

*Supplementary Materials*

# **Collismycin C from the Micronesian Marine Bacterium *Streptomyces* sp. MC025 Inhibits *Staphylococcus aureus* Biofilm Formation**

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**Table S1.** List of 79 bacterial strains isolated from marine organisms collected in the waters of Kosrae, Federated States of Micronesia

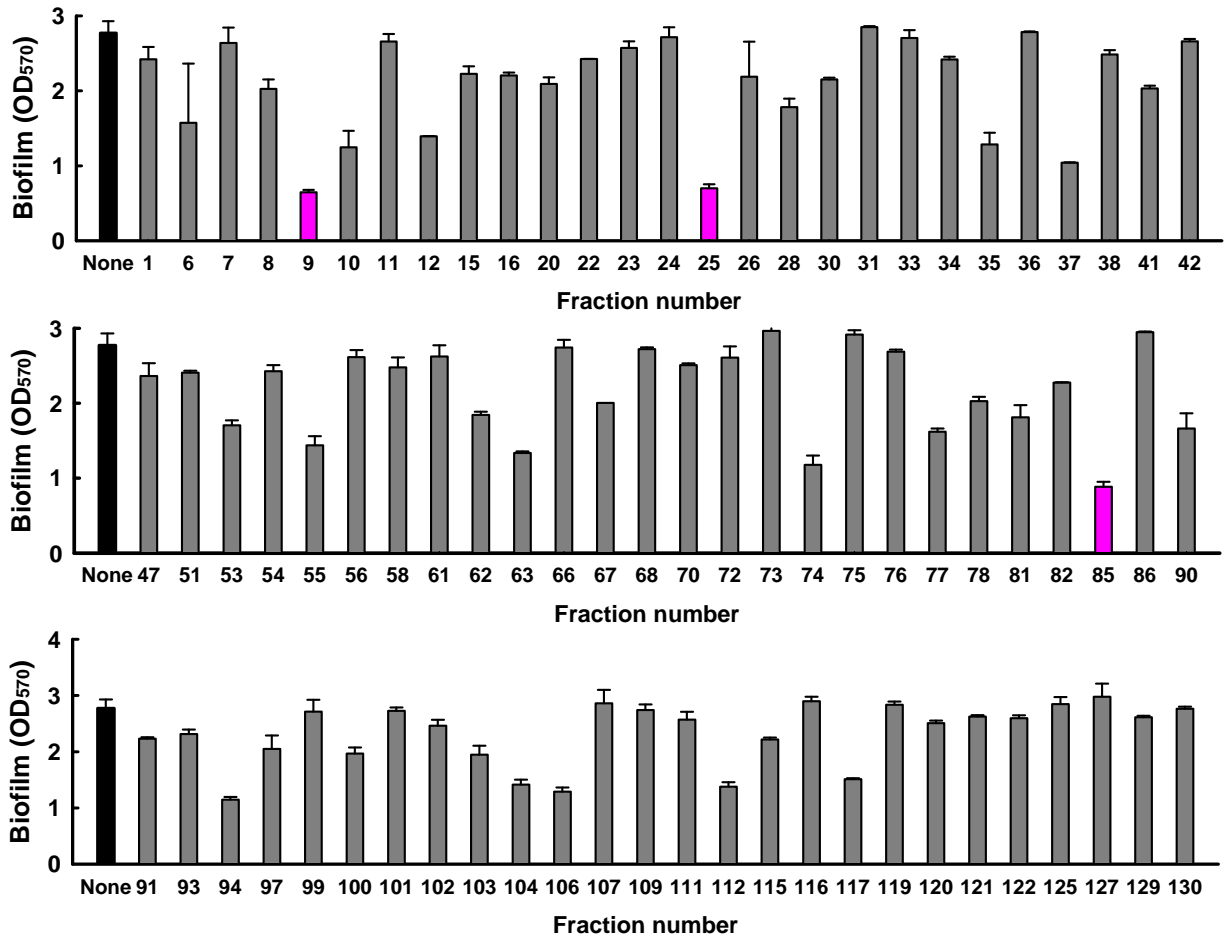
Strain	Phylum	Class	Blast Top	Similarity	sequence length
MC001	Proteobacteria	$\gamma$ -Proteobacteria	Photobacterium ganghwense strain FR1311	99.43780745	1415/1423
MC006	Proteobacteria	$\gamma$ -Proteobacteria	Alteromonas macleodii str. 'Balearic Sea AD45'	99.85041137	1335/1337
MC007	Firmicutes	Bacilli	Bacillus aryabhatai strain B8W22	99.92952784	1418/1419
MC008	Proteobacteria	$\gamma$ -Proteobacteria	Vibrio maritimus strain R-40493	98.64864865	1387/1406
MC009	Proteobacteria	$\gamma$ -Proteobacteria	Vibrio owensii strain DY05	99.85559567	1383/1385
MC010	Actinobacteria	Actinobacteria	Nocardioides furvisabuli strain SBS-26	99.40784604	1343/1351
MC011	Actinobacteria	Actinobacteria	Rhodococcus ruber strain DSM 43338	99.06069364	1371/1384
MC012	Bacteroidetes	Flavobacteria	Aquimarina spongiae strain A6	98.93162393	1389/1404
MC015	Firmicutes	Bacilli	Staphylococcus saprophyticus strain ATCC 15305	99.92810927	1390/1391
MC016	Proteobacteria	$\alpha$ -Proteobacteria	Pseudovibrio sp. FO-BEG1 strain FO-BEG1	98.44329133	1328/1349
MC020	Actinobacteria	Actinobacteria	Kocuria marina strain KMM 3905	99.71305595	1390/1394
MC022	Proteobacteria	$\alpha$ -Proteobacteria	Loktanella soesokkakensis strain DSSK1-5	99.92779783	1384/1385
MC023	Proteobacteria	$\gamma$ -Proteobacteria	Alteromonas macleodii str. 'Balearic Sea AD45'	99.85663082	1393/1395
MC024	Actinobacteria	Actinobacteria	Micrococcus yunnanensis strain YIM 65004	99.70760234	1364/1368
MC025	Actinobacteria	Actinobacteria	Streptomyces parvus strain NBRC 14599	99.8540146	1368/1370
MC026	Actinobacteria	Actinobacteria	Brachybacterium paraconglomeratum strain LMG 19861	100	1382/1382
MC028	Proteobacteria	$\gamma$ -Proteobacteria	Ferrimonas futtsuensis strain FUT3661	99.12600146	1361/1373
MC030	Firmicutes	Bacilli	Staphylococcus arlettae strain ATCC 43957	100	1392/1392
MC031	Firmicutes	Bacilli	Bacillus megaterium strain NBRC 15308	100	1416/1416
MC033	Firmicutes	Bacilli	Bacillus toyonensis strain BCT-7112	99.85925405	1419/1421
MC034	Proteobacteria	$\alpha$ -Proteobacteria	Loktanella pyoseonensis strain JJM85	99.16981132	1314/1325
MC035	Proteobacteria	$\gamma$ -Proteobacteria	Pseudomonas brenneri strain CFML 97-391	99.56865564	1385/1391
MC036	Firmicutes	Bacilli	Planomicrobium okeanokoites strain NBRC 12536	99.85347985	1363/1365
MC037	Proteobacteria	$\gamma$ -Proteobacteria	Alteromonas macleodii strain NBRC 102226	98.5	1379/1400
MC038	Firmicutes	Bacilli	Bacillus aryabhatai strain B8W22	100	1416/1416
MC041	Actinobacteria	Actinobacteria	Agrococcus terreus strain DNG5	99.70887918	1370/1374
MC042	Firmicutes	Bacilli	Fictibacillus phosphorivorans strain Ca7	100	1340/1340
MC047	Actinobacteria	Actinobacteria	Streptomyces albolongus strain NBRC 13465	99.27588704	1371/1381
MC051	Actinobacteria	Actinobacteria	Pseudonocardia kongjuensis strain LM 157	98.85386819	1380/1396
MC053	Actinobacteria	Actinobacteria	Pseudonocardia antitumoralis strain SCSIO 01299	99.78601997	1399/1402

MC054	Proteobacteria	$\gamma$ -Proteobacteria	<i>Vibrio furnissii</i> strain 9119-82	99.71448965	1397/1401
MC055	Proteobacteria	$\gamma$ -Proteobacteria	<i>Microbulbifer variabilis</i> strain Ni-2088	99.12727273	1363/1375
MC056	Proteobacteria	$\gamma$ -Proteobacteria	<i>Pseudoalteromonas shioyasakiensis</i> strain SE3	99.2074928	1377/1388
MC058	Proteobacteria	$\gamma$ -Proteobacteria	<i>Photobacterium ganghwense</i> strain FR1311	99.20692141	1376/1387
MC061	Actinobacteria	Actinobacteria	<i>Agrococcus terreus</i> strain DNG5	99.49640288	1383/1390
MC062	Actinobacteria	Actinobacteria	<i>Agrococcus terreus</i> strain DNG5	99.78229318	1375/1378
MC063	Actinobacteria	Actinobacteria	<i>Microbacterium neimengense</i> strain 7087	98.61516035	1353/1372
MC066	Actinobacteria	Actinobacteria	<i>Microbacterium aquimaris</i> strain JS54-2	99.19531822	1356/1367
MC067	Firmicutes	Bacilli	<i>Staphylococcus gallinarum</i> strain VIII1	100	1307/1307
MC068	Actinobacteria	Actinobacteria	<i>Micrococcus yunnanensis</i> strain YIM 65004	99.9271137	1371/1372
MC070	Firmicutes	Bacilli	<i>Staphylococcus capitis</i> strain JCM 2420	99.85611511	1388/1390
MC072	Proteobacteria	$\gamma$ -Proteobacteria	<i>Photobacterium rosenbergii</i> strain CC1	99.57050823	1391/1397
MC073	Proteobacteria	$\alpha$ -Proteobacteria	<i>Paracoccus zeaxanthinifaciens</i> strain R-1506	99.78479197	1391/1394
MC074	Firmicutes	Bacilli	<i>Bacillus cibi</i> strain JG-30	99.92790195	1386/1387
MC075	Proteobacteria	$\gamma$ -Proteobacteria	<i>Pseudoalteromonas shioyasakiensis</i> strain SE3	99.56521739	1374/1380
MC076	Proteobacteria	$\alpha$ -Proteobacteria	<i>Yangia pacifica</i> strain DX5-10	98.70722433	1298/1315
MC077	Proteobacteria	$\alpha$ -Proteobacteria	<i>Pseudovibrio</i> sp. FO-BEG1 strain FO-BEG1	99.92581602	1347/1348
MC078	Proteobacteria	$\gamma$ -Proteobacteria	<i>Pseudoalteromonas shioyasakiensis</i> strain SE3	99.42028986	1372/1380
MC081	Actinobacteria	Actinobacteria	<i>Streptomyces globisporus</i> strain KCTC 9026	100	1312/1312
MC082	Firmicutes	Bacilli	<i>Bacillus cereus</i> ATCC 14579	100	1403/1403
MC085	Bacteroidetes	Flavobacteria	<i>Aquimarina salinaria</i> strain antisso-27	98.31994156	1346/1369
MC086	Proteobacteria	$\alpha$ -Proteobacteria	<i>Loktanella soesokkakensis</i> strain DSSK1-5	99.8470948	1306/1308
MC090	Proteobacteria	$\gamma$ -Proteobacteria	<i>Photobacterium ganghwense</i> strain FR1311	99.64739069	1413/1418
MC091	Proteobacteria	$\alpha$ -Proteobacteria	<i>Loktanella soesokkakensis</i> strain DSSK1-5	99.92779783	1384/1385
MC093	Firmicutes	Bacilli	<i>Bacillus infantis</i>	99.71771348	1413/1417
MC094	Proteobacteria	$\gamma$ -Proteobacteria	<i>Shewanella haliotis</i> strain DW01	99.85663082	1393/1395
MC097	Firmicutes	Bacilli	<i>Bacillus aquimaris</i> strain TF-12	98.9154013	1368/1383
MC099	Firmicutes	Bacilli	<i>Staphylococcus arlettae</i> strain ATCC 43957	99.85326486	1361/1363
MC100	Proteobacteria	$\gamma$ -Proteobacteria	<i>Vibrio alginolyticus</i> strain NBRC 15630	99.85559567	1383/1385
MC101	Actinobacteria	Actinobacteria	<i>Nocardiopsis prasina</i> strain DSM 43845	99.77186312	1312/1315
MC102	Proteobacteria	$\gamma$ -Proteobacteria	<i>Vibrio alginolyticus</i> strain NBRC 15630	99.92857143	1399/1400
MC103	Actinobacteria	Actinobacteria	<i>Jiangella muralis</i> strain 15-Je-017	98.34462002	1307/1329

MC104	Firmicutes	Bacilli	Bacillus endophyticus strain 2DT	99.55156951	1332/1338
MC106	Actinobacteria	Actinobacteria	Streptomyces coelicoflavus strain NBRC 15399	100	1378/1378
MC107	Firmicutes	Bacilli	Bacillus infantis	99.85724483	1399/1401
MC109	Firmicutes	Bacilli	Bacillus cereus ATCC 14579	99.85905567	1417/1419
MC111	Proteobacteria	$\gamma$ -Proteobacteria	Alteromonas macleodii str. 'Balearic Sea AD45'	99.92679356	1365/1366
MC112	Firmicutes	Bacilli	Bacillus oceanisediminis strain H2	99.63924964	1381/1386
MC115	Firmicutes	Bacilli	Fictibacillus barbaricus strain V2-BIII-A2	99.3598862	1397/1406
MC116	Proteobacteria	$\alpha$ -Proteobacteria	Paracoccus zeaxanthinifaciens strain R-1506	99.85590778	1386/1388
MC117	Proteobacteria	$\gamma$ -Proteobacteria	Pseudovibrio sp. FO-BEG1 strain FO-BEG1	100	1342/1342
MC119	Actinobacteria	Actinobacteria	Kocuria palustris strain TAGA27	100	1370/1370
MC120	Actinobacteria	Actinobacteria	Agromyces indicus strain NIO-1018	99.77810651	1349/1352
MC121	Actinobacteria	Actinobacteria	Micrococcus sp. MOLA 4	99.93127148	1454/1455
MC122	Proteobacteria	$\gamma$ -Proteobacteria	Pseudoalteromonas shioyasakiensis strain SE3	99.70695971	1361/1365
MC125	Firmicutes	Bacilli	Bacillus subtilis subsp. spizizenii strain ATCC 6633	100	1400/1400
MC127	Firmicutes	Bacilli	Bacillus aerius strain 24K	100	1400/1400
MC129	Actinobacteria	Actinobacteria	Rhodococcus equi strain DSM 20307	100	1360/1360
MC130	Actinobacteria	Actinobacteria	Kocuria rosea strain DSM 20447	99.78070175	1365/1368

**Table S2.**  $^1\text{H}$  and  $^{13}\text{C}$  NMR (250 and 63 MHz, respectively;  $\text{CDCl}_3$ ) data of **1-6**

Position	<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>		<b>5</b>		<b>6</b>	
	$\delta_{\text{C}}$	$\delta_{\text{H}}$ (m, <i>J</i> in Hz)	$\delta_{\text{C}}$	$\delta_{\text{H}}$ (m, <i>J</i> in Hz)	$\delta_{\text{C}}$	$\delta_{\text{H}}$ (m, <i>J</i> in Hz)	$\delta_{\text{C}}$	$\delta_{\text{H}}$ (m, <i>J</i> in Hz)	$\delta_{\text{C}}$	$\delta_{\text{H}}$ (m, <i>J</i> in Hz)	$\delta_{\text{C}}$	$\delta_{\text{H}}$ (m, <i>J</i> in Hz)
2	154.9		160.5		158.6		159.1		159.6		161.4	
3	105.0	8.13 (s)	102.8	8.01 (s)	105.8	8.19 (s)	99.9	8.09 (s)	104.5	8.06 (s)	106.7	8.31 (s)
4	168.4		167.3		167.2		160.6		166.0		164.8	
4-OCH <sub>3</sub>	56.9	4.16 (s)	56.5	4.12 (s)	56.8	4.14 (s)	56.4	4.19 (s)	56.7	4.11 (s)	57.2	4.17 (s)
5	121.1		117.7		127.4		136.3		127.1		131.9	
5-SCH <sub>3</sub>	18.5	2.42 (s)	17.6	2.36 (s)	18.1	2.54 (s)						
5-SOCH <sub>3</sub>									39.0	3.04 (s)	40.1	3.11 (s)
6	152.7		155.0		137.4		154.3		151.1		132.9	
7	140.4	8.70 (d, 0.5)	62.6	4.93 (s)	116.6		156.4	9.12 (s)	147.2	8.76 (s)	114.7	
2'	153.2		155.6		153.9		155.7		154.4		153.0	
3'	121.2	8.12 (ddd, 8.0, 1.0, 1.0)	121.3	8.44 (ddd, 8.0, 1.0, 1.0)	121.9	8.47 (ddd, 7.6, 4.8, 1.1)	121.7	8.55 (ddd, 8.0, 1.0, 1.0)	122.3	8.47 (d, 7.9)	122.4	8.53 (ddd, 7.9, 1.0, 0.9)
4'	137.7	7.87 (ddd, 8.0, 7.6, 1.7)	137.2	7.84 (ddd, 8.0, 7.6, 1.8)	137.4	7.85 (ddd, 7.9, 7.6, 1.8)	137.3	7.87 (ddd, 8.0, 7.6, 1.8)	137.5	7.84 (ddd, 7.9, 7.6, 1.4)	137.6	7.89 (ddd, 7.9, 7.6, 1.8)
5'	125.1	7.40 (ddd, 7.6, 4.8, 1.0)	124.4	7.34 (ddd, 7.6, 4.8, 1.0)	125.0	7.38 (ddd, 7.9, 1.1, 0.9)	124.5	7.38 (ddd, 7.6, 4.8, 1.0)	125.0	7.35 (dd, 7.6, 4.8)	125.7	7.43 (ddd, 7.6, 4.8, 1.0)
6'	149.6	8.71 (ddd, 4.8, 1.7, 1.0)	149.3	8.68 (ddd, 4.8, 1.8, 1.0)	149.2	8.66 (ddd, 4.8, 1.8, 0.9)	149.2	8.70 (ddd, 4.8, 1.8, 1.0)	149.1	8.65 (d, 4.8)	149.4	8.69 (ddd, 4.8, 1.8, 0.9)
OH				4.78 (brs)						11.2 (brs)		

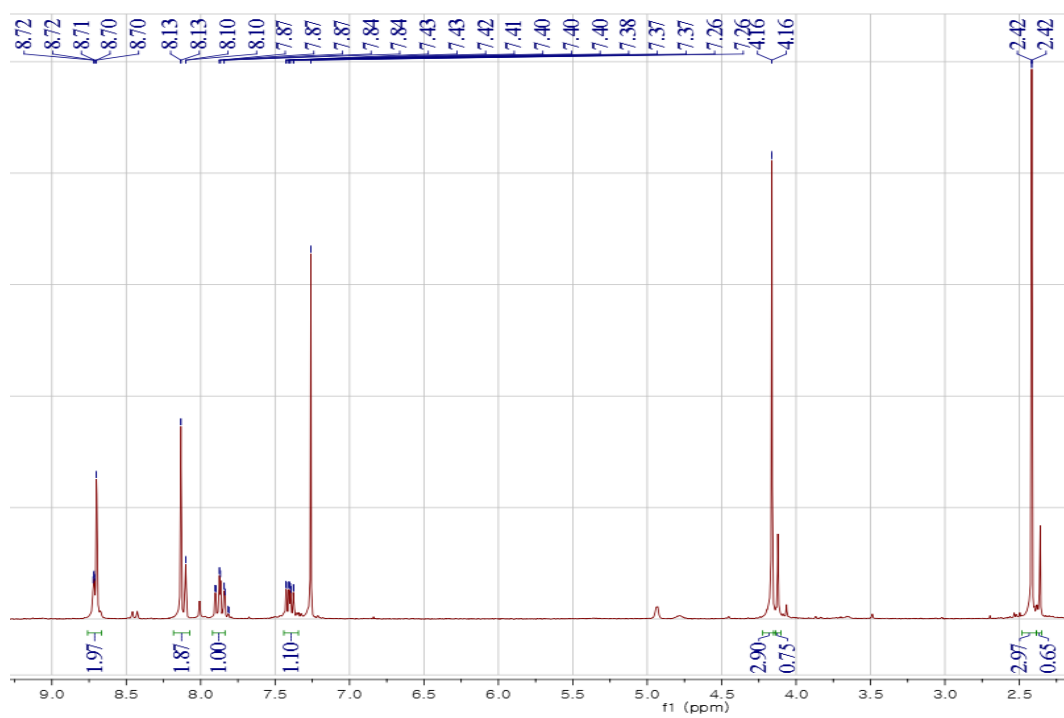


**Figure S1.** Antibiofilm activity screening of the extracts of 79 bacterial culture broth

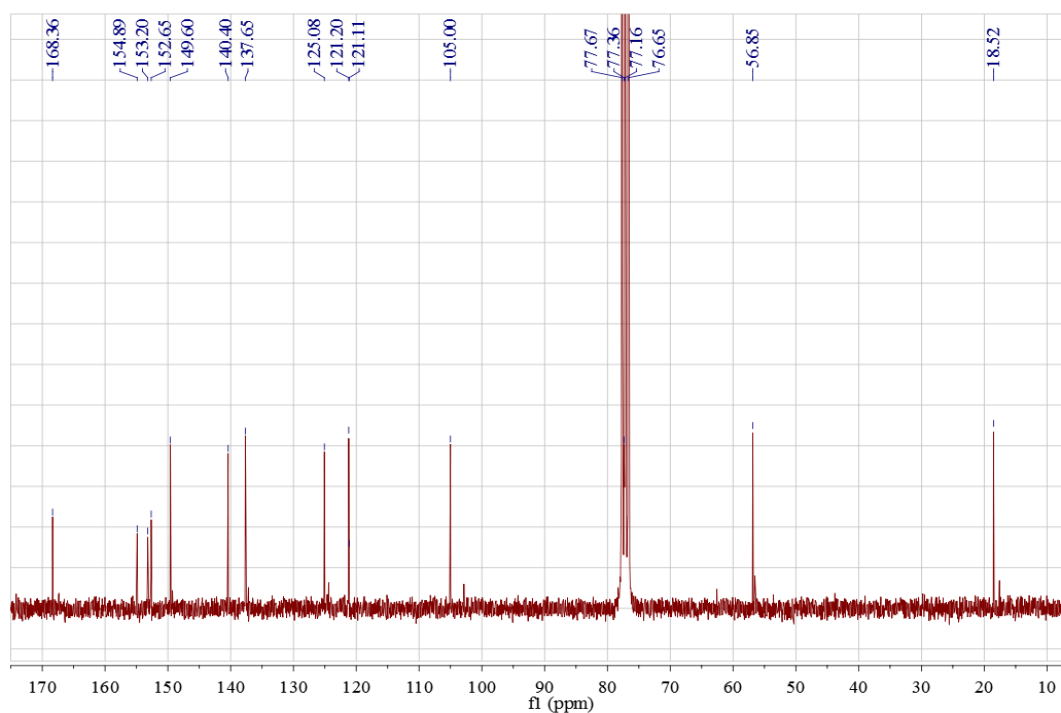


**Figure S2.** Plate image of *Streptomyces* sp. MC025

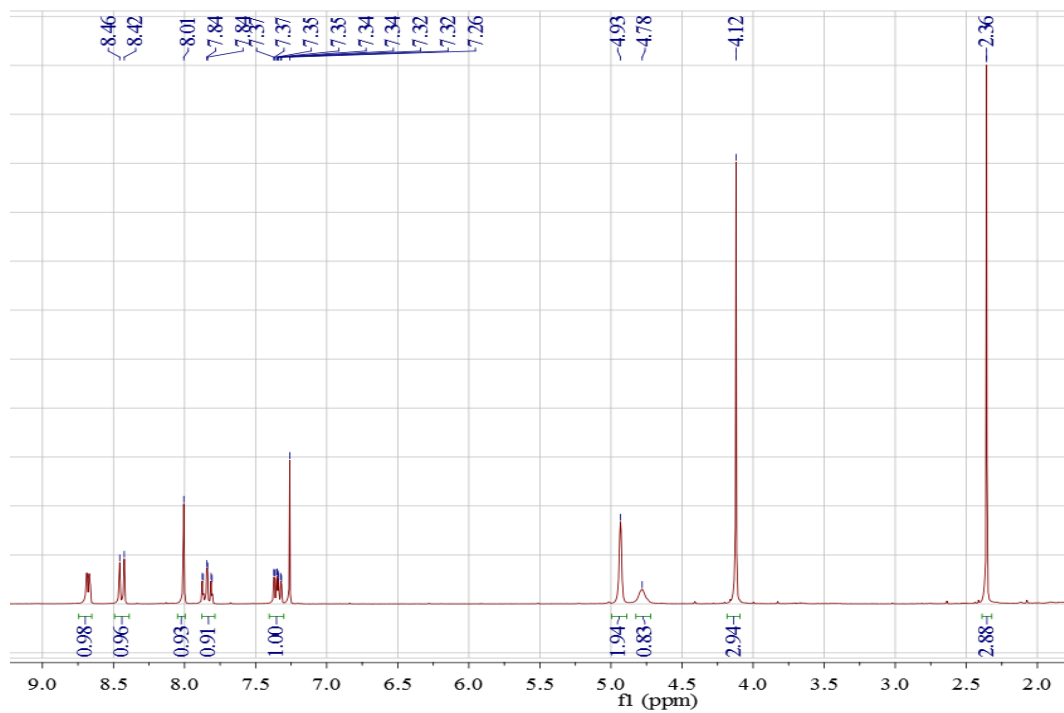




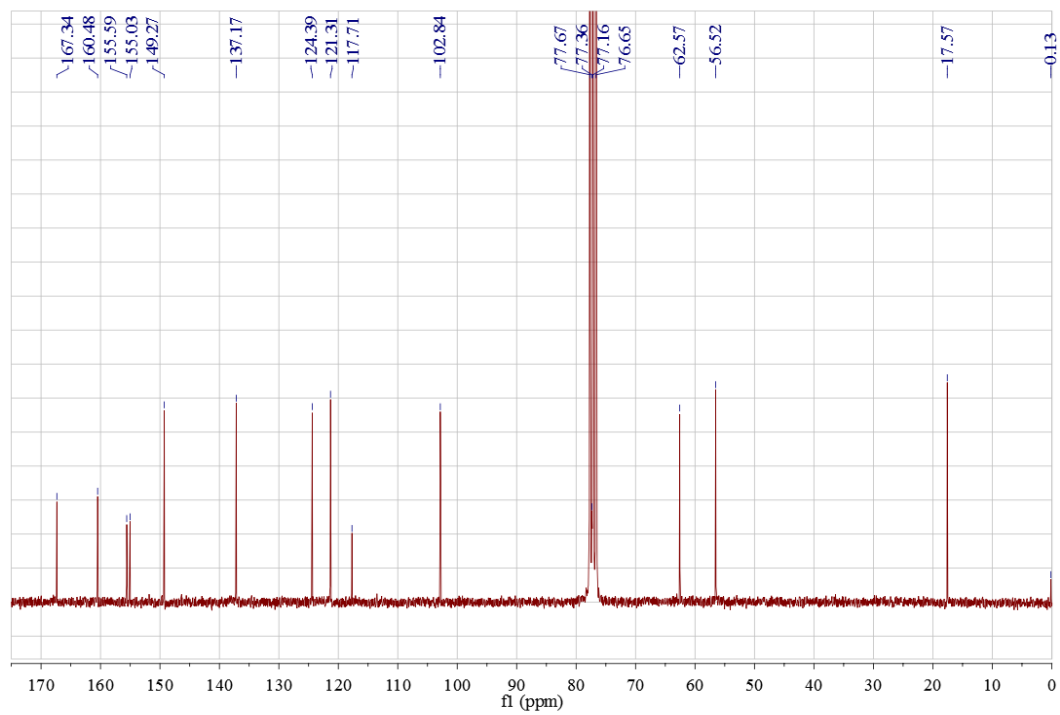
**Figure S3.**  $^1\text{H}$  NMR spectrum of compound 1 ( $\text{CDCl}_3$ , 250 MHz)



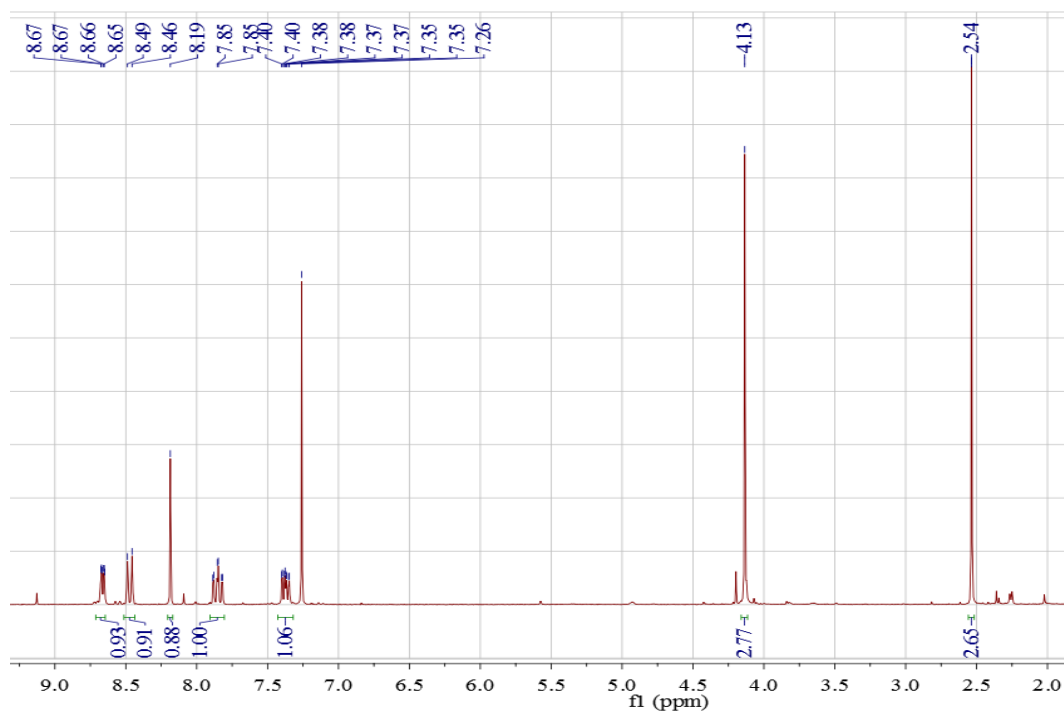
**Figure S4.**  $^{13}\text{C}$  NMR spectrum of compound **1** ( $\text{CDCl}_3$ , 63 MHz)



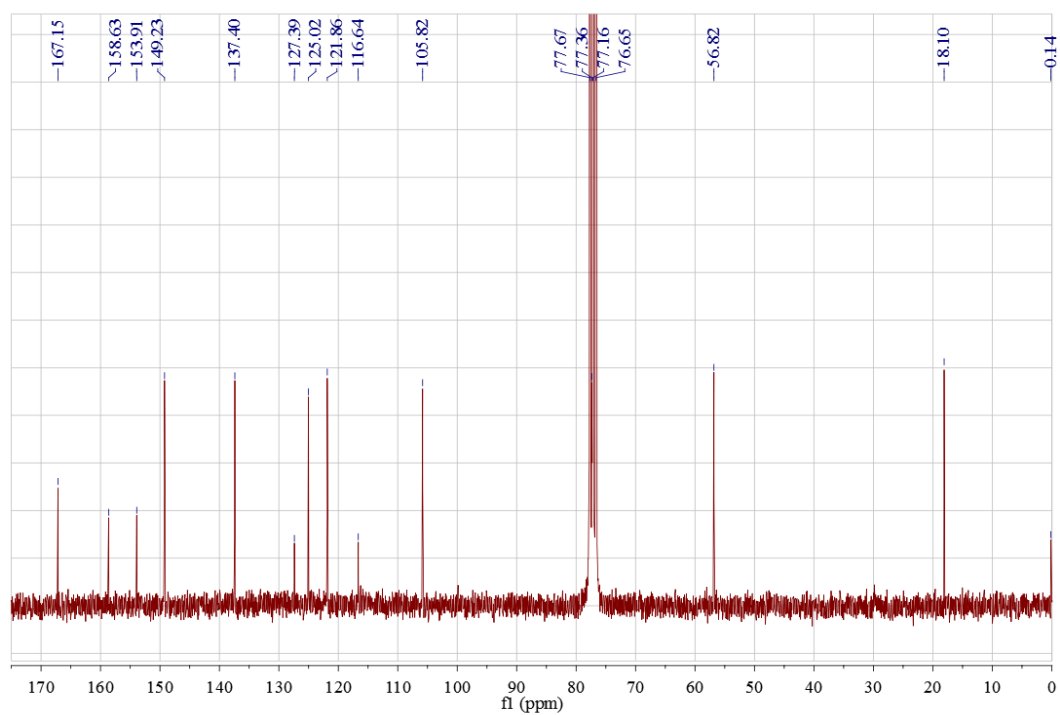
**Figure S5.**  $^1\text{H}$  NMR spectrum of compound **2** ( $\text{CDCl}_3$ , 250 MHz)



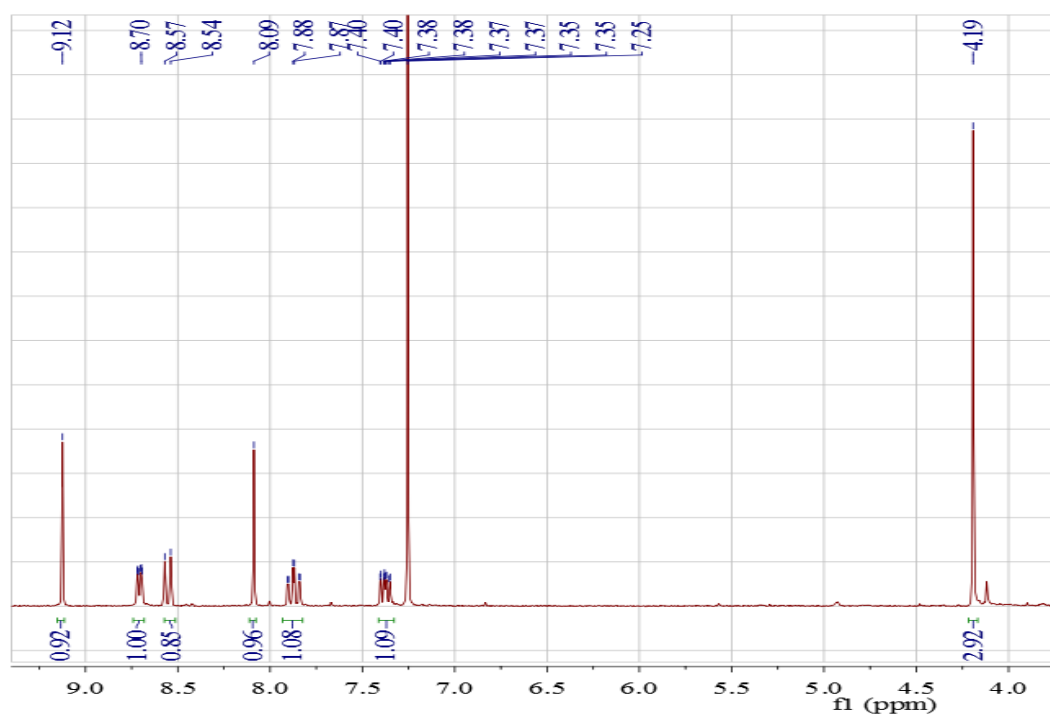
**Figure S6.**  $^{13}\text{C}$  NMR spectrum of compound **2** ( $\text{CDCl}_3$ , 63 MHz)



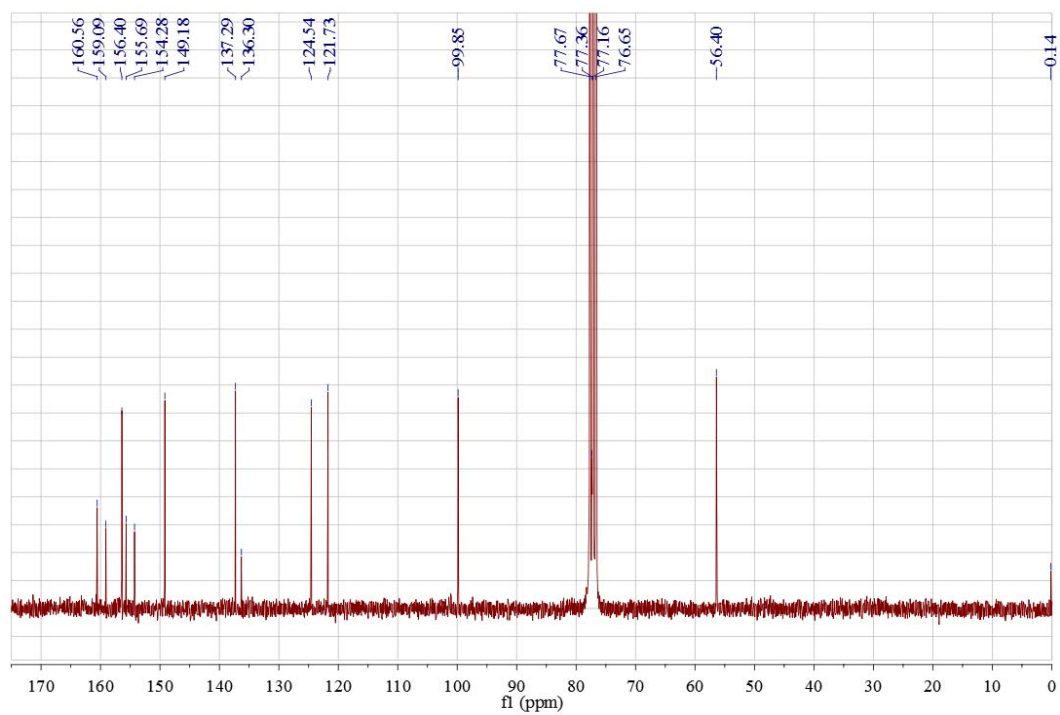
**Figure S7.**  $^1\text{H}$  NMR spectrum of compound **3** ( $\text{CDCl}_3$ , 250 MHz)



**Figure S8.**  $^{13}\text{C}$  NMR spectrum of compound **3** ( $\text{CDCl}_3$ , 63 MHz)

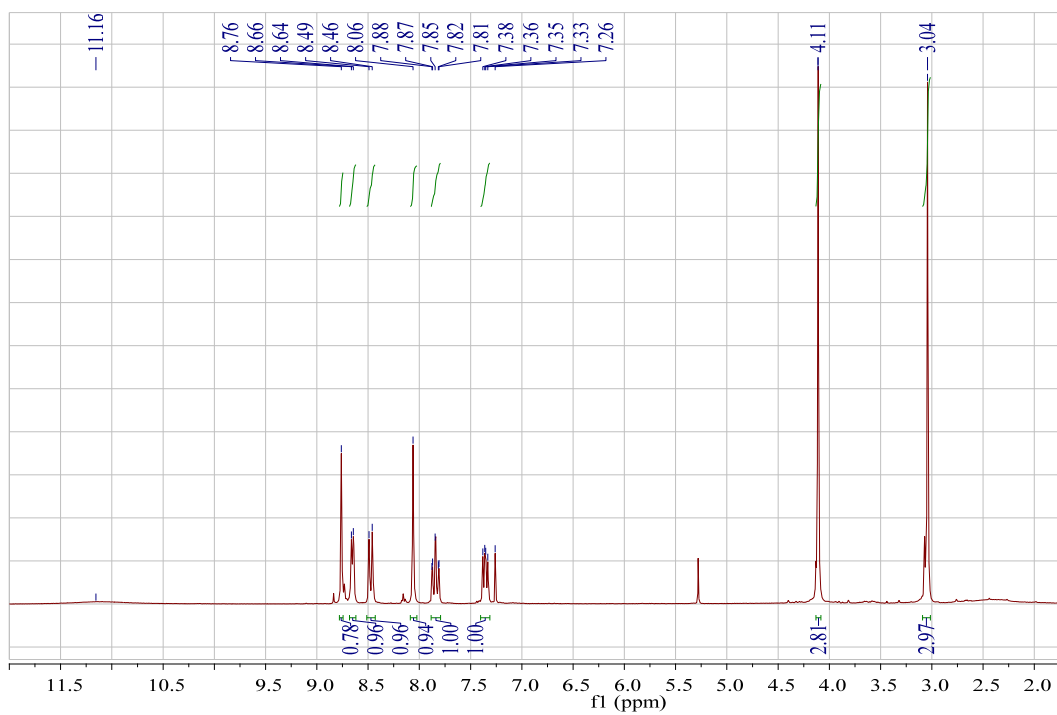


**Figure S9.**  $^1\text{H}$  NMR spectrum of compound 4 ( $\text{CDCl}_3$ , 250 MHz)

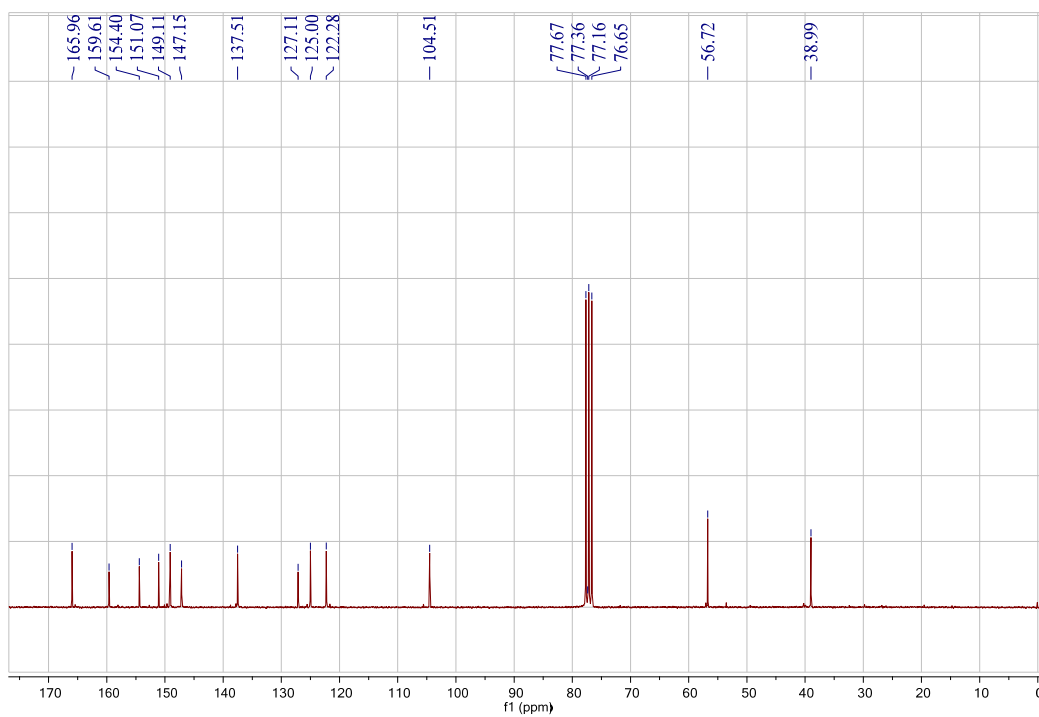


**Figure S10.**  $^{13}\text{C}$  NMR spectrum of compound **4** ( $\text{CDCl}_3$ , 63 MHz)

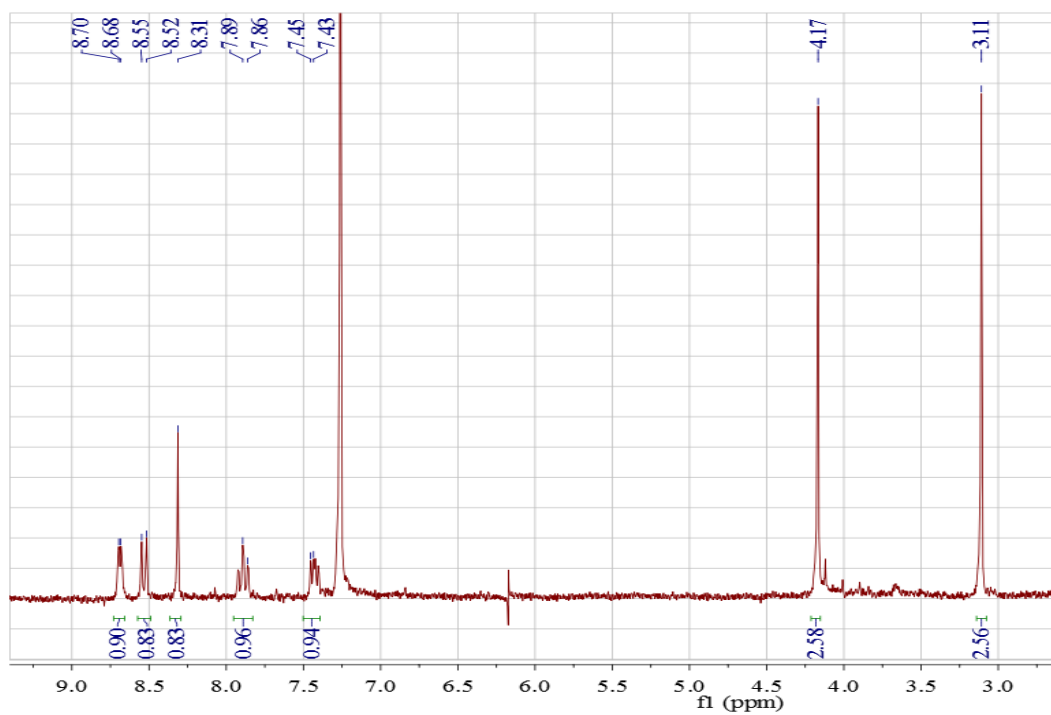




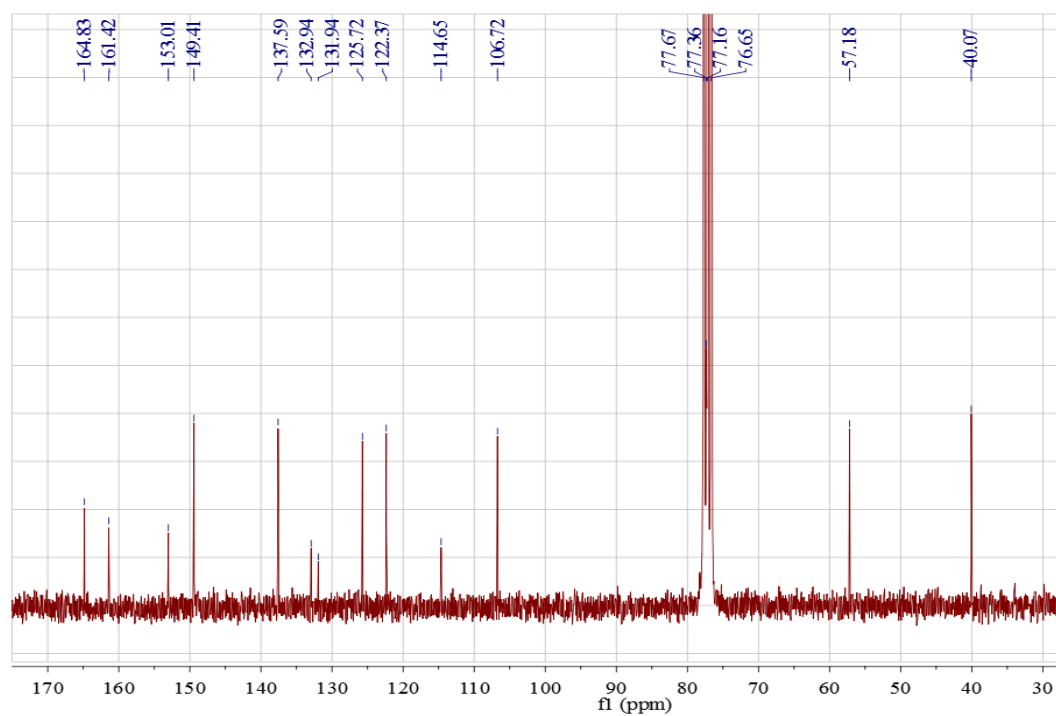
**Figure S11.**  $^1\text{H}$  NMR spectrum of compound **5** ( $\text{CDCl}_3$ , 250 MHz)



**Figure S12.**  $^{13}\text{C}$  NMR spectrum of compound 5 ( $\text{CDCl}_3$ , 63 MHz)



**Figure S13.**  $^1\text{H}$  NMR spectrum of compound **6** ( $\text{CDCl}_3$ , 250 MHz)



**Figure S14.**  $^{13}\text{C}$  NMR spectrum of compound **6** ( $\text{CDCl}_3$ , 63 MHz)