SUPPLEMENTARY MATERIAL

Benzofuran Derivatives With Nerve Growth Factor-Potentiating Activity from *Phellinus ribis*

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ABSTRACT

Three new benzofuran derivatives, namely ribisin E **(1)** ribisin F **(2)** along with ribisin G **(3)** were isolated from the MeOH extract of the fruiting bodies of *Phellinus ribis.* Their structures were elucidated based on the NMR analysis. Furthermore, the absolute configuration of ribisin E **(1)** and ribisin G **(3)** were deduced by the CD calculations, and the absolute configuration of ribisin F **(2)** was determined by comparing its CD spectrum and specific rotation with the data of known analogues. All compounds **(1-3)** exhibited the activity of promoting neurite outgrowth in nerve growth factor (NGF)-mediated PC 12 cell at concentrations ranging from 1 to 30 μM.

Keywords: *Phellinus ribis*; benzofuran derivatives; NGF-potentiating activity

List of supporting information

Table S1. ^{1}H and ^{13}C NMR data for compounds 1-3

	Compound 1		Compound 2		Compound 3	
Position	δ_C	δ_H mult. (*J* in Hz)	δ_C	δ_H mult. (*J* in Hz)	δ_C	δ_H mult. (*J* in Hz)
1	193.9		191.2		189.4	
1a	116.1		144.5		115.4	
2	74.1	4.84 d (2.7)	43.4	3.12 dd (3.5,6.4) 2.72 dd (6.9,6.4)	81.8	4.24 d (2.5)
3	87.6	4.00 dd (3.4, 2.7)	67.9	4.31 m	84.6	3.90 dd (6.4, 2.5)
4	64.9	5.12 d (3.4)	71.9	4.61 brs	66.0	5.32 d (6.4)
4a	167.7		168.0		165.9	
5a	157.3		156.1		156.0	
6	112.8	7.60 dd (7.8, 0.9)	111.5	7.66 dd (7.4, 0.9)	111.8	7.66 ddd (7.1, 1,9, 0,7)
7	127.1	7.42 td (7.8, 1.4)	124.7	7.38 td (7.4, 1.0)	126.1	7.38 dd (7.1, 1.8)
8	125.9	7.38 td (7.8, 0.9)	123.3	7.32 td (7.4, 0.9)	124.9	7.36 td (7.1, 1.9)
9	122.8	7.98 dd (7.8, 1.4)	120.9	7.89 dd (7.4,1.0)	122.3	8.06 ddd (7.1,1.8, 0.7)
9a	124.3		123.2		123.1	
2-OCH_3					59.2	3.60 s
3-OCH_3	59.8	3.52 s			58.9	3.57 s

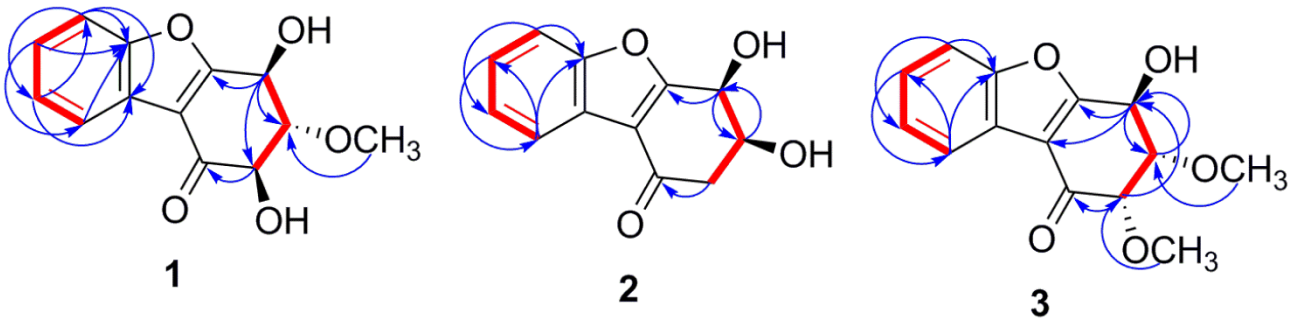

Figure S1. May HMBC( ) and ^{1}H-^{1}H COSY ( ) correlations of compounds 1-3.

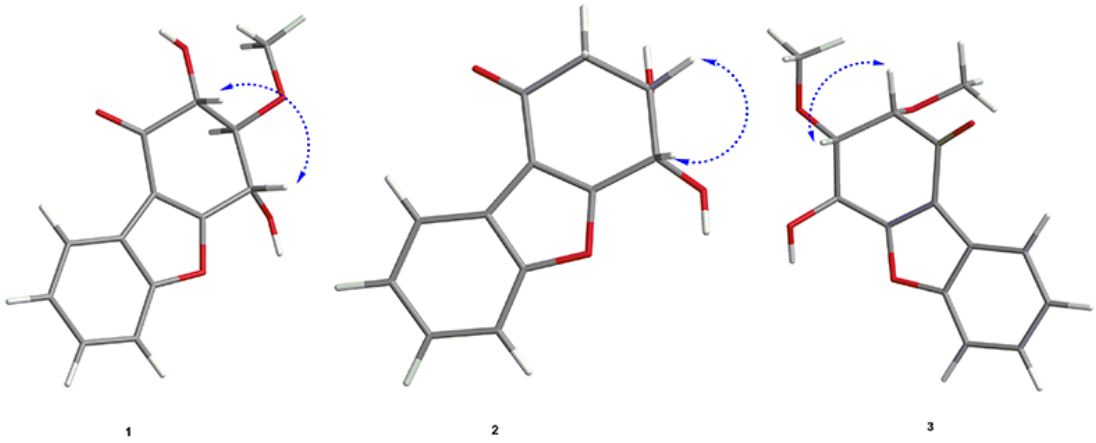

Figure S2. Key NOESY correlations of compounds 1-3.

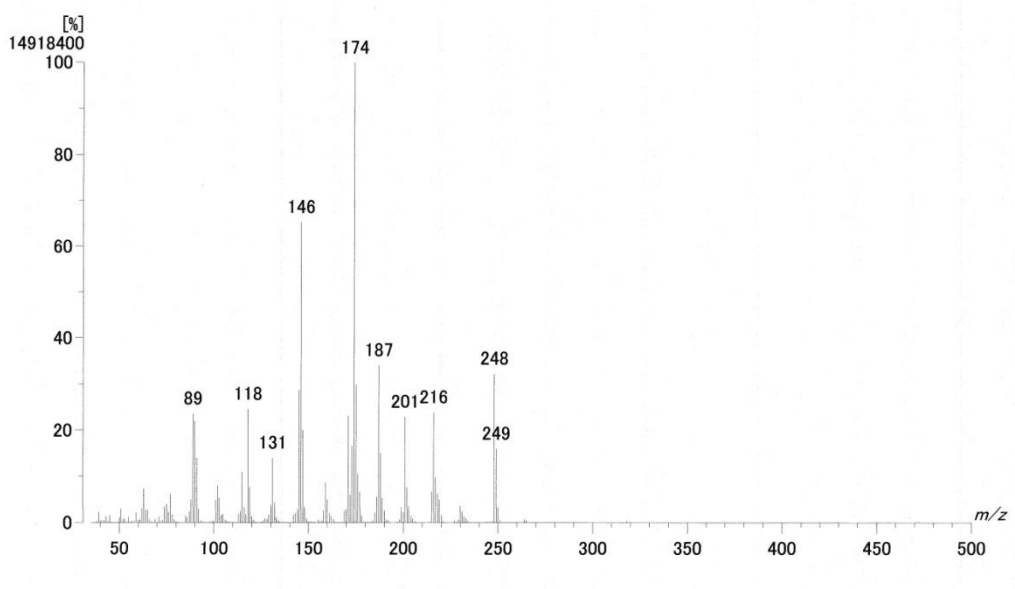

Figure S3. The EIMS of compound 1.

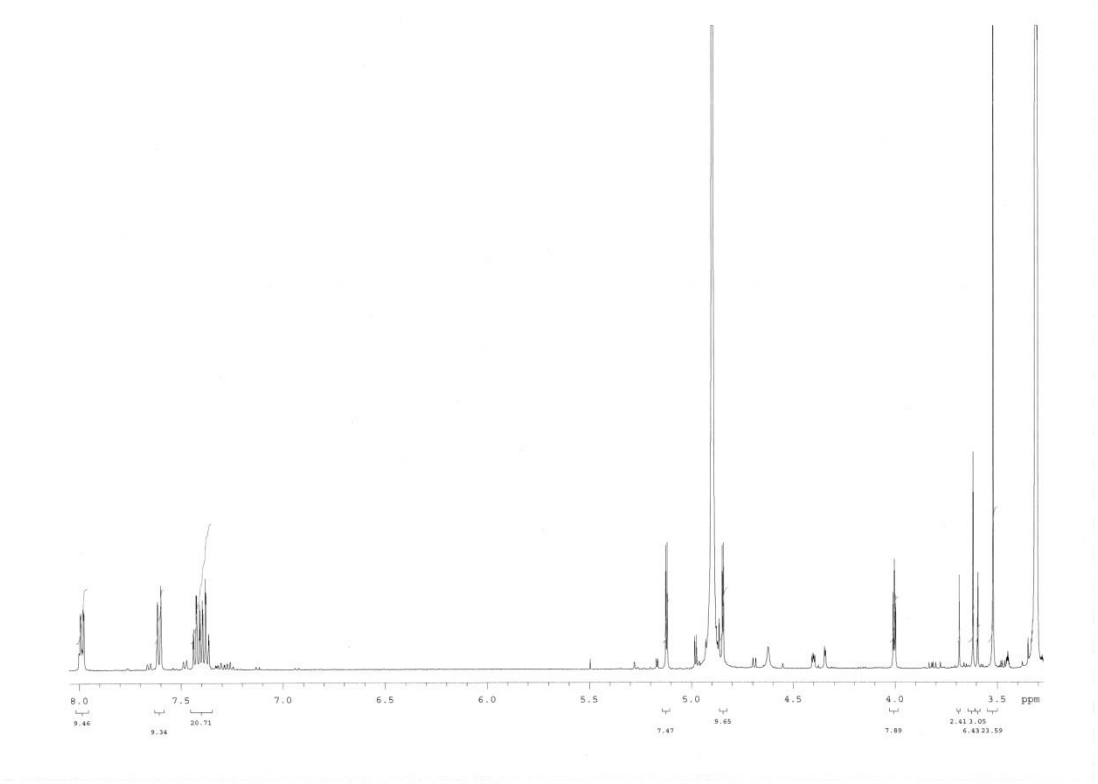

Figure S4. ^{1}H NMR spectrum of compound 1 in CD_3OD

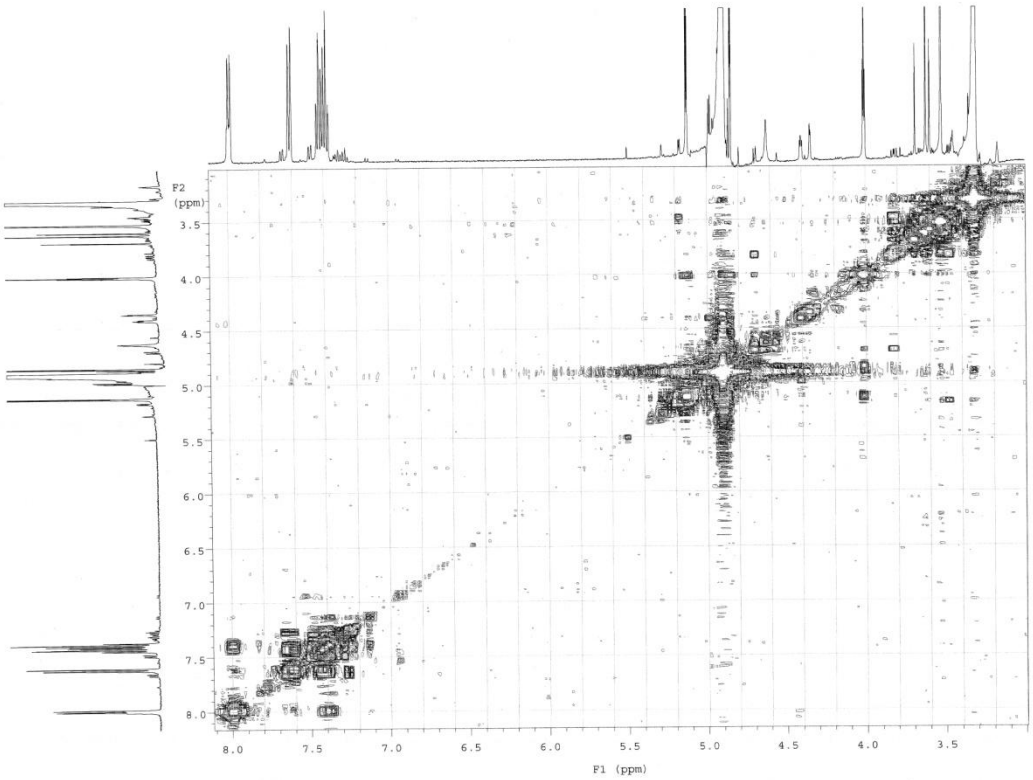

Figure S5. ^{1}H-^{1}H COSY NMR spectrum of compound 1 in CD_3OD

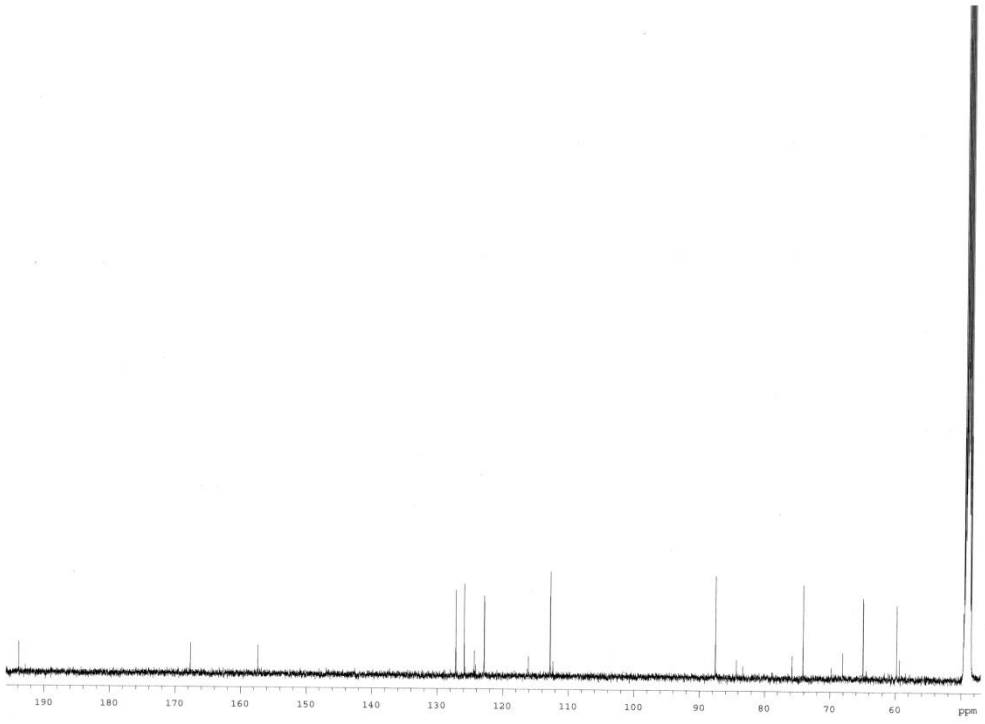

Figure S6. 13C NMR spectrum of compound 1 in CD_3OD

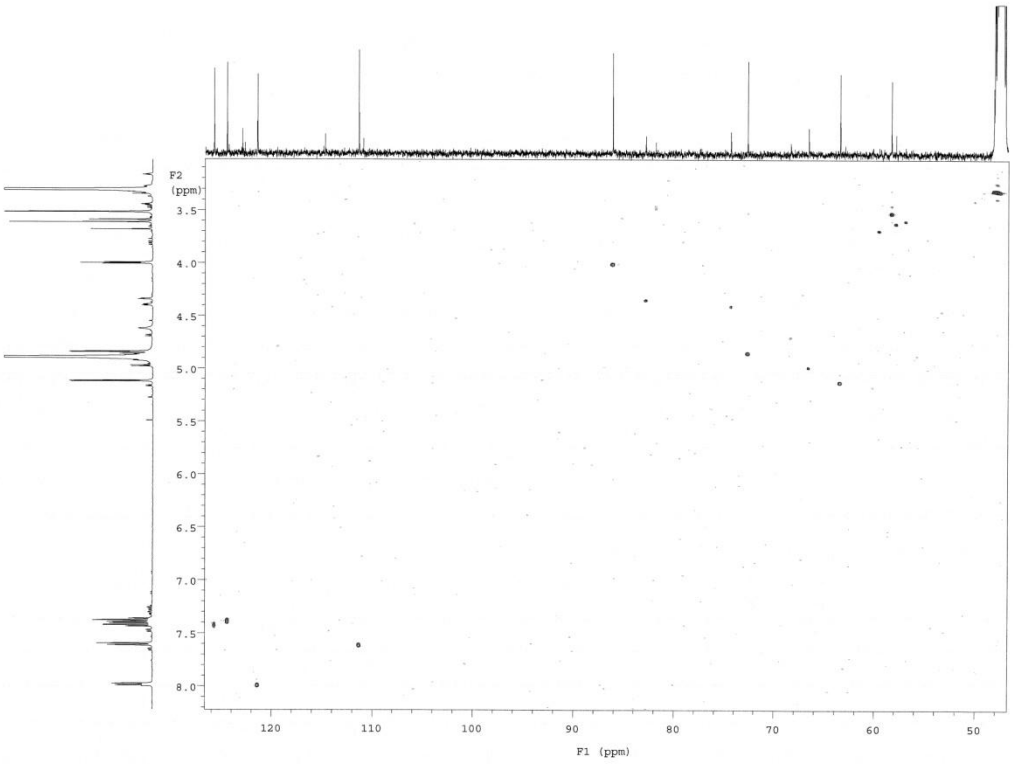

Figure S7. HMQC spectrum of compound 1 in CD_3OD

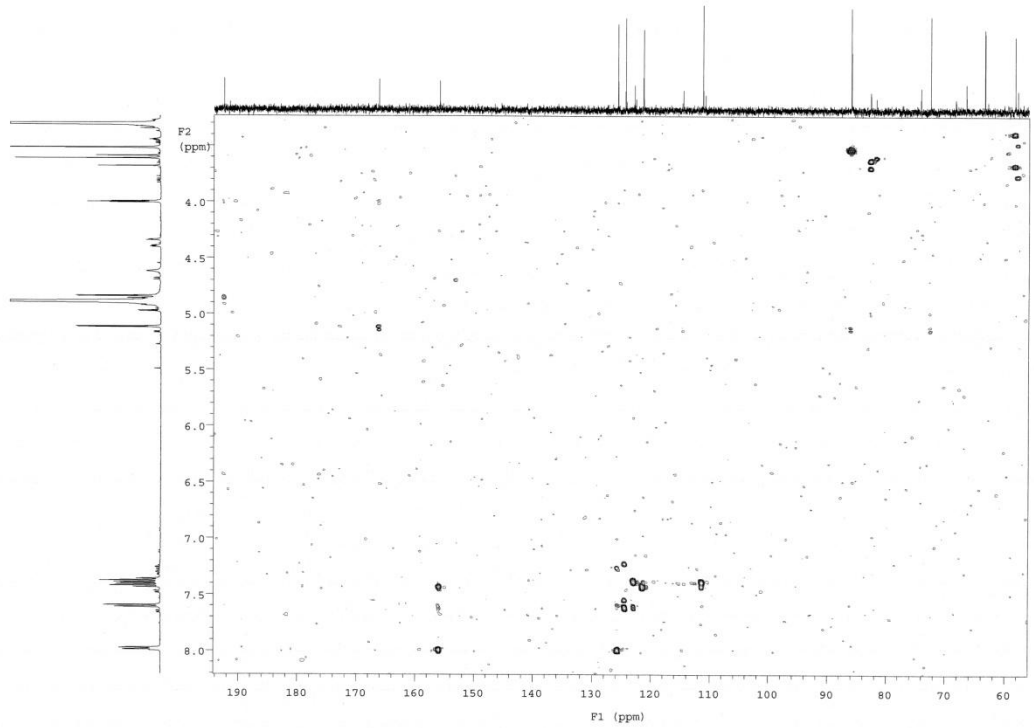

Figure S8. HMBC spectrum of compound 1 in CD_3OD

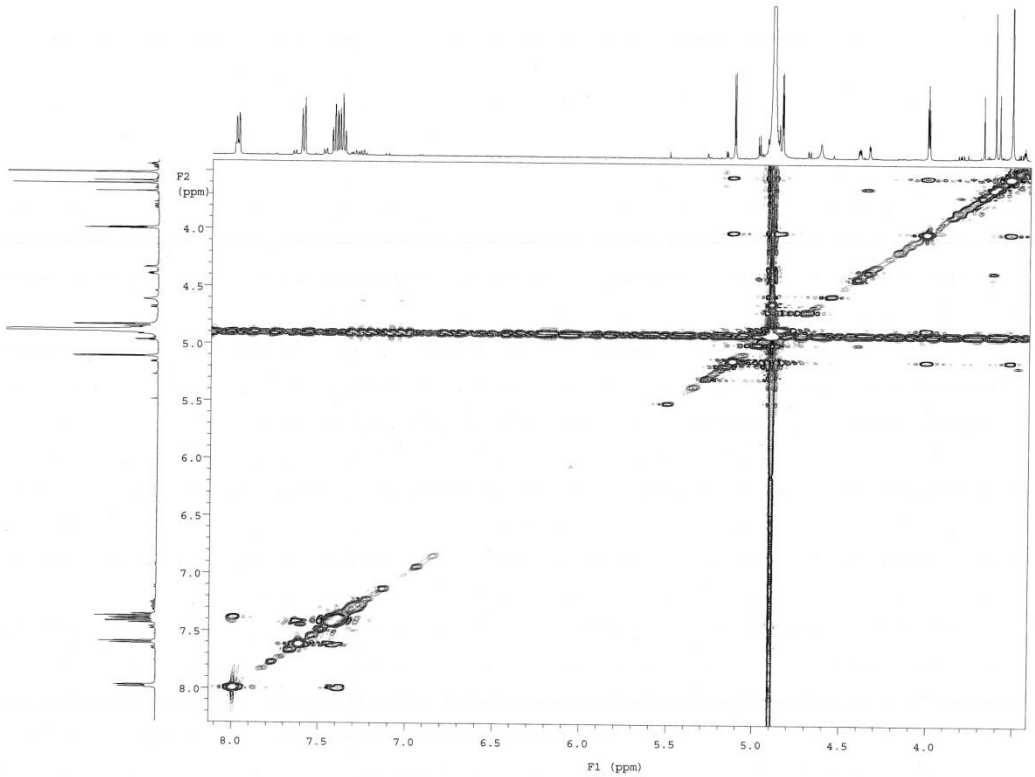

Figure S9. NOESY spectrum of compound 1 in CD_3OD

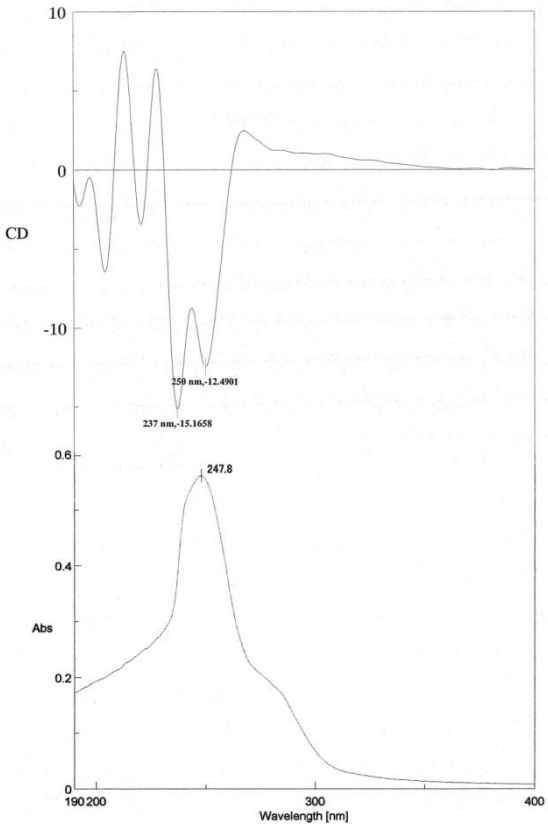

Figure S10. CD and UV spectrum of *p*-bromobenzoate derivative of 1

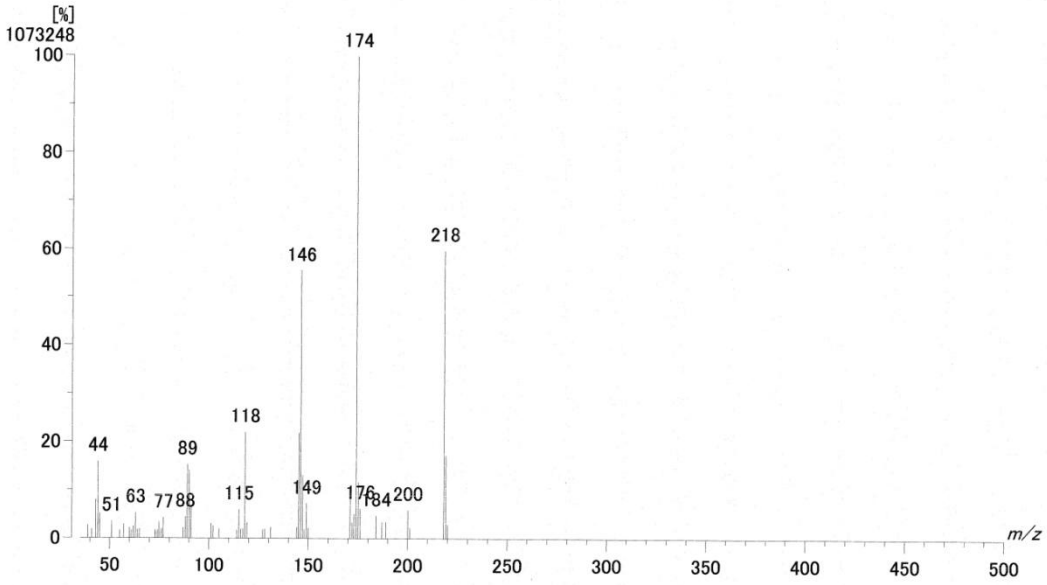

Figure S11. The EIMS of compound 2.

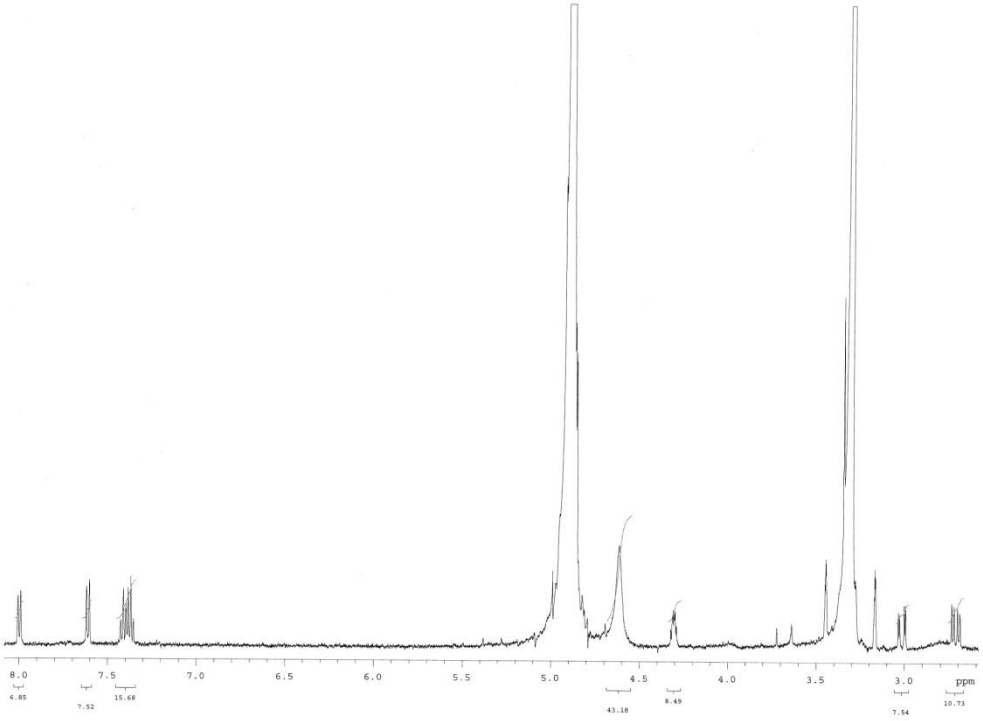

Figure S12. 1H NMR spectrum of compound 2 in CD_3OD

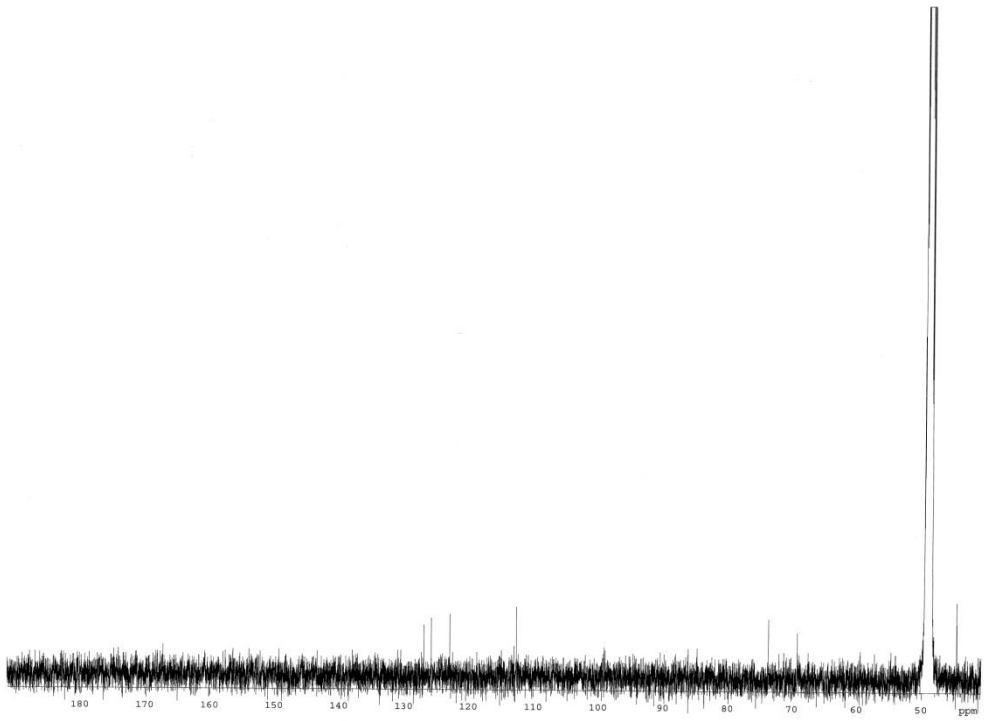

Figure S13. ^{13}C NMR spectrum of compound 2 in CD_3OD

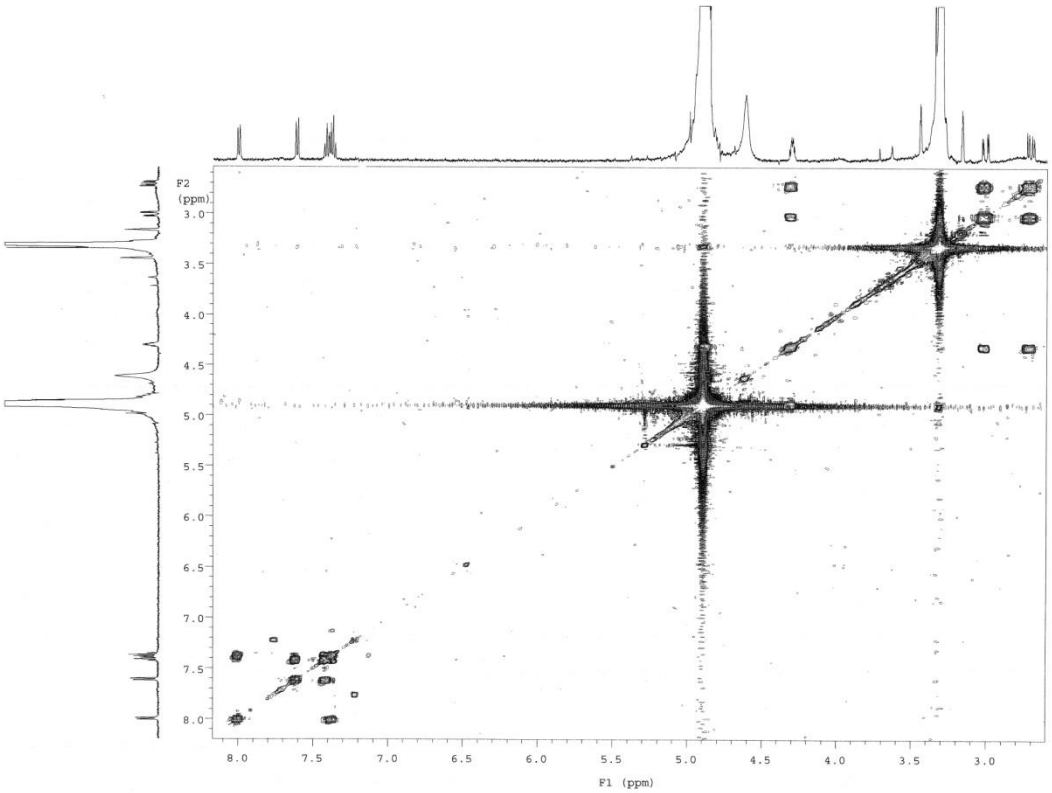

Figure S14. ^{1}H-^{1}H COSY NMR spectrum of compound 2 in CD_3OD

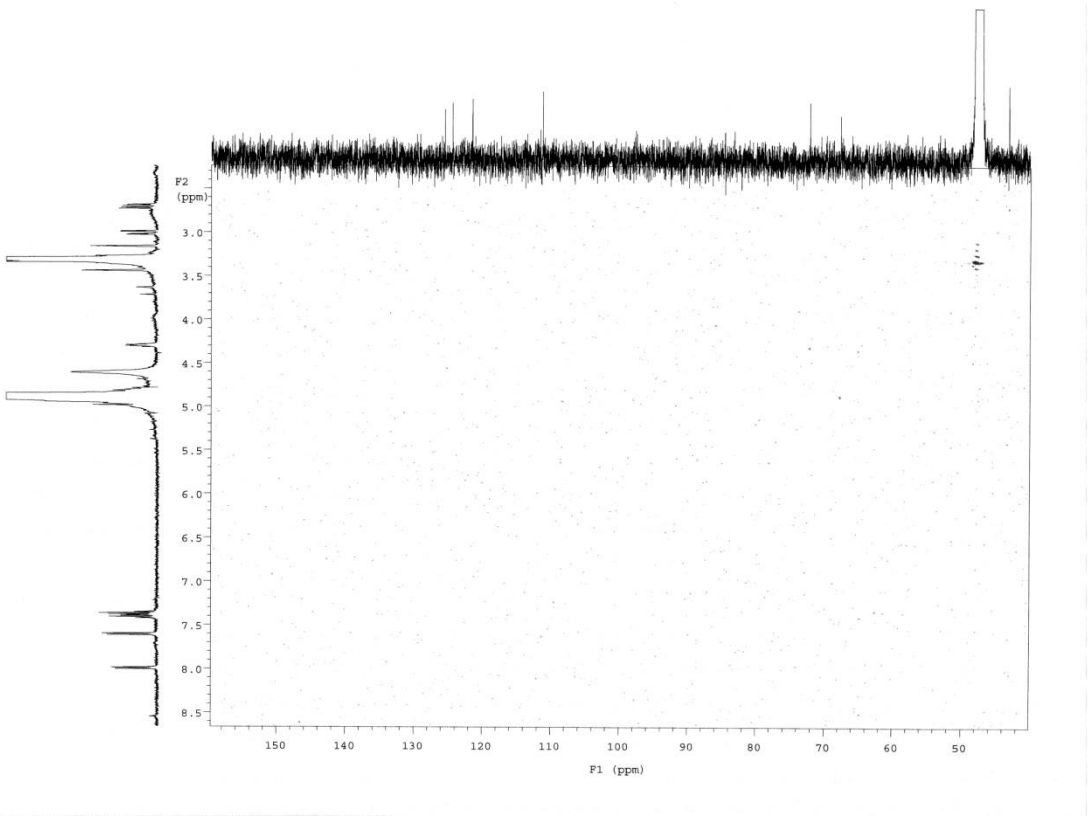

Figure S15. HMQC spectrum of compound 2 in CD_3OD

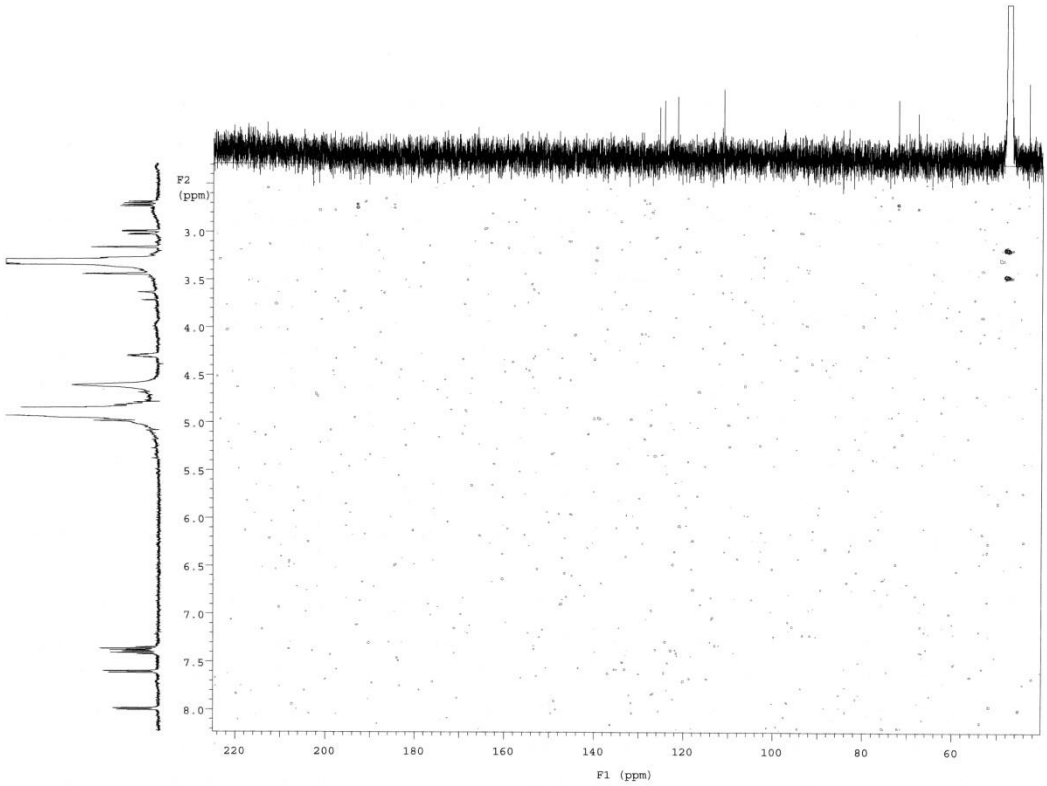

Figure S16. HMBC spectrum of compound 2 in CD_3OD

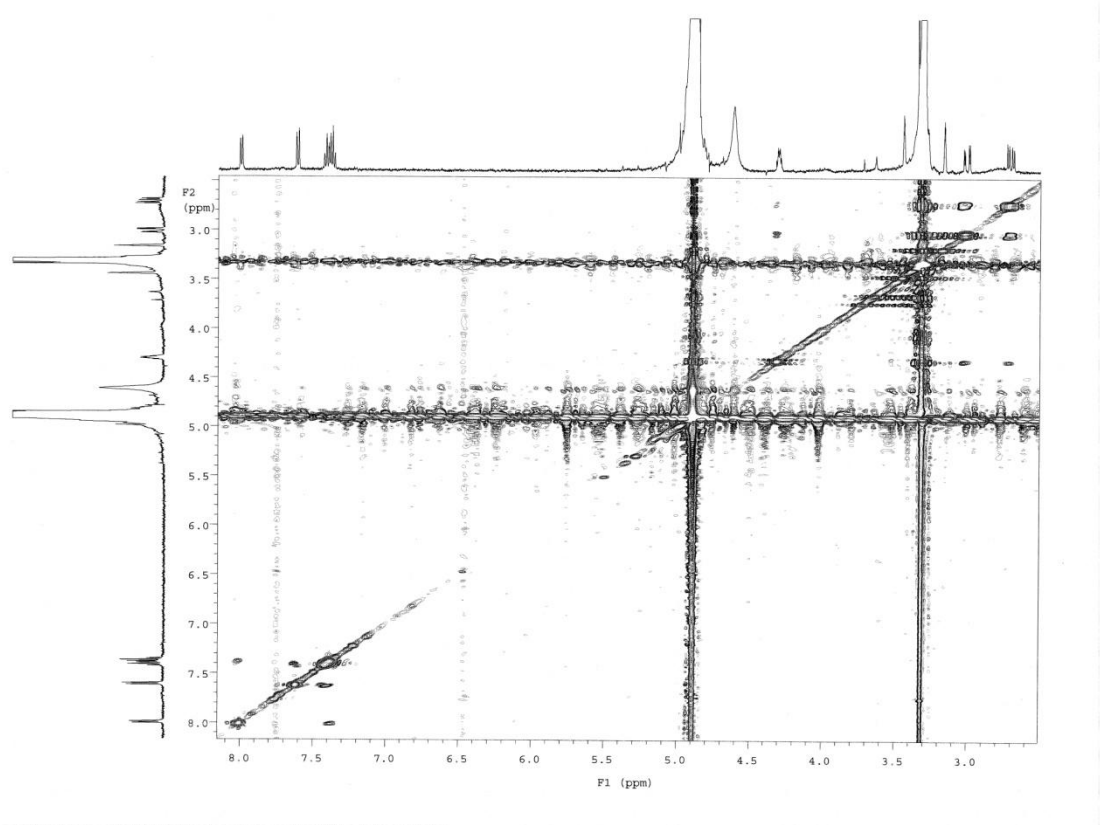

Figure S17. NOESY spectrum of compound 2 in CD_3OD

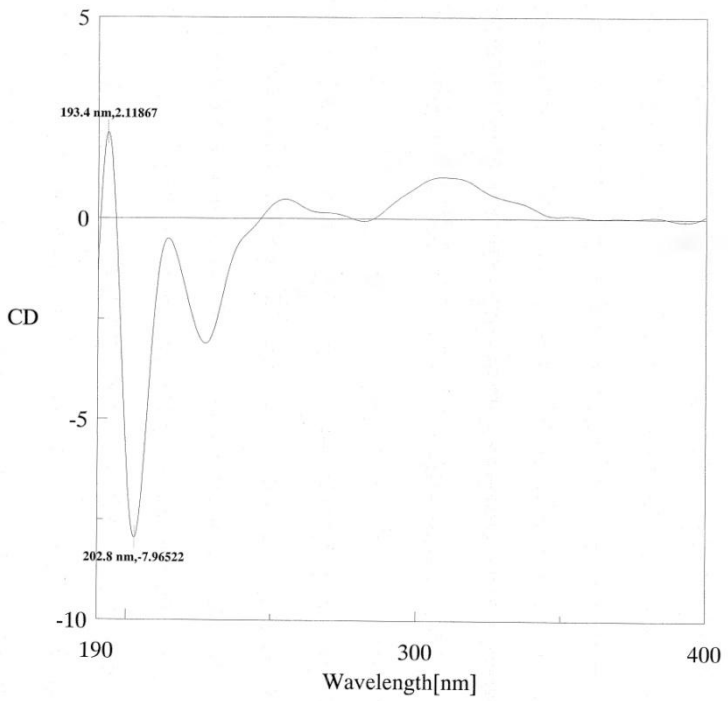

Figure S18. The CD spectrum of compound 2.

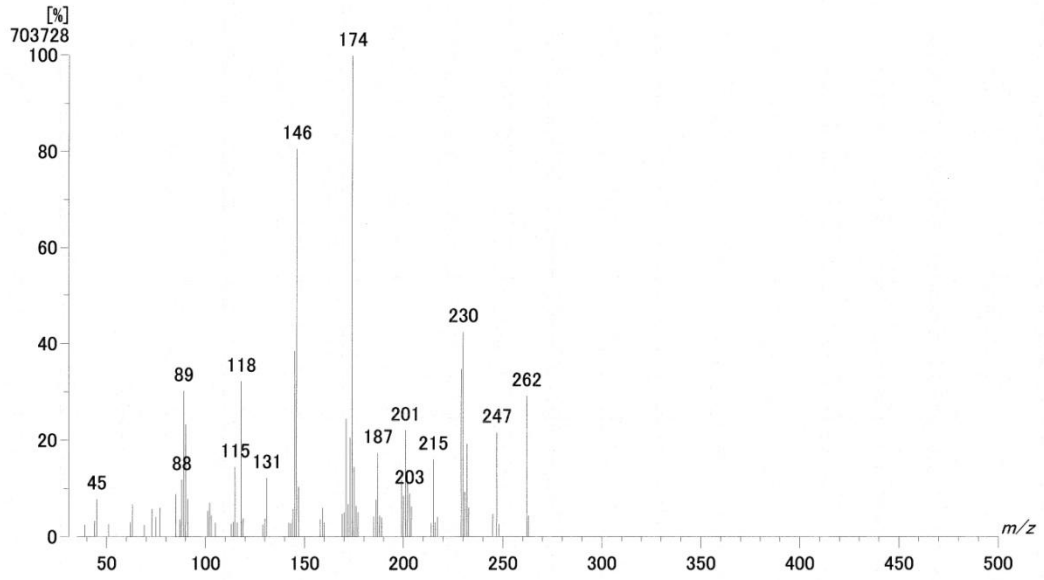

Figure S19. The EIMS of compound 3.

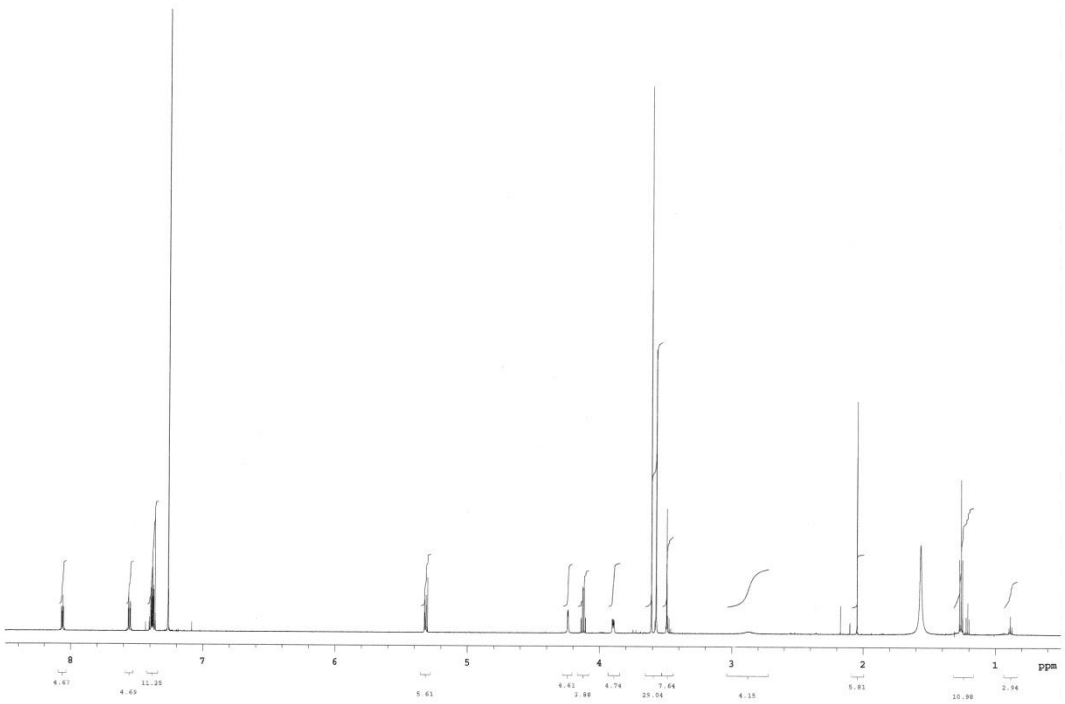

Figure S20. ^{1}H NMR spectrum of compound 3 in $CDCl_3$

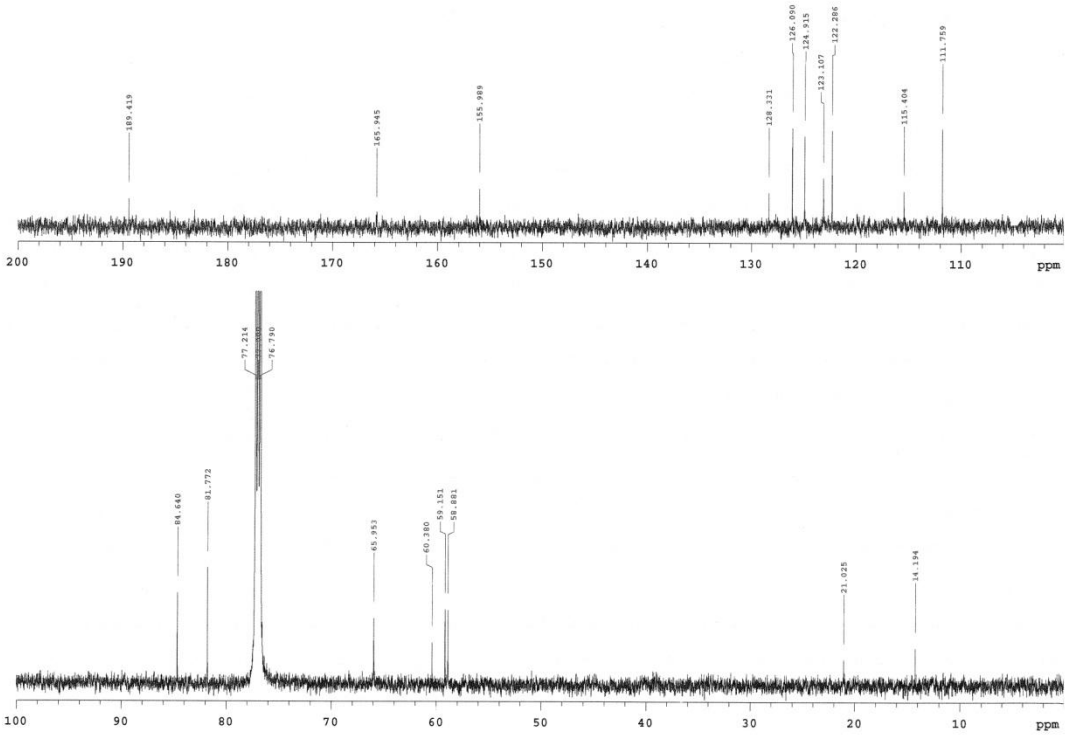

Figure S21. ^{13}C NMR spectrum of compound 3 in $CDCl_3$

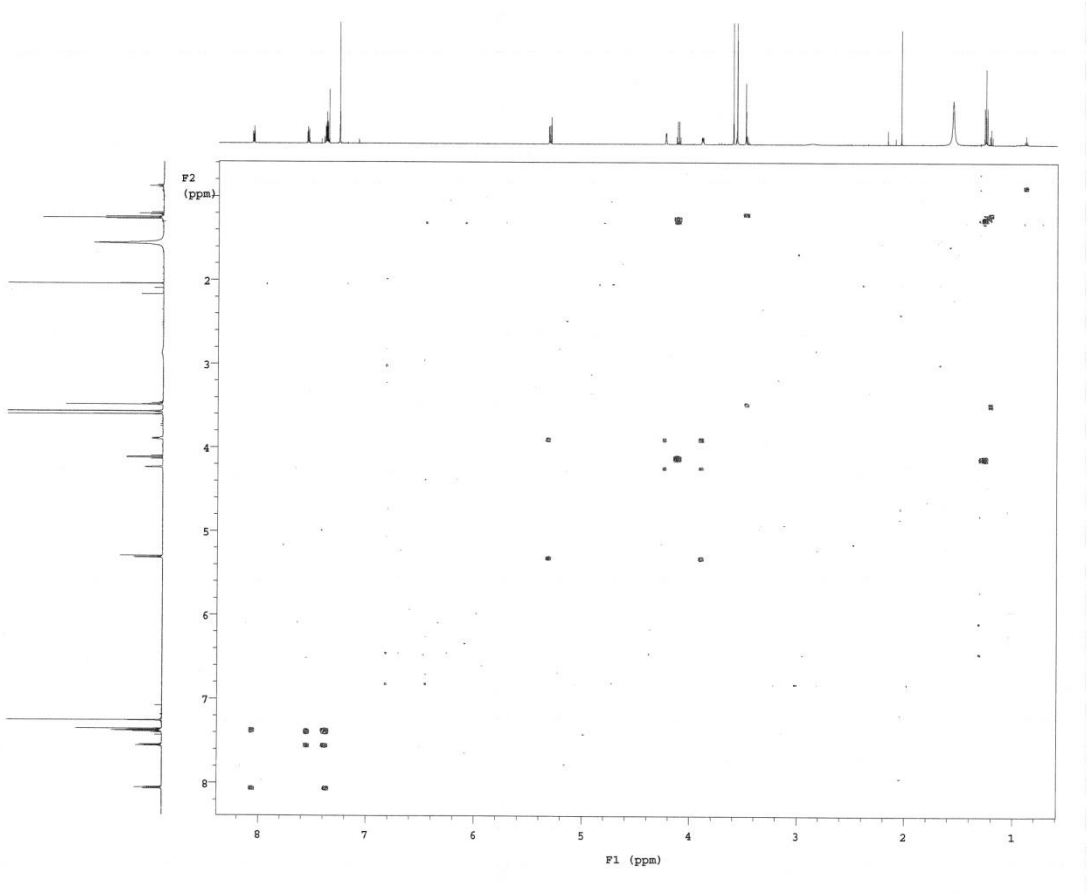

Figure S22. ^{1}H-^{1}H COSY NMR spectrum of compound 3 in $CDCl_3$

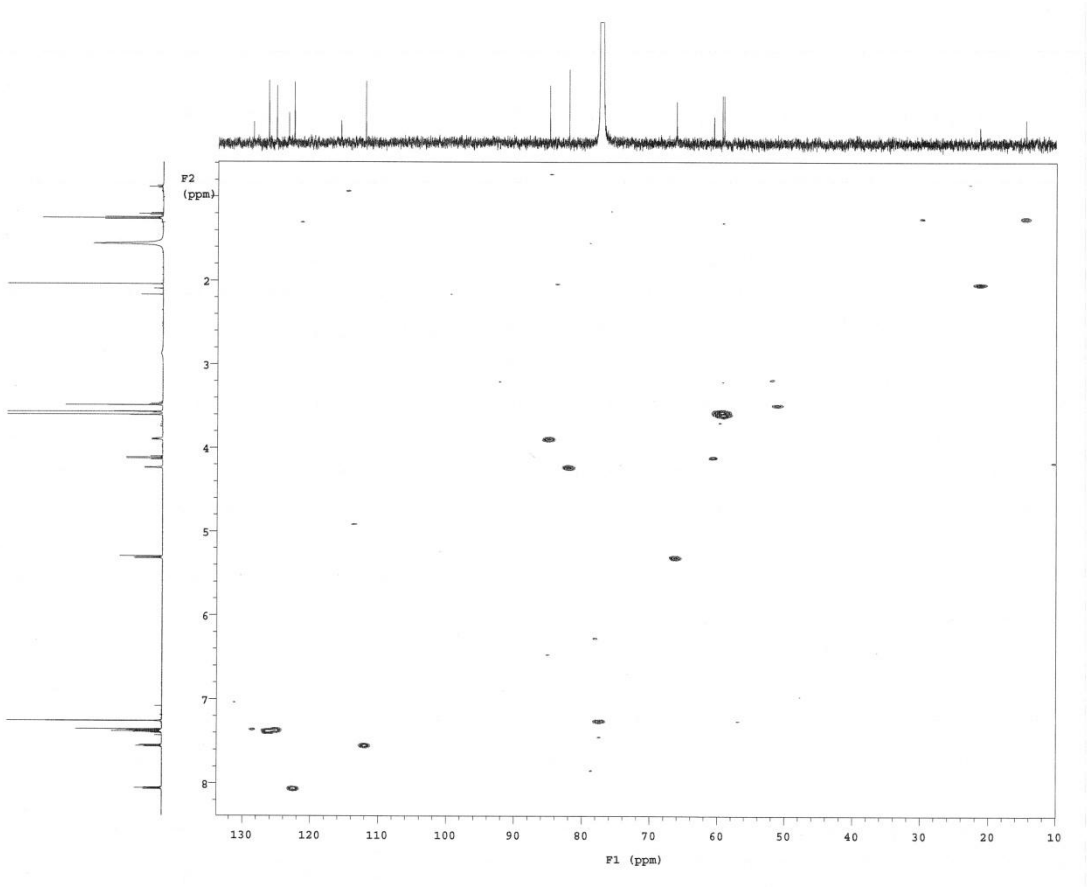

Figure S23. HMQC spectrum of compound 3 in $CDCl_3$

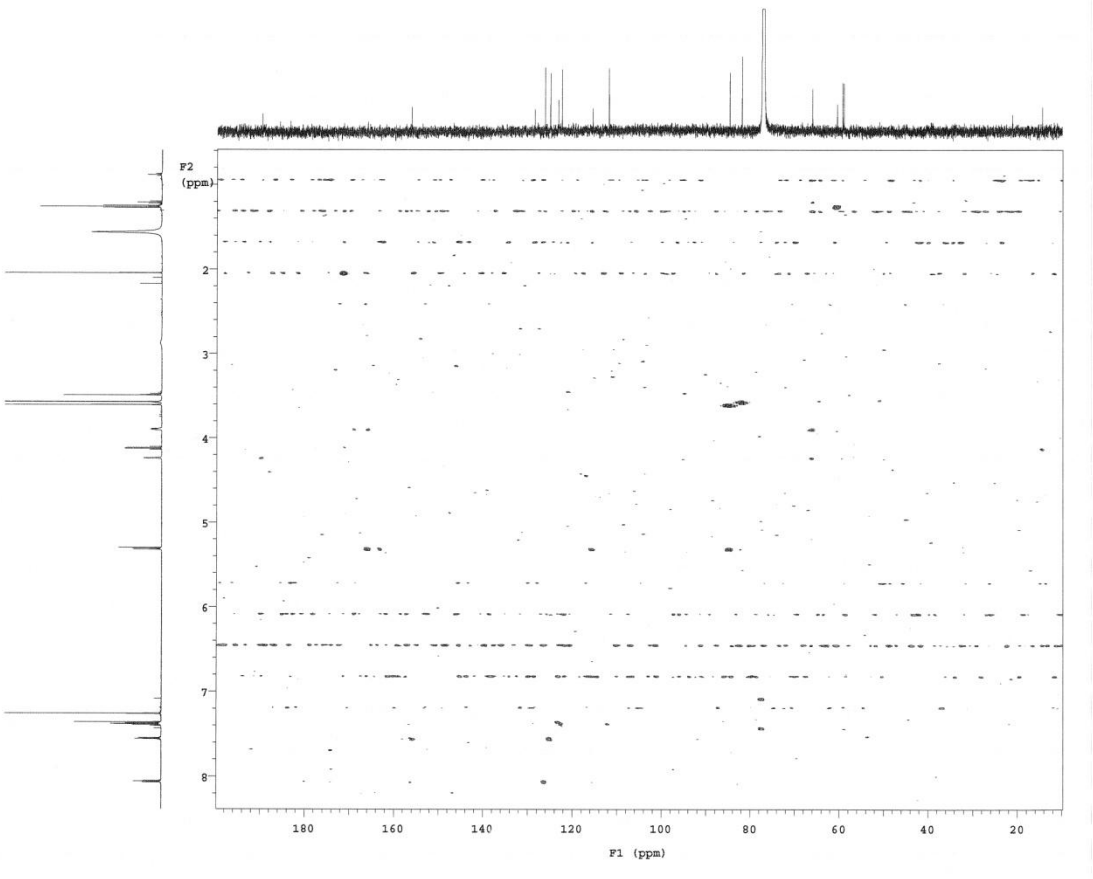

Figure S24. HMBC spectrum of compound 3 in $CDCl_3$

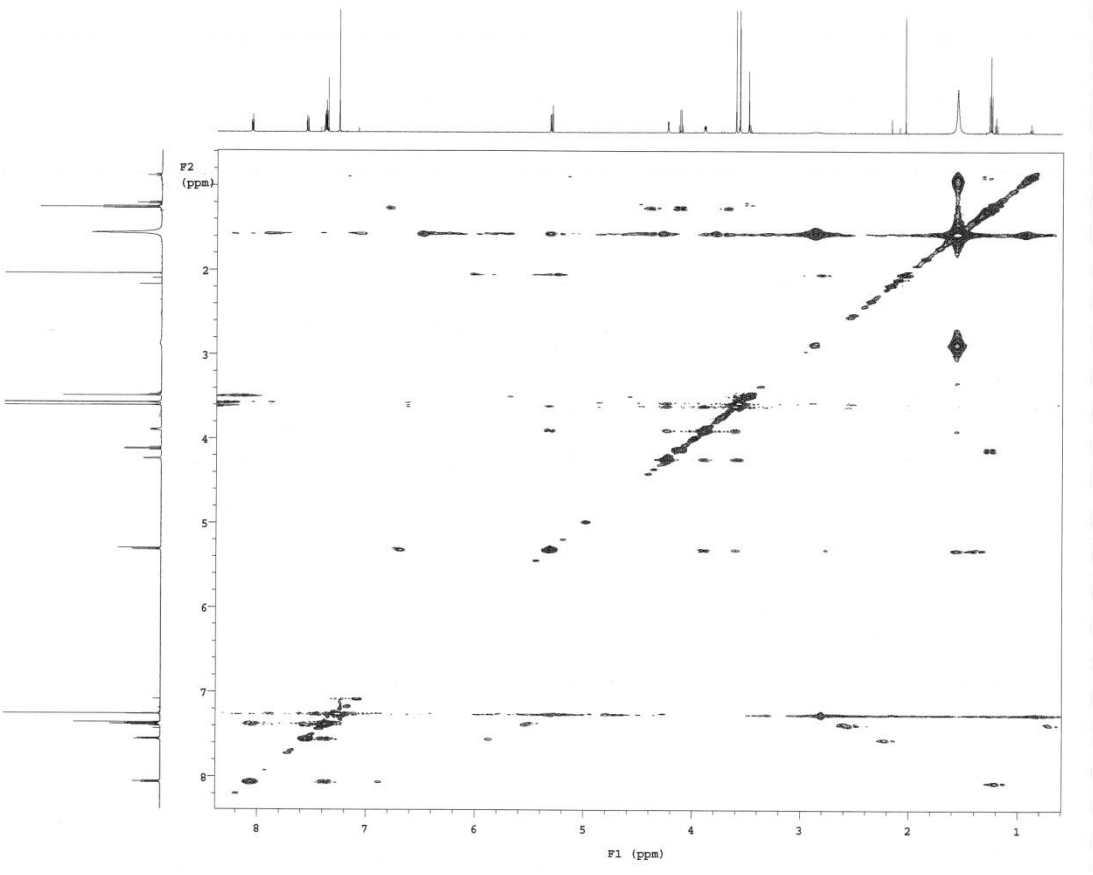

Figure S25. NOESY spectrum of compound 3 in $CDCl_3$

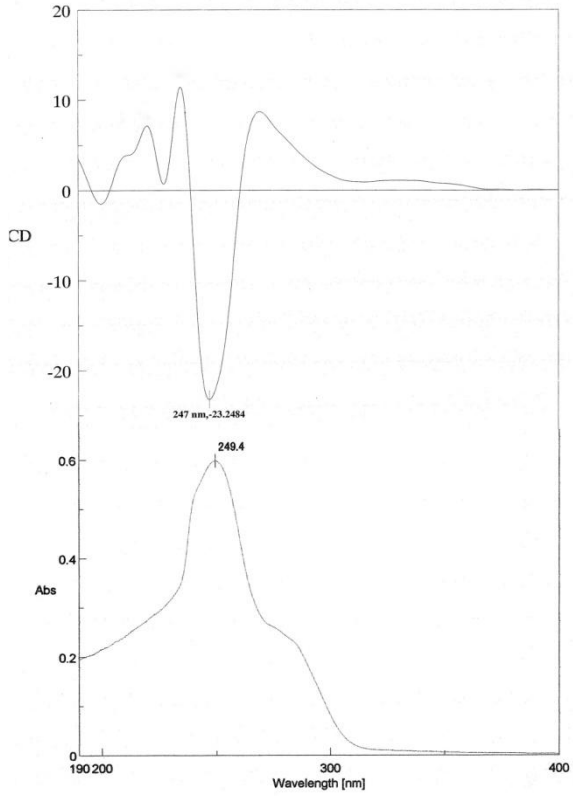

Figure S26. CD and UV spectrum of *p*-bromobenzoate derivative of 3

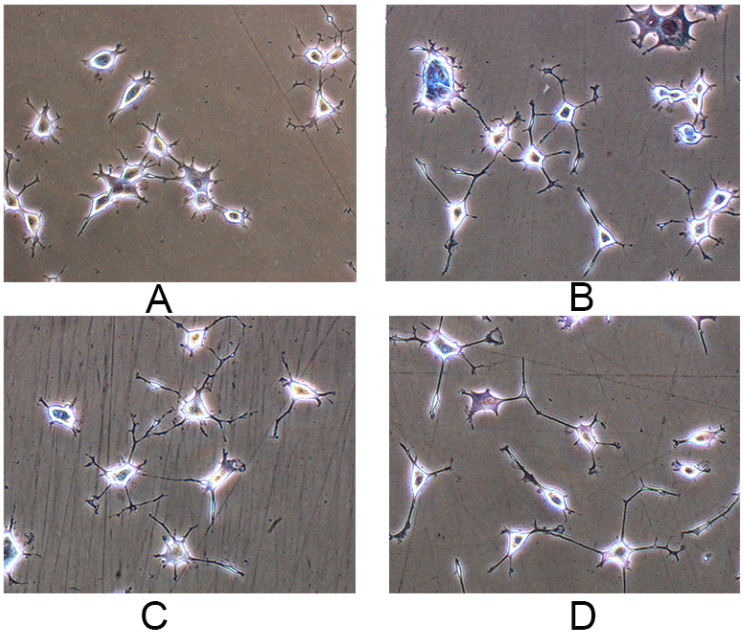

Figure S27. Morphological changes observed in PC12 cells treated with (A) NGF 1 ng/mL, (B) 1 (30 μM) + NGF 1 ng/mL, (C) 2 (30 μM) + NGF 1 ng/mL, (D) 3 (30 μM) + NGF 1 ng/mL.

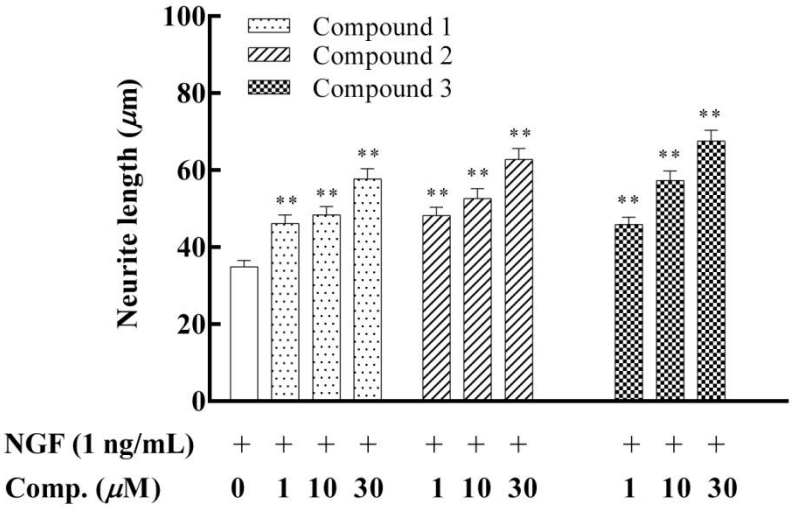

Figure S28. Quantitative analysis of neurite outgrowth promoted by 1, 2, and 3. PC12 cells were supplemented with NGF (1 ng/mL) and 1, 2, or 3. After 4 days, the neurite lengths of the PC12 cells were quantified. Data are expressed as the mean±SE (n= 100).p< 0.01 vs control; Dunnett's t test.**