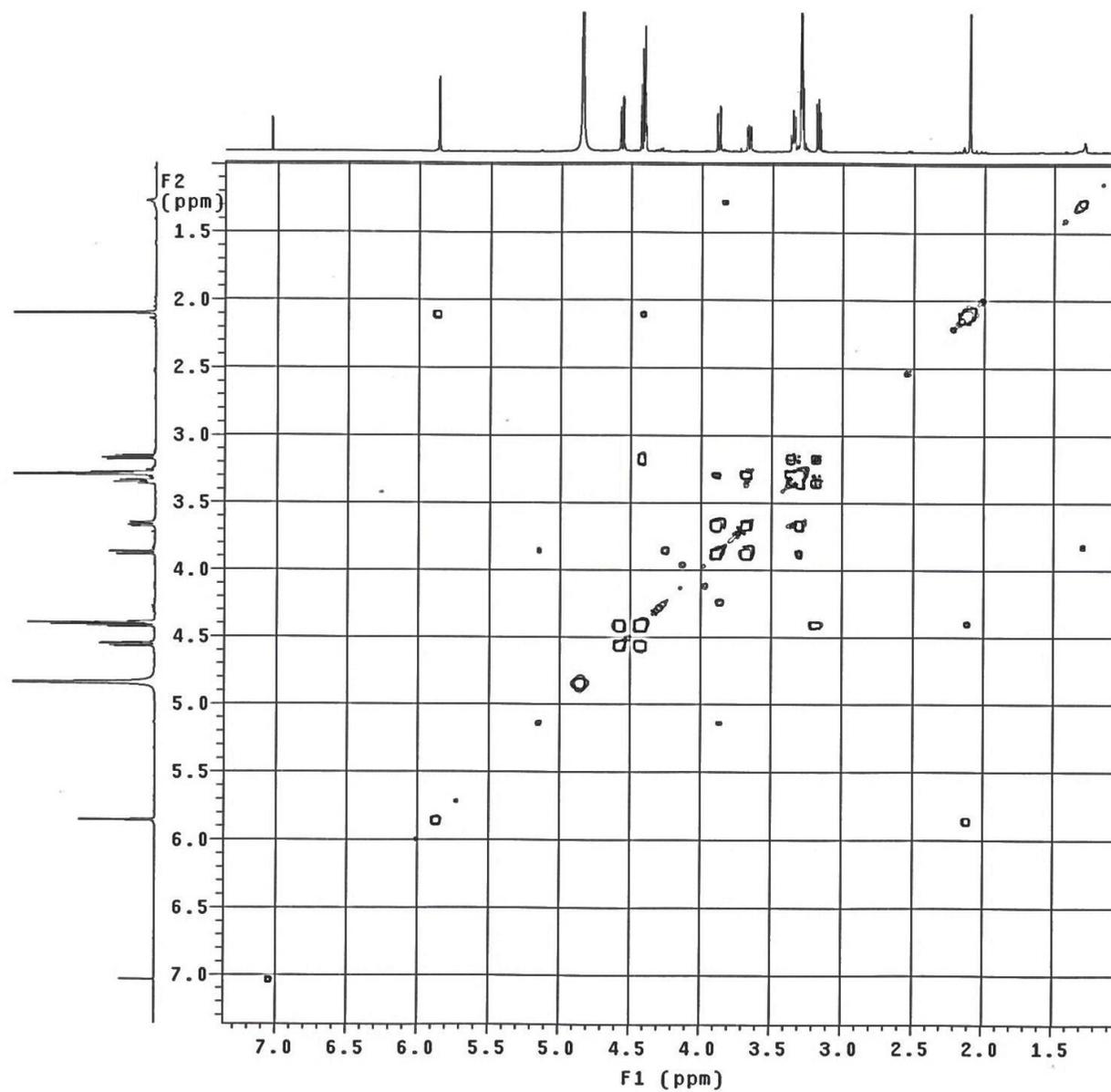


Figure S6. gCOSY spectrum of compound 1, measured in MeOH-d₄

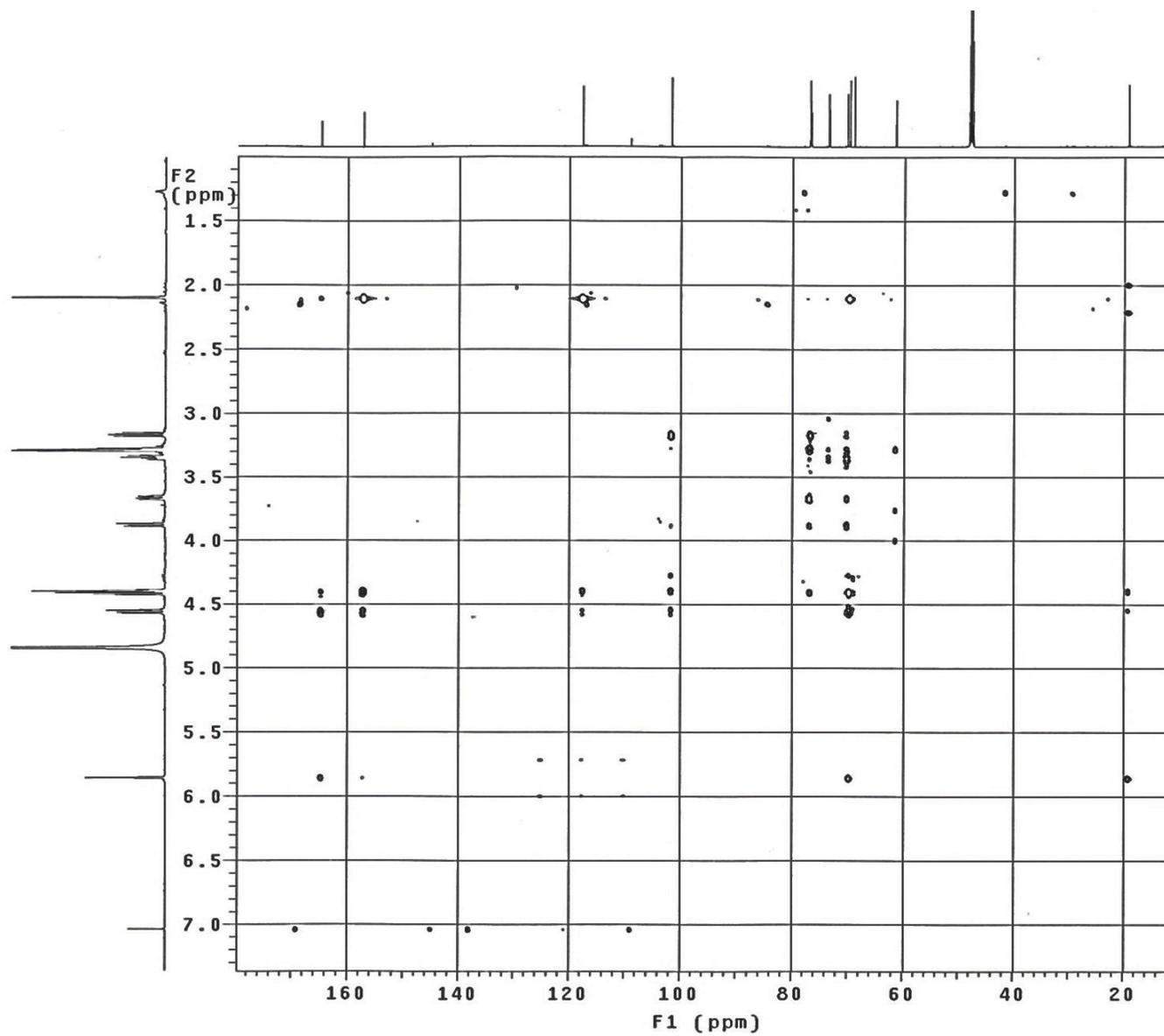


Figure S7. gHMBCAD spectrum of compound 1, measured in MeOH-*d*₄

1.2. NMR spectrums of Compound 11, Schweinfurthinol 9-O- β -D-pyranoglucoside: Figure S8 – Figure S14

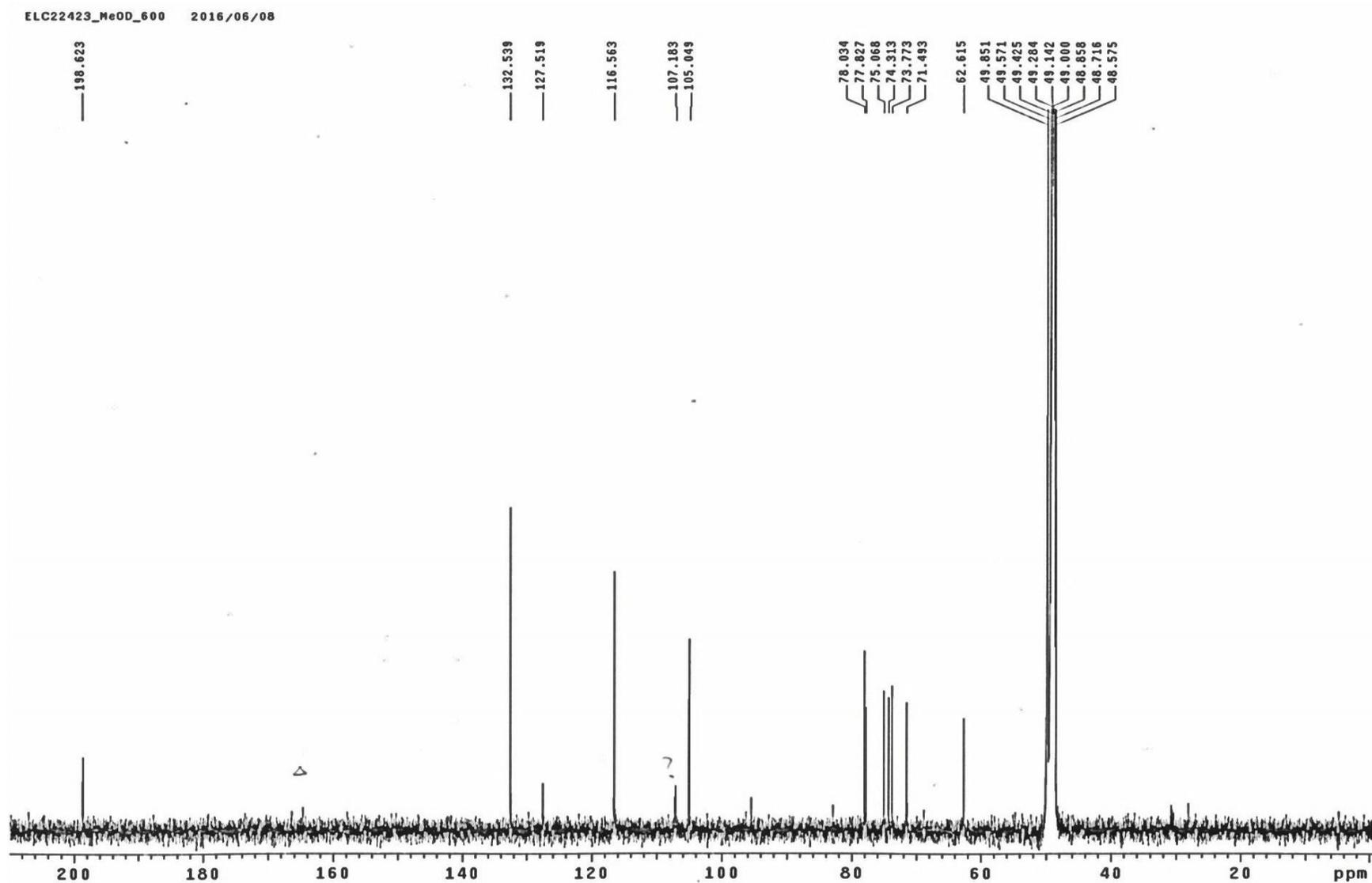


Figure S8. ^{13}C -NMR spectrum of compound 11, measured in $\text{MeOH-}d_4$ at 150 MHz.

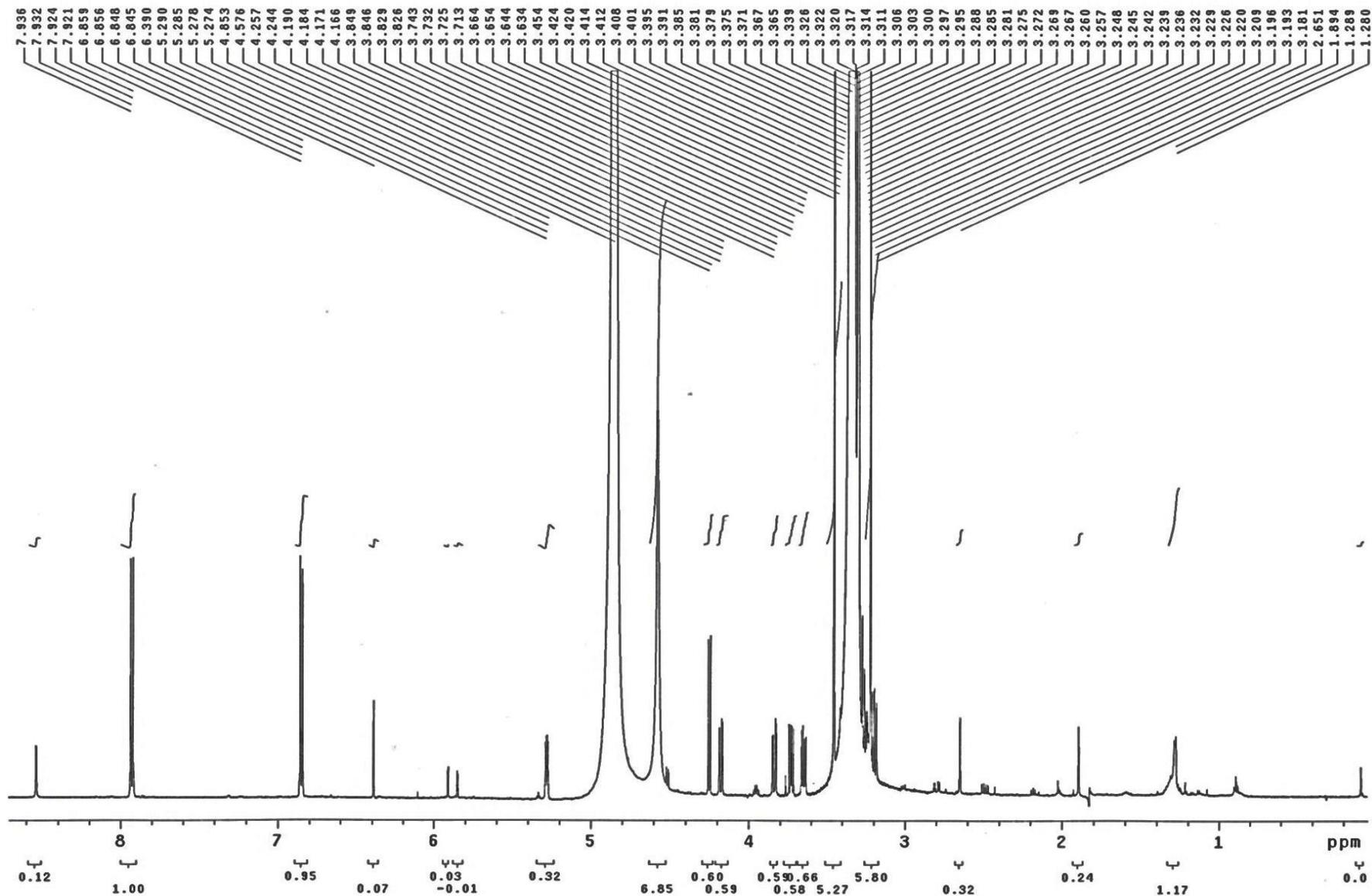


Figure S9. ¹H NMR spectrum of compound 11, measured in MeOH-*d*₄ at 600 MHz

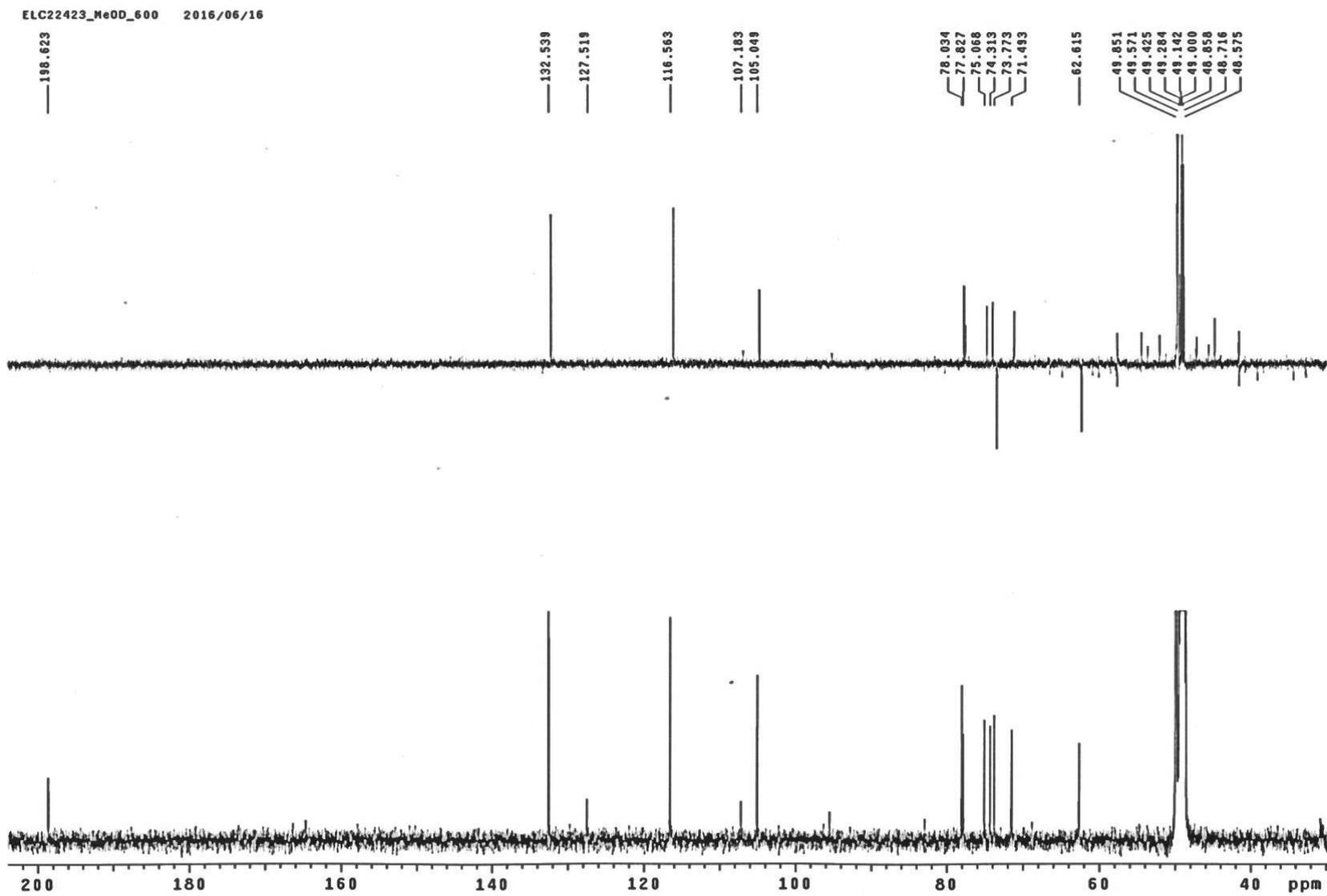


Figure S10. DEPT₁₃₅ spectrum of compound **11**, measured in MeOH-*d*₄ at 150 MHz

ELC22423_MeOD_600 2016/06/14

exp4 gHSQCAD

SAMPLE	FLAGS	ACQUISITION	ARRAYS
date Jun 14 2016	hs nn	array 1	phase 256
solvent cd3od	sppul y	arraydim 1	
sample ELC22423_02	PFgf1g y		
ACQUISITION	hsglv1 5076	1	phase 1
sw 6009.6	SPECIAL	2	F2 (ppm)
at 0.170	temp 26.0		
np 2048	gain 18		
fb 4000	spin not used		
ss 32	GRADIENTS		
d1 1.000	gzlv1E 4237		
nt 16	gtE 0.002000		
2D ACQUISITION	EDratio 3.976		
sw1 28653.3	gstab 0.000500		
nl 128	F2 PROCESSING		
phase arrayed	gf 0.049		
PRESATURATION	gfs not used		
satmode n	fn 2048		
wet n	F1 PROCESSING		
TRANSMITTER	gf1 0.004		
tn H1	gfs1 not used		
sfrq 599.869	procl 1p		
tof -300.0	fml 2048		
tpwr 61	DISPLAY		
pw 13.300	sp 199.3		
DECOUPLER	wp 5393.4		
dn C13	sp1 589.6		
dof 33.5	wp1 20398.7		
dm nny	rfl 305.4		
decwave W40_COLD	rfp 0		
dmf 35088	rfl1 -2.0		
dpwr 42	rfp1 0		
pwxlv1 59	PLOT		
pwx 11.300	wc 152.0		
HSQC	sc 0		
j1xh 146.0	wc2 150.0		
nul1flg y	sc2 0		
mult 2	vs 651		
ADIABATIC	th 1		
pwx180ad COLD_ad300	ai cdc ph		
pwx180adR COLD_ad3~			
00R			
pwx180 400.0			
pwxlv1180 56			
pwx180ref COLD_ref~			
200			
pwx180r 1998.8			
pwxlv1180r 47			

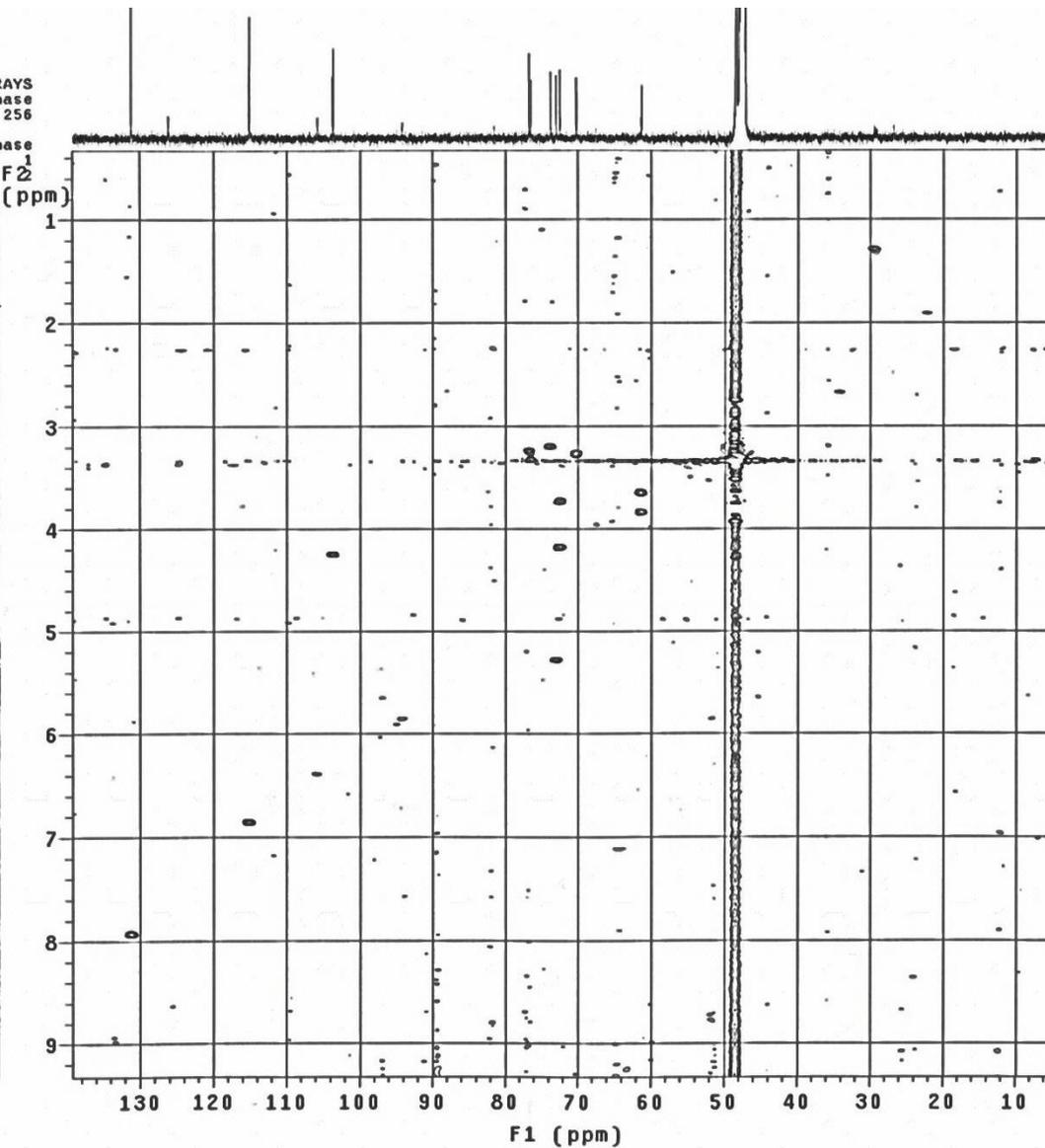


Figure S11. gHSQCAD spectrum of compound 11, measured in MeOH-*d*₄

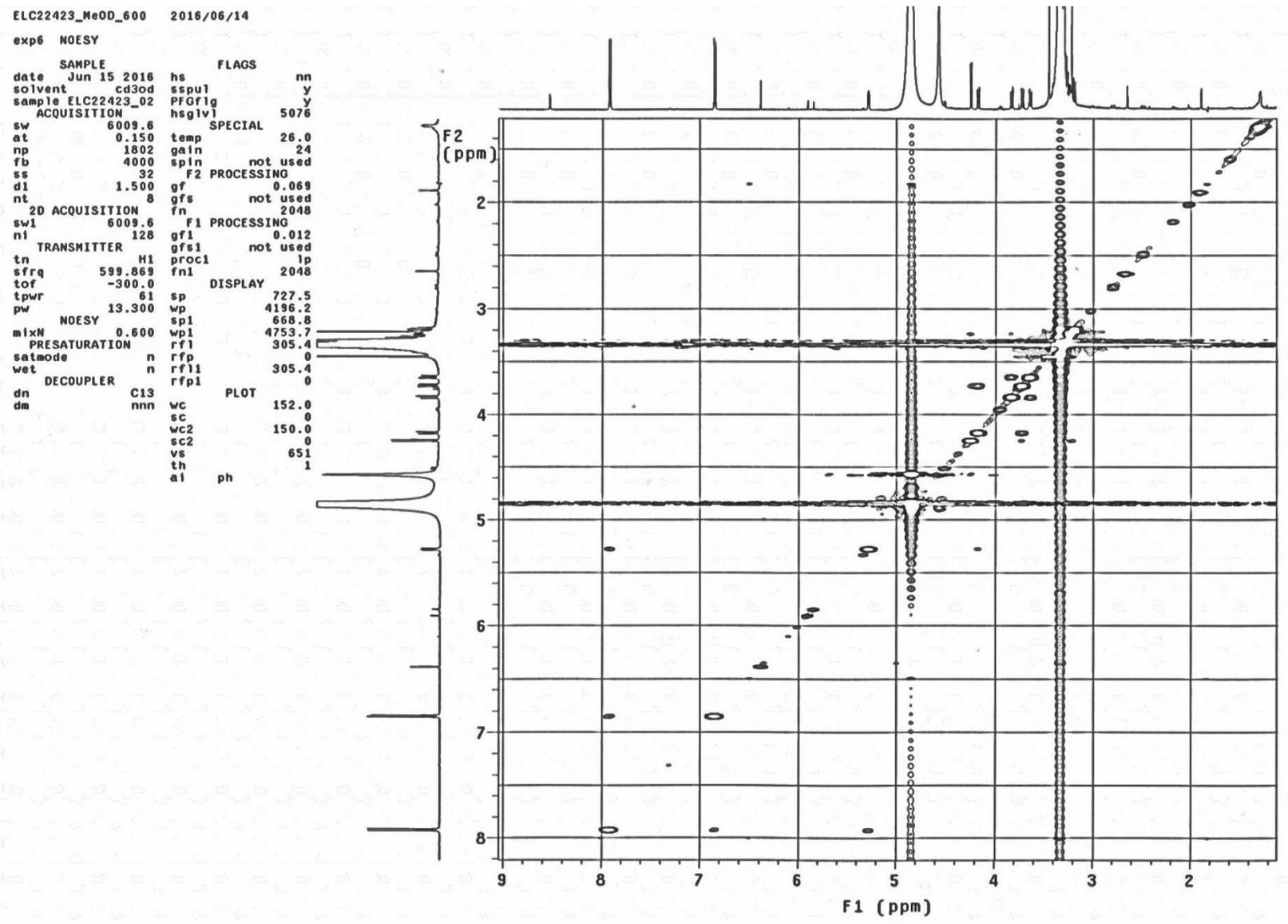


Figure S12. NOESY spectrum of compound 11, measured in MeOH-*d*₄

ELC22423_MeOD_600 2016/06/14

exp5 gCOSY

SAMPLE		FLAGS	
date	Jun 15 2016	hs	nn
solvent	cd3od	sspul	y
sample	ELC22423_02	hsglv1	5076
ACQUISITION		SPECIAL	
sw	6009.6	temp	26.0
at	0.150	gain	24
np	1802	spin	not used
fb	4000	F2	PROCESSING
ss	32	sb	-0.075
d1	1.000	sbs	not used
nt	2	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	6009.6	sb1	-0.027
n1	256	sbs1	not used
d2	0	procl	lp
PRESATURATION		fn1	
satmode	n	fn1	2048
wet	n	sp	-299.6
TRANSMITTER		DISPLAY	
tn	H1	wp	6003.7
sfrq	599.869	sp1	-299.6
tof	-300.0	wp1	6003.7
tpwr	61	rfl	305.4
pw	13.300	rfp	0
GRADIENTS		rfp1	
gz1v1E	4237	rfp1	0
gtE	0.001000	wc	152.0
EDratio	1.000	sc	0
gstab	0.000500	wc2	150.0
DECOUPLER		sc2	
dn	C13	vs	651
dm	nnn	th	2
	ai	cdc	av

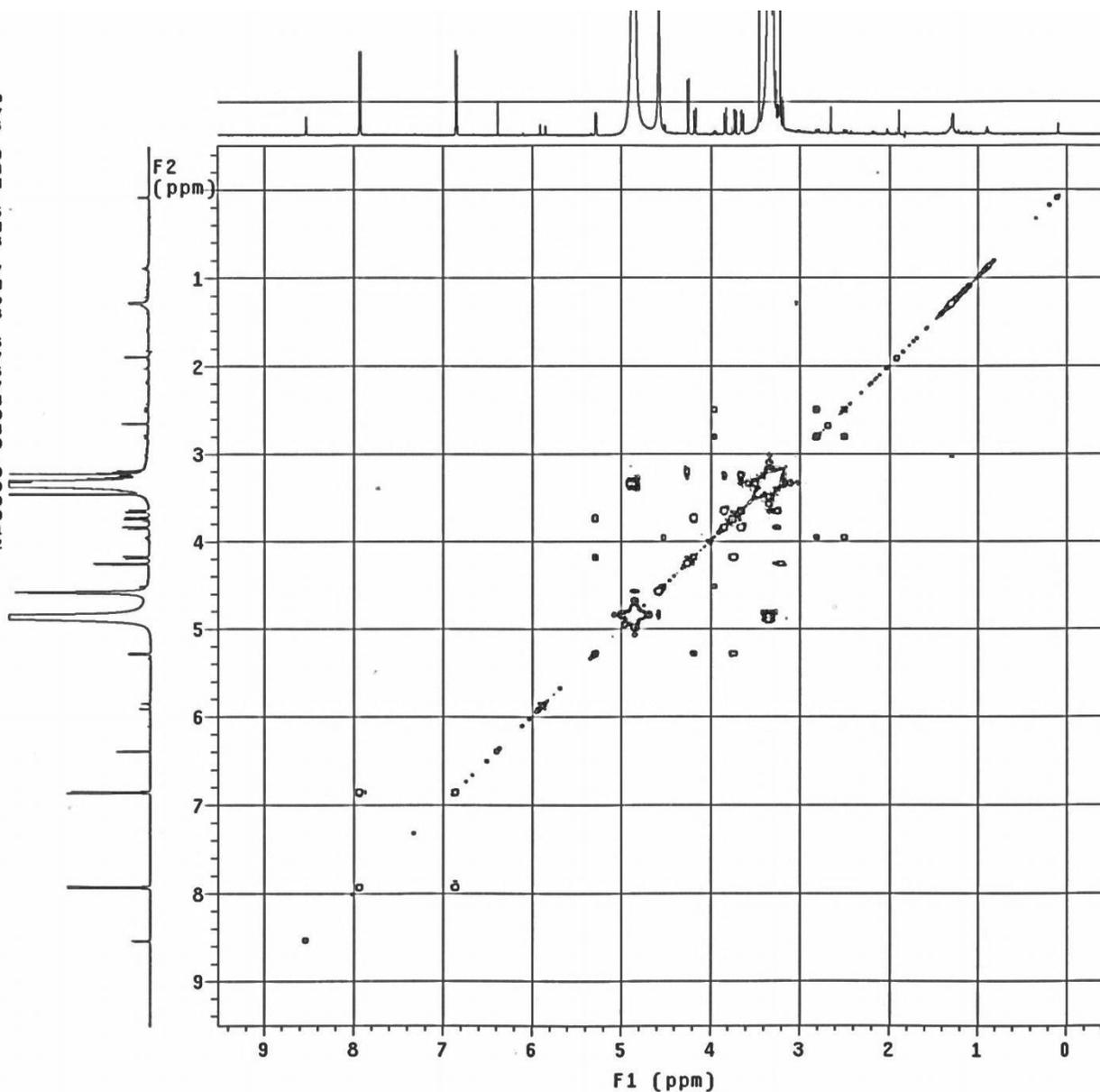


Figure S13. gCOSY spectrum of compound 11, measured in MeOH- d_4

ELC22423_MeOD_600 2016/06/16

exp44 gHMBCAD

SAMPLE		FLAGS	ACQUISITION ARRAYS	
date	Jun 19 2016	hs	nn	array
solvent	cd3od	sspul	y	phase
sample	ELC22423_03	PF0f1g	y	512
ACQUISITION		hsglv1	5052	phase
sw	6009.6	SPECIAL	1	7
at	0.150	temp	26.0	(RPM)
np	1802	gain	24	
fb	4000	spin	not used	
ss	32	GRADIENTS		
d1	1.000	gzlv11	421	
nt	72	gt1	0.001000	
2D ACQUISITION		gzlv13	1263	
sw1	34692.1	gt3	0.001000	
nl	256	gstab	0.000500	
phase	arrayed	F2 PROCESSING		
PRESATURATION		sb	-0.075	
satmode	y	sbs	not used	
wet	n	fn	2048	
TRANSMITTER		F1 PROCESSING		
tn	H1	gf1	0.007	
sfrq	599.869	gfs1	not used	
tof	-300.0	procl	1p	
tpwr	61	fn1	2048	
pw	12.400	DISPLAY		
DECOUPLER		sp	1331.9	
dn	C13	wp	3773.6	
dof	2296.1	sp1	4767.5	
dm	nnn	wpl	26019.1	
decwave	W40_COLD	rfl	305.4	
dmf	35088	rfp	0	
dpwr	42	rf11	754.8	
pwxlvl	58	rfp1	0	
pw	13.000	PLOT		
HMBC		wc	152.0	
j1xh	146.0	sc	0	
jnxh	8.0	wc2	150.0	
ADIABATIC		sc2	0	
pwxl80ad	COLD_ad300	vs	25	
pwxlvl180	56	th	2	
pwxl80	400.0	ai cdc av		

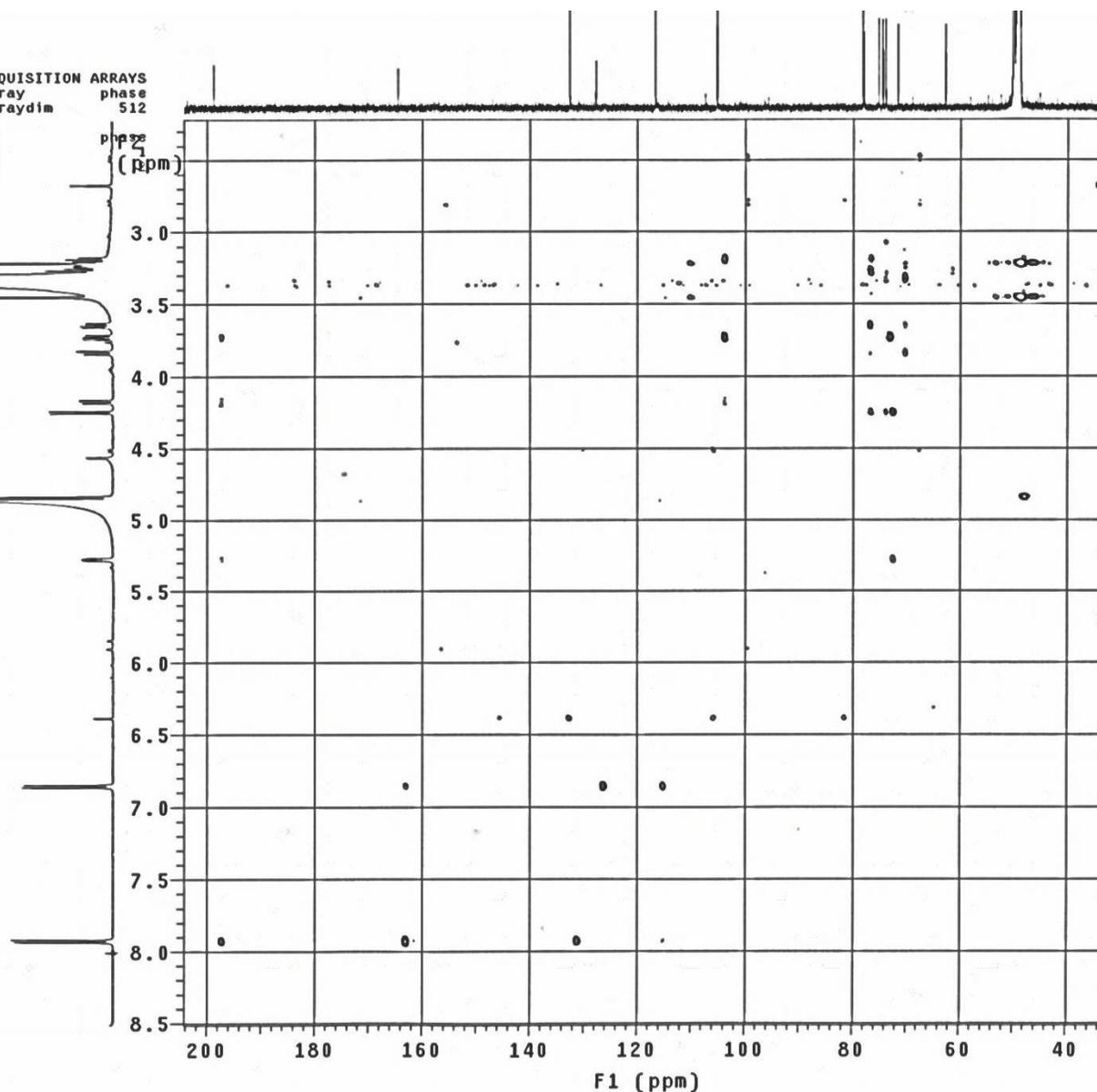


Figure S14. gHMBCAD spectrum of compound 11, measured in MeOH-*d*₄

1.3. NMR spectrums of Compound 12, 1-O-(3-methyl)-butenoyl-myo-inositol: Figure S15 – Figure S21

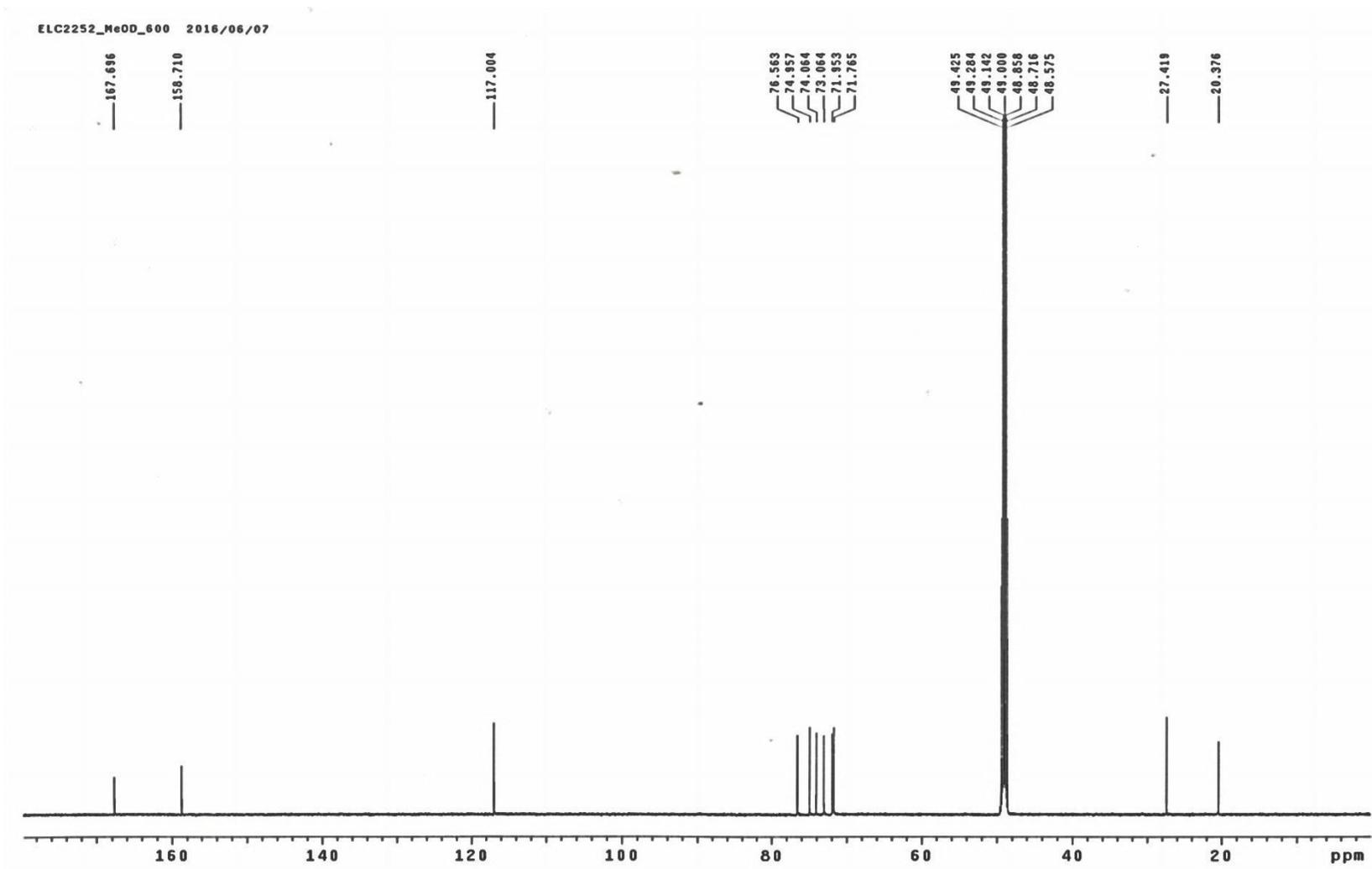


Figure S15. ^{13}C -NMR spectrum of compound 12, measured in $\text{MeOH-}d_4$ at 150 MHz

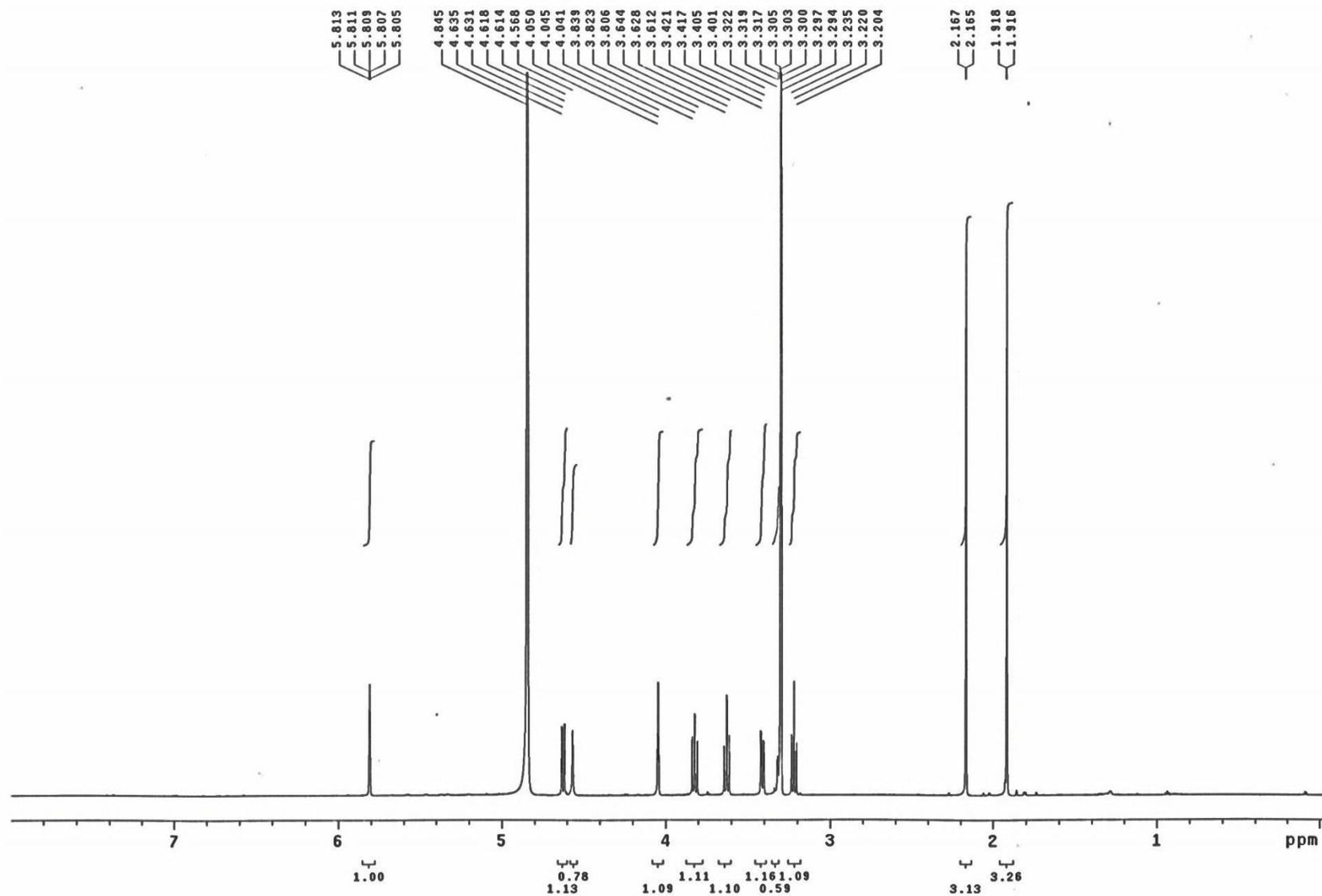


Figure S16. ¹H NMR spectrum of compound 12, measured in MeOH-*d*₄ at 600 MHz

ELC2252_MeOD_600 2016/06/07

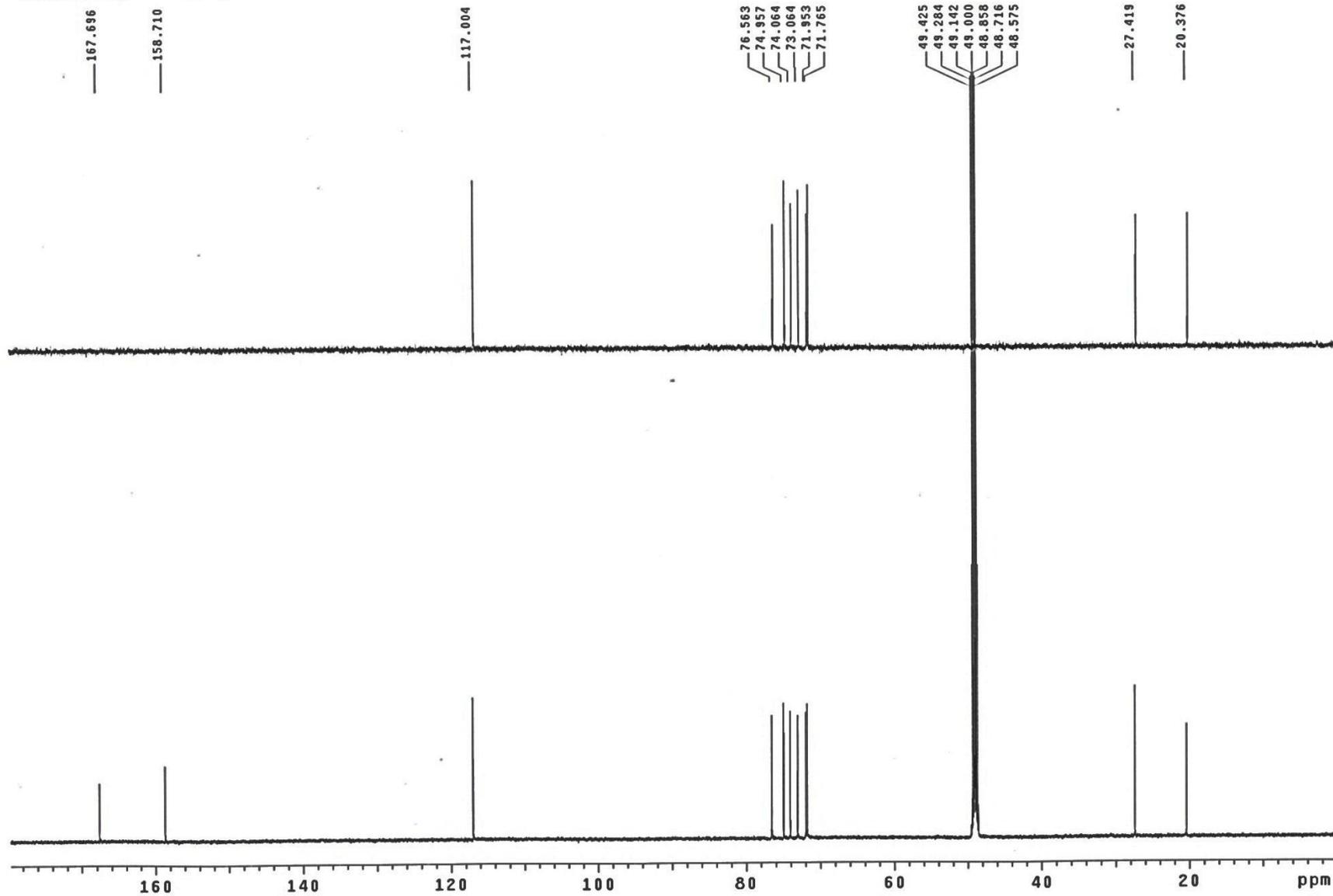


Figure S17. DEPT₁₃₅ spectrum of compound 12, measured in MeOH-*d*₄ at 150 MHz

exp5 gHSQCAD

SAMPLE		FLAGS	ACQUISITION	ARRAYS
date	Jun 8 2016	hs	nn	phase
solvent	cd3od	sspul	y	256
sample	ELC2252_01	PFgf1g	y	
ACQUISITION		hsglv1	5076	1
sw	6613.8	SPECIAL		1
at	0.155	temp	26.0	2
np	2048	gain	30	
fb	4000	spin	not used	
ss	32	GRADIENTS		
d1	1.000	gzlv1E	4237	
nt	8	gtE	0.002000	
2D ACQUISITION		EDratio	3.976	
sw1	29411.8	gstab	0.000500	
ni	128	F2 PROCESSING		
phase	arrayed	gf	0.049	
PRESATURATION		gfs	not used	
satmode	n	fn	2048	
wet	n	F1 PROCESSING		
TRANSMITTER		gf1	0.004	
tn	H1	gfs1	not used	
sfrq	599.869	procl	1p	
tof	-300.0	fn1	2048	
tpwr	61	DISPLAY		
pw	13.300	sp	238.6	
DECOUPLER		wp	4069.0	
dn	C13	sp1	1055.2	
dof	-343.6	wp1	24040.7	
dm	nny	rf1	607.5	
decwave	W40_COLD	rff	0	
dmf	35088	rff1	754.3	
dpwr	42	rffp1	0	
pxvlv1	59	PLOT		
pxw	11.300	wc	152.0	
HSQC		sc	0	
j1xh	146.0	wc2	150.0	
nullfg	y	sc2	0	
mult	2	vs	328	
ADIABATIC		th	2	
pxw180ad	COLD_ad300	ai	cdc	ph
pxw180adR	COLD_ad300R			
pxw180	400.0			
pxw180ref	56			
pxw180ref	COLD_ref200			
pxw180r	1998.8			
pxw180r	47			

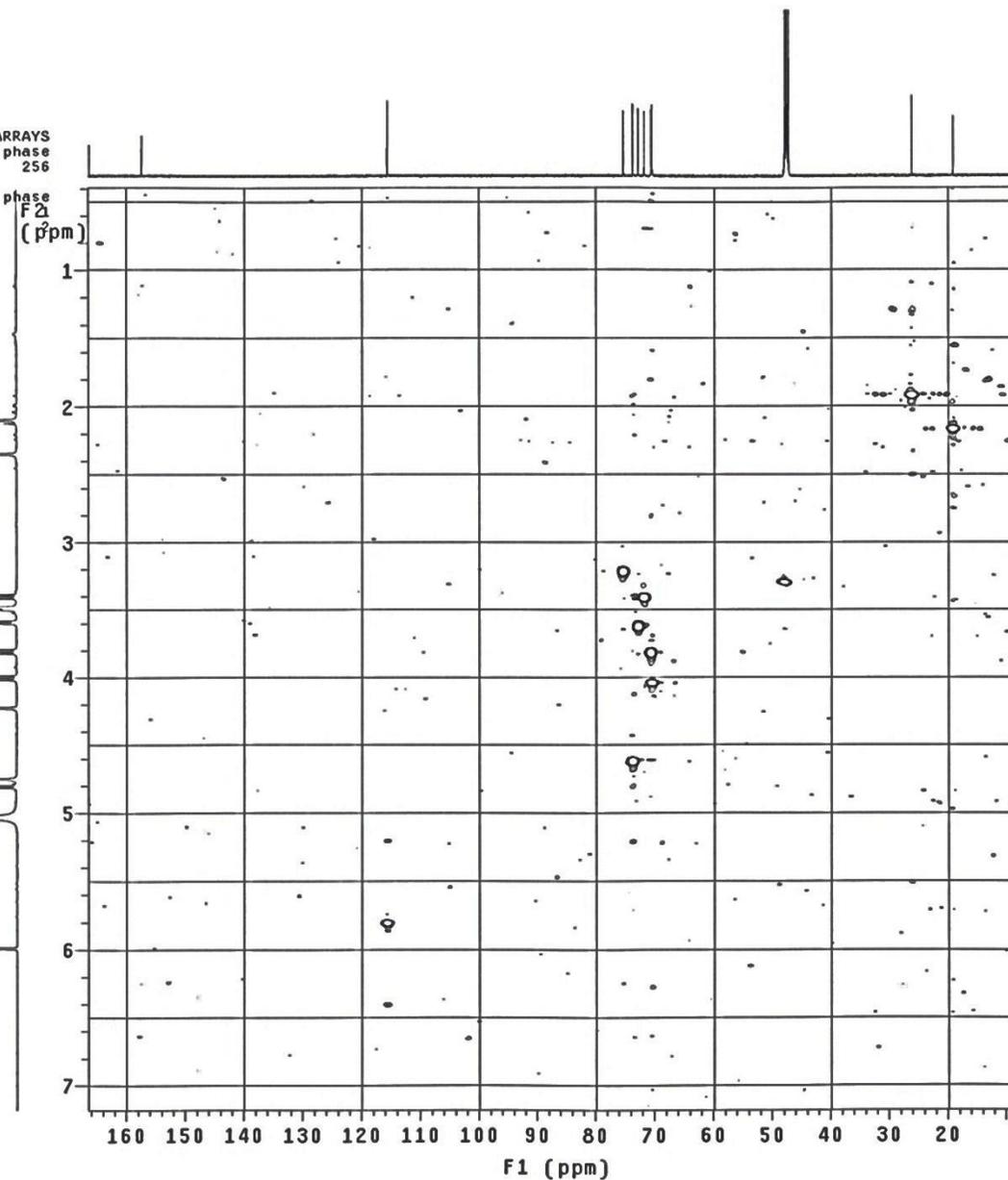


Figure S18. gHSQCAD spectrum of compound 12, measured in MeOH-*d*₄

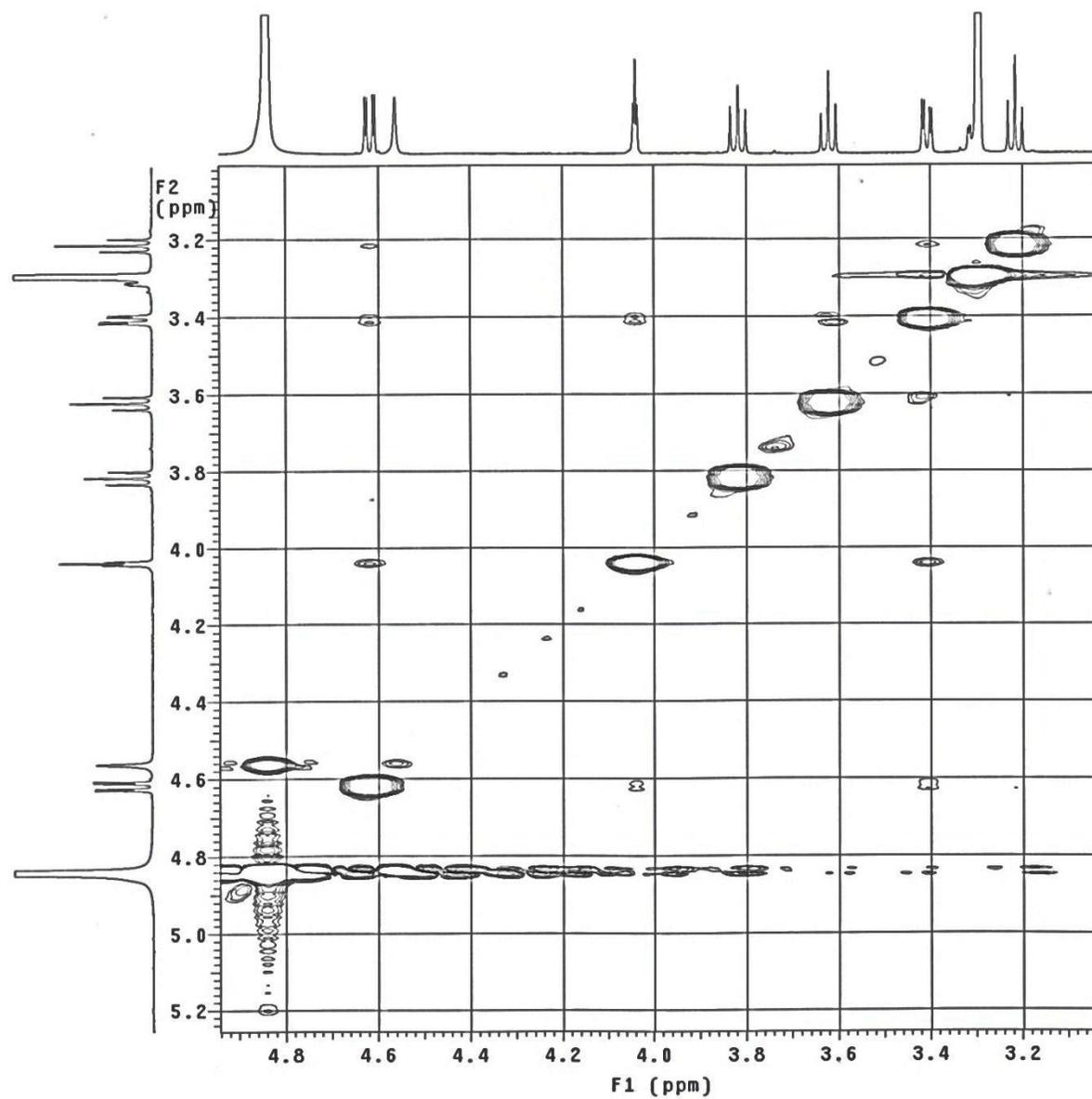


Figure S19. NOESY spectrum of compound **12**, measured in MeOH-*d*₄

ELC2252_MeOD_600 2016/06/07

exp3 gCOSY

SAMPLE		FLAGS	
date	Jun 14 2016	hs	nn
solvent	cd3od	sspul	y
sample	ELC2252_01	hsglv1	5076
ACQUISITION		SPECIAL	
sw	4194.6	temp	26.0
at	0.150	gain	34
np	1258	spin	not used
fb	4000	F2 PROCESSING	
ss	32	sb	-0.075
d1	1.000	sbs	not used
nt	1	fn	2048
2D ACQUISITION		F1 PROCESSING	
sw1	4194.6	sb1	-0.039
ni	256	sbs1	not used
d2	0	proc1	1p
PRESATURATION		fn1	
satmode	n	fn1	2048
wet	n	DISPLAY	
TRANSMITTER		sp	6.3
tn	H1	wp	4190.5
sfrq	599.868	sp1	6.3
tof	-899.8	wp1	4190.5
tpwr	61	rfl	-2.2
pw	13.300	rfp	0
GRADIENTS		rfl1	-2.2
gzlv1E	4237	rfp1	0
gtE	0.001000	PLOT	
EDratio	1.000	wc	152.0
gstab	0.000500	sc	0
DECOUPLER		wc2	150.0
dn	C13	sc2	0
dm	nnn	vs	633
		th	4
		a1	cdc av

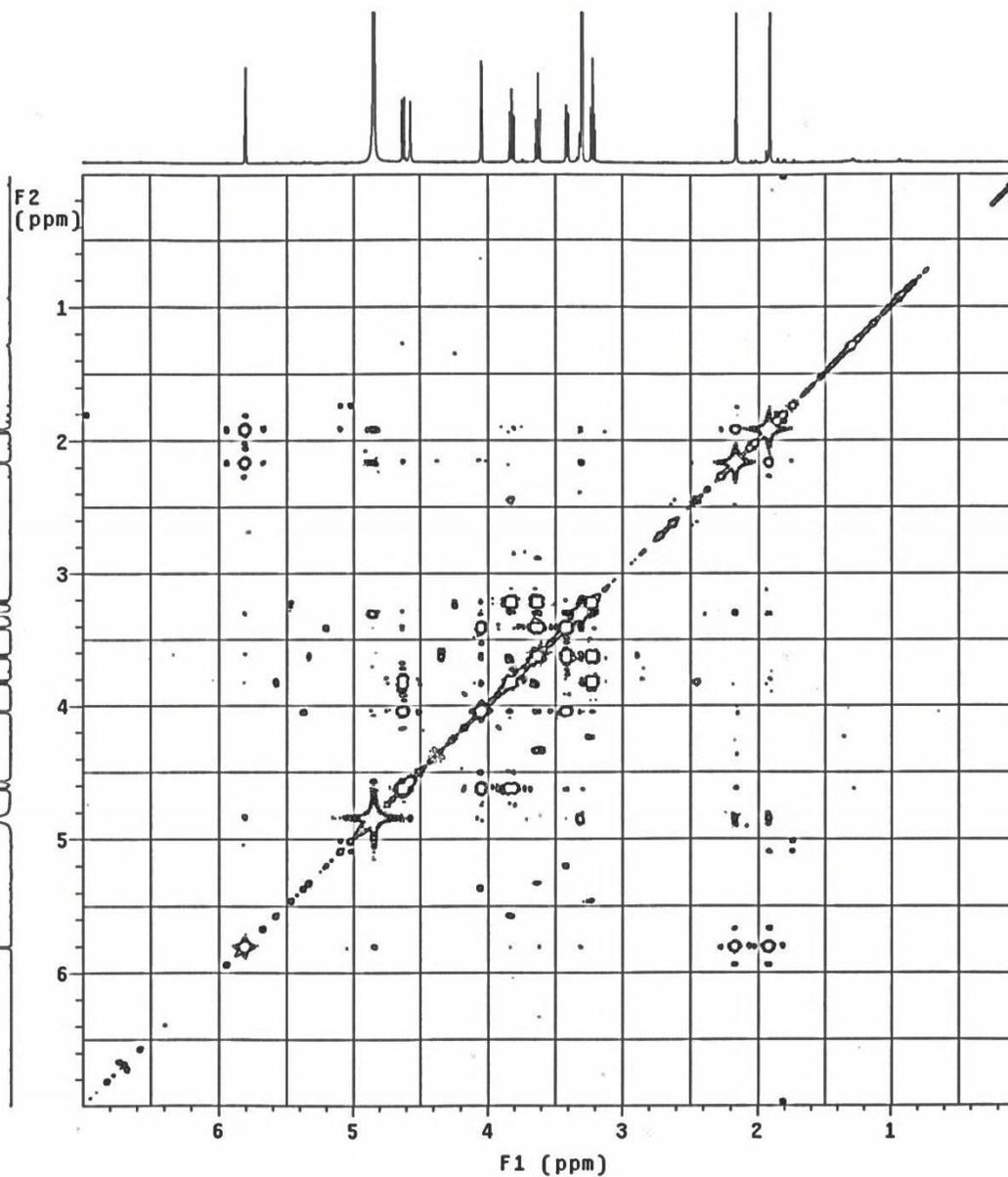


Figure S20. gCOSY spectrum of compound 12, measured in MeOH-*d*₄

ELC2252_MeOD_600 2016/06/07

exp6 gHMBCAD

SAMPLE		FLAGS	ACQUISITION ARRAYS	
date	Jun 8 2016	hs	nn	array
solvent	cd3od	sspul	y	phase
sample	ELC2252_01	PFGflg	y	512
ACQUISITION		hsplv1	5076	1
sw	6613.8	SPECIAL	y	2
at	0.150	temp	26.0	phase
np	1984	gain	36	F2
fb	4000	spin	not used	(ppm)
ss	32	GRADIENTS		
d1	1.000	g2lv11	423	1.5
nt	8	gt1	0.001000	2.0
2D ACQUISITION		g2lv13	1269	2.5
sw1	34692.1	gt3	0.001000	3.0
nl	256	gstab	0.000500	3.5
phase	arrayed	F2 PROCESSING		4.0
PRESATURATION		sb	-0.075	4.5
satmode	n	sbs	not used	5.0
wet	n	fn	2048	5.5
TRANSMITTER		F1 PROCESSING		6.0
tn	H1	gf1	0.007	6.5
sfrq	599.869	gfs1	not used	
tof	-300.0	proc1	lp	
tpwr	61	fn1	2048	
pw	13.300	DISPLAY		
DECOUPLER		sp	471.1	
dn	C13	wp	3520.0	
dof	2296.1	sp1	498.7	
dm	nnn	wp1	26798.3	
decwave	W40_COLD	rfl	607.5	
dmf	35088	rfl1	0	
dpwr	42	rfl11	754.8	
pwxlv1	59	rflp1	0	
pwx	11.300	PLOT		
HMBC		wc	152.0	
j1xh	146.0	sc	0	
jnxh	8.0	wc2	150.0	
ADIABATIC		sc2	0	
pwx180ad	COLD_ad300	vs	328	
pwxlv1180	56	th		
pwx180	400.0	a1	cdc av	

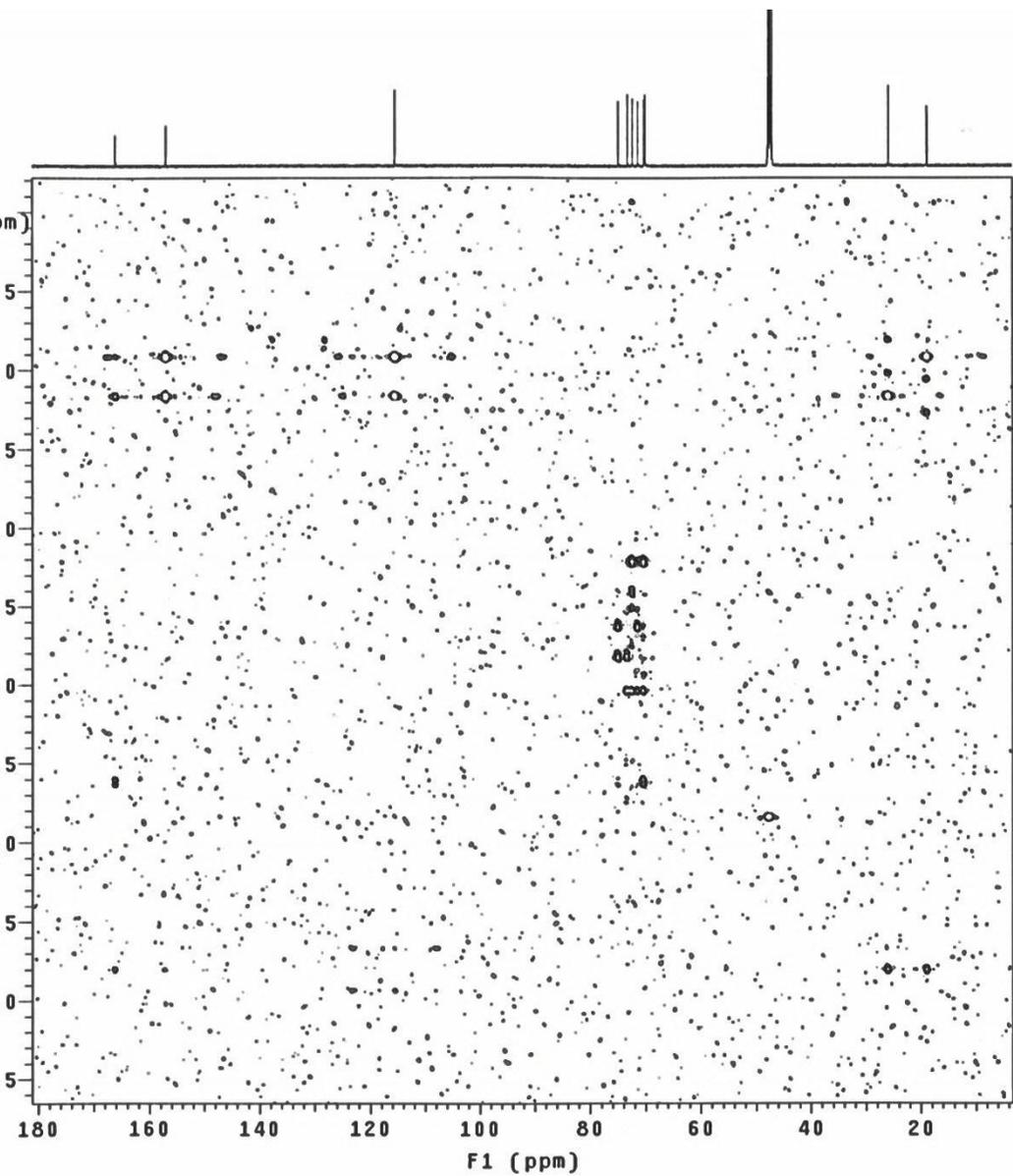


Figure S21. gHMBCAD spectrum of compound 12, measured in MeOH-d₄

2. IC₅₀ plots for all tested compounds: 1, 5, 10, 11, 12, 14, 18, 19, and 20 (Figure S22 – Figure S30), and acarbose (Figure S31)

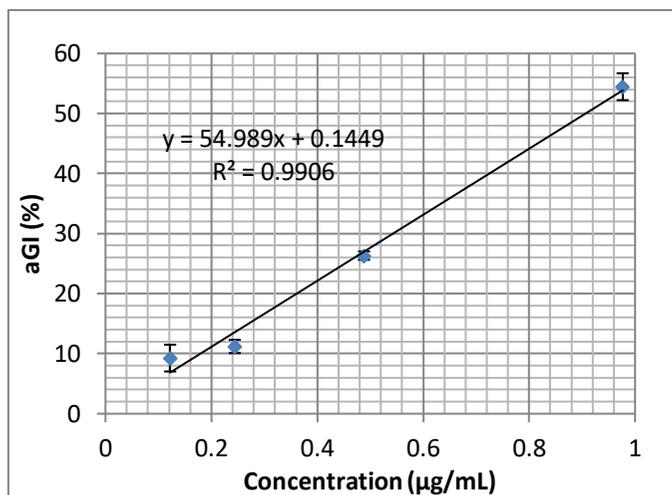


Figure S22. IC₅₀ plots for compound 1: Walterolactone A/B β-D-pyranoglucoside

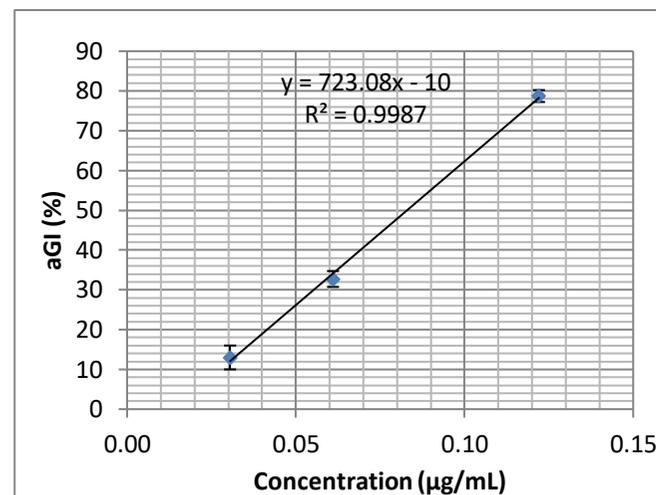


Figure S23. IC₅₀ plots for compound 5: Condensed tannin-ELCTB-2.1.2

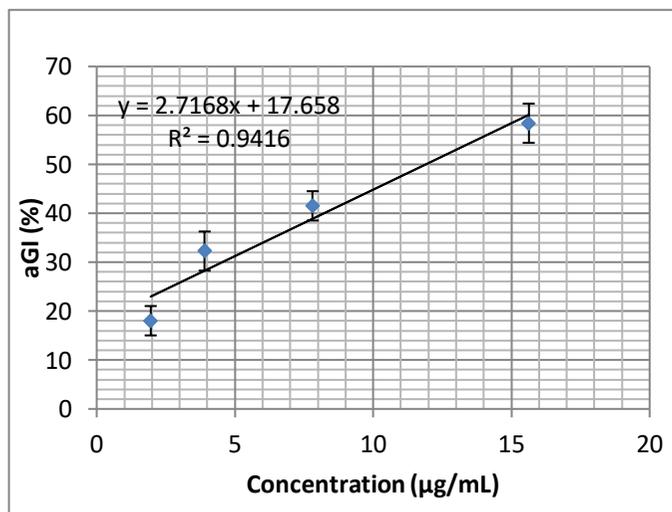


Figure S24. IC₅₀ plots for compound 10: (-)-Gallocatechin

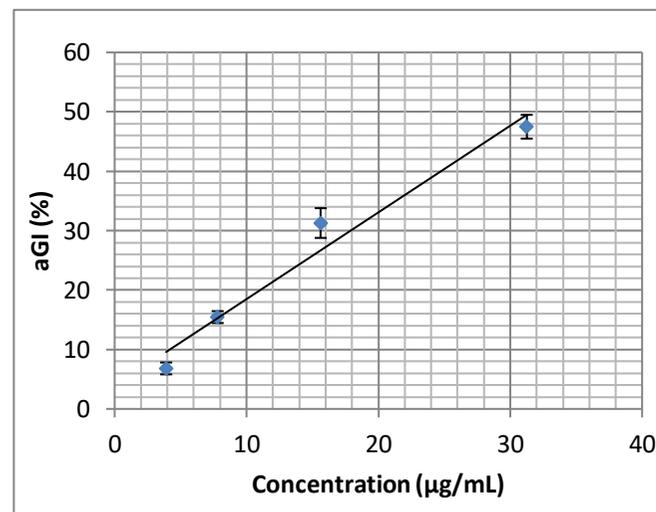


Figure S25. IC₅₀ plots for compound 11: Schweinfurthiol 9-O-β-D-pyranoglucoside

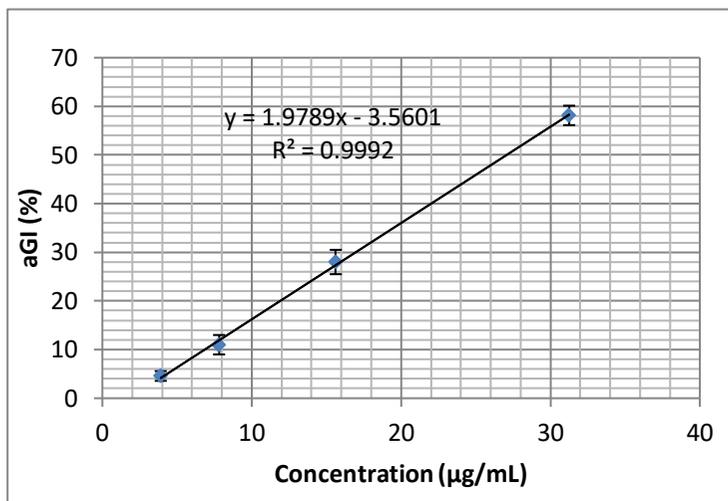


Figure S26. IC₅₀ plots for compound 12: 1-O-(3-Methyl)-butenoyl-myoinositol

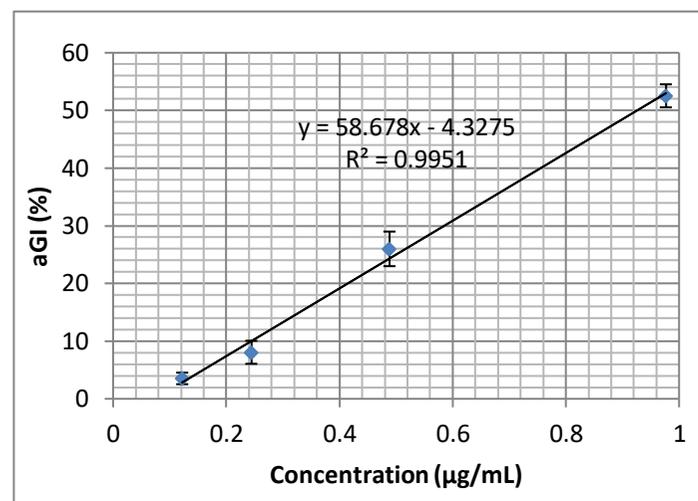


Figure S27. IC₅₀ plots for compound 14: Leonuriside

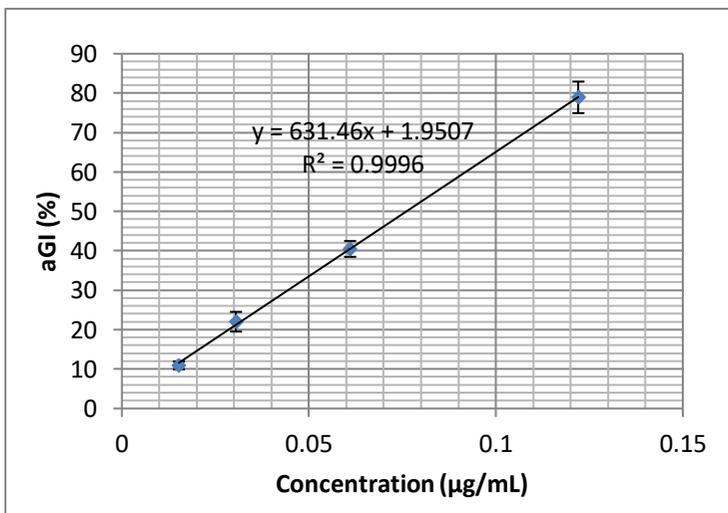


Figure S28. IC₅₀ plots for compound 18: Condensed tannin-ELCTB-3.1

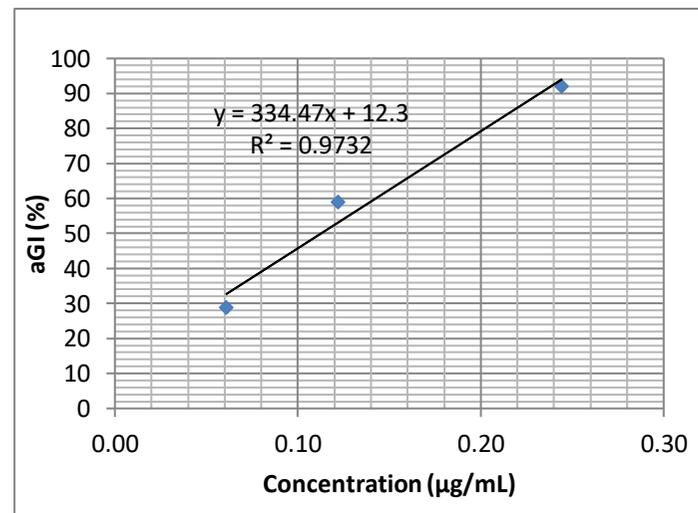


Figure S29. IC₅₀ plots for compound 19: (+)-Catechin

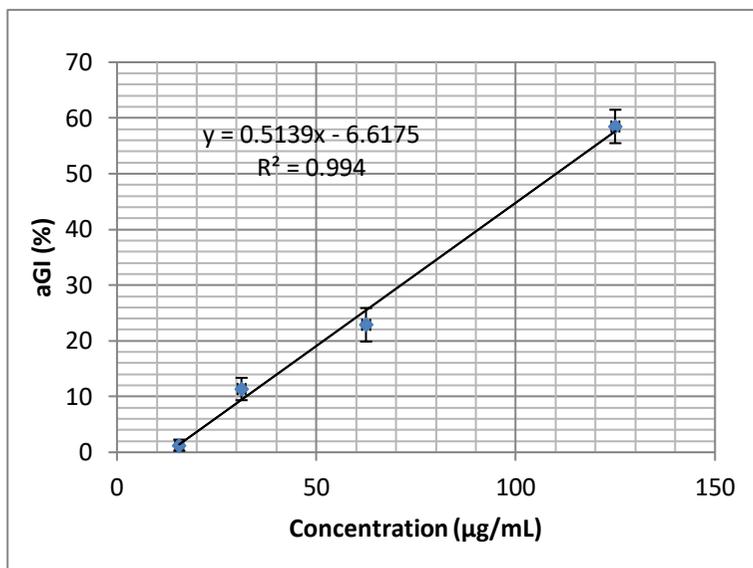


Figure S30. IC₅₀ plots for compound 20: Methyl galloate

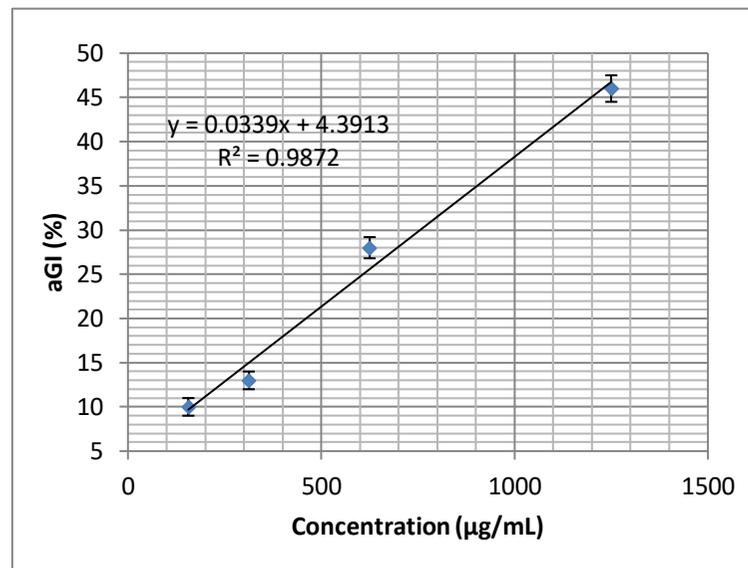


Figure S31. IC₅₀ plots for acarbose

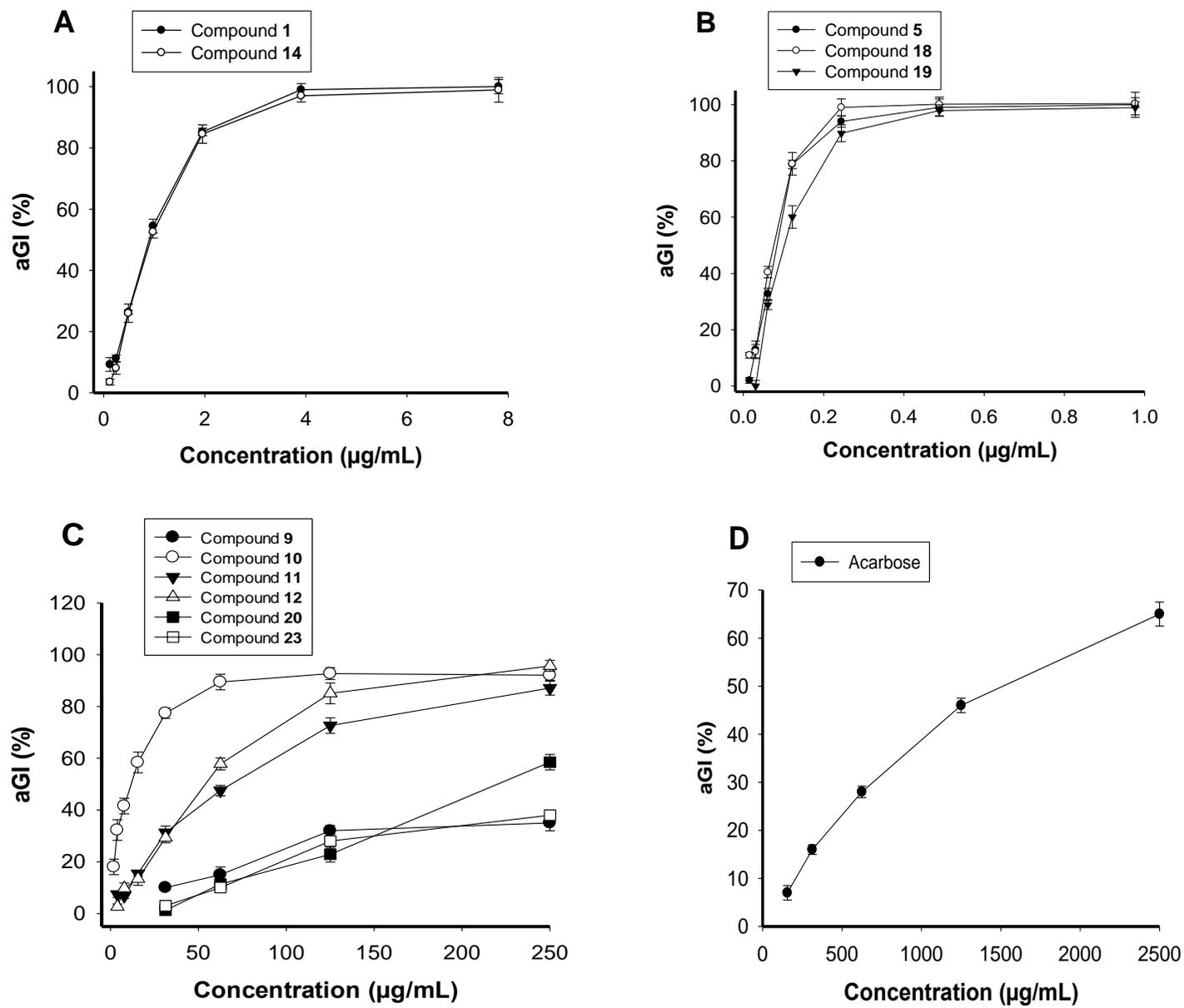


Figure S32. The corresponding % inhibition at each concentration of compounds 1 and 14 (A), compounds 5, 18 and 19 (B), compounds 9, 10, 11, 12, 20 and 23 (C), and acarbose (D).