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SUPPLEMENTARY MATERIAL TO

Synthesis and assessment of the cytotoxic effect of some of 1,4-dihydropyridine derivatives which contain azole moiety

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Diethyl 2,6-bis(bromomethyl)-4-(3-itrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate ***(8)***

Yield 3830 mg (72 %). Yellow solid; m.p.: 252-254 °C. IR (KBr): 3297m, 3111w, 2979w, 1693s, 1641m, 1514s, 1437w, 1352s, 1292s, 1220s, 1139s, 1095s, 760w, 711w, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, δ): 8.16 (*s*, 1H, ArH), 8.07 (*d*, 1H, *J* = 7.8, ArH), 7.64 (*d*, 1H, *J* = 7.5, ArH), 7.44 (*t*, 1H, *J* = 8.1, ArH), 6.63 (*s*, 1H, NH), 5.15 (*s*, 1H, CH), 4.88 (*d*, 2H, *J* = 11.71, CH_2Br), 4.69 (*d*, 2H, *J* = 11.4, CH_2Br), 4.10-4.25 (*m*, 4H, 2×OCH_2), 1.27 (*t*, 6H, *J* = 7.2, 2CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, *δ*): 165.40, 165.15, 149.03, 148.35, 148.86, 147.60, 145.31, 134.23, 129.88, 129.78, 122.09, 121.98, 121.74, 121.53, 102.36, 102.34, 60.17, 60.09, 27.18, 26.66, 14.07, 13.92. (+)ESI-HRMS (*m/z*): calculated for $[C_{19}H_{20}Br_2N_2O_6 + H]^+$ 529.97, observed 529.1. Combustion analysis of $C_{19}H_{20}Br_2N_2O_6$: Calculated. C 42.88, H 3.79, N 5.26; found C 42.52, H 3.81, N 5.11.

Diethyl 4-(3-nitrophenyl)-2,6-bis[((5-phenyl-1,3,4-oxadiazol-2-yl)thio)methyl]-1,4-dihydro-pyridine-3,5-di carboxylate ***(9a)***

Yield 6030 mg (83 %).Yellow solid; m.p.: 120-122 °C. IR (KBr): 3223w, 3098w, 2981w, 1690s, 1521s, 1470s, 1344m, 1288m, 1205s, 1091s, 1044m, 783w, 696m, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, *δ*): 9.65 (*s*, 1H, NH), 7.99 (*s*, 1H, ArH), 7.92 (*d*, 1H, *J* = 9, ArH), 7.77 (*d*, 4H, *J* = 8.1, ArH), 7.40-7.65 (*m*, 8H, ArH), 5.03 (*s*, 1H, CH), 4.68 (*d*, 2H, *J* = 13.5, CH_2S), 4.40 (*d*, 2H, *J* = 13.5, CH_2S), 3.92 (*q*, 4H, *J* =7.2, 2×OCH_2), 1.06 (*t*, 6H, *J* = 6.9, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.80, 165.60, 162.42, 148.61, 147.48, 145.27, 134.12, 132.08, 129.71, 129.26, 126.30, 122.90, 123.04, 121.60, 102.92, 60.11, 32.17, 13.75. (+)ESI-HRMS (*m/z*): calculated for $[C_{35}H_{30}N_6O_8S_2 + H]^+$

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726.1567, observed 726.4. Combustion analysis for $C_{35}H_{30}N_6O_8S_2$: Calculated. C 57.84, H 4.16, N 11.56, S 8.82; found C 57.79, H 4.24, N 11.68, S 8.72.

Diethyl 4-(3-nitrophenyl)-2,6-bis[((5-(3-nitrophenyl)-1,3,4-oxadiazol-2-yl)thio)methyl]-1,4-dihydro pyridine-3,5-dicarboxylate ***(9b)***

Yield 6450 mg (79 %). Yellow solid; m.p.: 114-116 °C. IR (KBr): 3286w, 3244w, 3104w, 2979w, 1690s, 1630m, 1486s, 1401m, 1351s, 1282s, 1218s, 1157s, 1101s, 1055s, 917w, 744m, 712m, 625m, 560m, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, δ): 9.63 (*s*, 1H, NH), 8.49 (*m*, 2H, ArH), 8.37 (*m*, 2H, ArH), 8.19 (*m*, 2H, ArH), 7.75-7.95 (*m*, 4H, ArH), 7.35-7.60 (*m*, 2H, ArH), 5.02 (*s*, 1H, CH), 4.65 (*d*, 2H, J = 13.8, CH_2S), 4.44 (*d*, 2H, J = 12.9, CH_2S), 3.95 (*q*, 4H, J = 6.9, 2×OCH_2), 1.07 (*t*, 6H, J=7.2, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.53, 164.07, 163.54, 148.47, 148.05, 147.46, 145.01, 134.03, 132.24, 131.19, 129.59, 126.35, 124.32, 121.93, 121.49, 120.76, 103.01, 60.13, 32.11, 13.76. (+)ESI-HRMS (*m/z*): calculated for $[C_{35}H_{28}N_8O_{12}S_2 + H]^+$ 816.1268, observed 816.2. Combustion analysis for $C_{35}H_{28}N_8O_{12}S_2$: Calculated. C 51.47, H 3.46, N 13.72, S 7.85; found C 51.13, H 3.58, N 13.91, S 7.71.

Diethyl 2,6-bis[((5-(2-hydroxyphenyl)-1,3,4-oxadiazol-2-yl)thio)methyl]-4-(3-nitrophenyl)--1,4-dihydropyridine-3,5-dicarboxylate ***(9c)***

Yield 5690 mg (75 %). Yellow solid; m.p.: 150-152 °C. IR (KBr): 3288w, 3237w, 3107w, 2980w, 1690s, 1626m, 1590w, 1527m, 1484s, 1407w, 1349m, 1286s, 1248m, 1216m, 1161m, 1100s, 1053m, 963w, 864w, 830w, 749m, 708m, 673w, 631w, 541w, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, δ): 10.14 (*bs*, 2H, 2×OH), 9.64 (*s*, 1H, NH), 8.00 (*s*, 1H, ArH), 7.93 (*d*, 1H, J = 7.8, ArH), 7.63 (*d*, 1H, J = 7.8, ArH), 7.30-7.60 (*m*, 5H, ArH), 7.05 (*d*, 2H, J = 8.4, ArH), 6.89 (*t*, 2H, J = 7.2, ArH), 5.02 (*s*, 1H, CH), 4.64 (*d*, 2H, J = 12.61, CH_2S), 4.42 (*d*, 2H, J = 13.21, CH_2S), 3.95 (*q*, 4H, J =7.2, 2×OCH_2), 1.08 (*t*, 6H, J = 6.9, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.53, 165.14, 161.85, 156.20, 148.56, 147.39, 145.03, 134.14, 133.46, 129.67, 128.46, 122.02, 122.52, 119.49, 117.02, 109.16, 102.88, 60.05, 32.24, 13.75. (+)ESI-HRMS (*m/z*): calculated for $[C_{35}H_{30}N_6O_{10}S_2 + H]^+$ 758.15, observed 758.45. Combustion analysis for $C_{35}H_{30}N_6O_{10}S_2$: Calculated. C 55.40, H 3.99, N 11.08, S 8.45; found C 55.13, H 4.08, N 11.23, S 8.34.

Diethyl 2,6-bis[((5-(2-chlorophenyl)-1,3,4-oxadiazol-2-yl)thio)methyl]-4-(3-nitrophenyl)-1,4--dihydropyridine-3,5-dicarboxylate ***(9d)***

Yield 6440 mg (81 %). Yellow solid; m.p.: 92-94 °C. IR (KBr): 3276w, 3206w, 3067w, 2976w, 1687s, 1505s, 1439m, 1346m, 1283m, 1218m, 1162m, 1093s, 1042m, 759m, 695w, 602w, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, δ): 9.63 (*s*, 1H, NH), 7.90-8.00 (*m*, 2H, ArH), 7.78 (*t*, 2H, J = 7.8, ArH), 7.55-7.70 (*m*, 5H, ArH), 7.40-7.50 (*m*, 3H, ArH), 5.01 (*s*, 1H, CH), 4.62 (*d*, 2H, J = 13.5, CH_2S), 4.48 (*d*, 2H, J = 13.5, CH_2S), 3.95 (*q*, 4H, J = 6.9, 2×OCH_2), 1.08 (*t*, 6H, J = 7.2, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.52, 163.76, 163.10,

148.42, 147.40, 144.88, 134.07, 133.22, 131.73, 131.09, 130.91, 129.62, 127.65, 122.02, 122.52, 121.94, 121.55, 102.98, 60.06, 32.16, 13.75. HRMS-FAB (*m/z*): calculated for $[C_{35}H_{28}Cl_2N_6O_8S_2 + H]^+$ 795.6630, observed 795.071. Combustion analysis for $C_{35}H_{28}Cl_2N_6O_8S_2$: Calculated. C 52.83, H 3.55, N 10.56, S 8.06; found C 52.66, H 3.71, N 10.63, S 8.01.

Diethyl 4-(3-nitrophenyl)-2,6-bis[(4,5-diphenyl-4H-1,2,4-triazol-3-ylthio)methyl]-1,4-dihydropyridine-3,5-di carboxylate ***(10a)***

Yield 7450 mg (85 %). Yellow solid; m.p.: 134-136 °C. IR (KBr): 3331w, 3293w, 3120w, 2979w, 1690s, 1629m, 1513s, 1409m, 1353m, 1289s, 1224s, 1161m, 1097s, 1054w, 752m, 601w, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, δ): 9.63 (*s*, 1H, NH), 7.95-8.05 (*m*, 2H, ArH), 7.62 (*d*, 2H, *J* = 7.5, ArH), 7.40-7.55 (*m*, 7H, ArH), 7.25-7.40 (*m*, 13H, ArH), 5.02 (*s*, 1H, CH), 4.44 (*s*, 4H, 2×CH_2S), 3.96 (*q*, 4H, *J* = 6.6, 2×OCH_2), 1.08 (*t*, 6H, *J* = 7.5, 2CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.63, 154.55, 151.35, 148.62, 147.39, 145.34, 134.33, 133.83, 129.96, 129.79, 128.51, 127.83, 127.62, 126.55, 122.09, 121.45, 102.36, 59.88, 32.33, 13.84. (+)ESI-HRMS (*m/z*): calculated for $[C_{47}H_{40}N_8O_6S_2 + H]^+$ 876.2512, observed 876.4. Combustion analysis for $C_{47}H_{40}N_8O_6S_2$: Calculated. C 64.37, H 4.60, N 12.78, S 7.31; found C 64.21, H 4.77, N 12.83, S 7.14.

Diethyl 4-(3-nitrophenyl)-2,6-bis[(5-(3-nitrophenyl)-4-phenyl-4H-1,2,4-triazol-3-ylthio) methyl]-1,4-dihydro pyridine-3,5-dicarboxylate ***(10b)***

Yield 7160 mg (74 %). Yellow solid; m.p.: 155-157 °C. IR (KBr): 3076w, 2979w, 1689s, 1642w, 1527s, 1499s, 1349s, 1284m, 1216m, 1165m, 1094s, 1040m, 905w, 807w, 772w, 742w, 698m, 606w, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, δ): 9.56 (*s*, 1H, NH), 8.16 (*d*, 2H, *J* = 8.1, ArH), 7.99 (*d*, 4H, *J* = 8.1, ArH), 7.04-7.75 (*m*, 16H, ArH), 4.99 (*s*, 1H, CH), 4.44 (*s*, 4H, 2×CH_2S), 3.97 (*q*, 4H, *J* = 6.9, 2×OCH_2), 1.09 (*t*, 6H, *J* = 6.9, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.76, 152.74, 152.43, 148.71, 147.50, 145.45, 134.46, 133.73, 133.39, 130.51, 130.39, 130.19, 129.77, 127.94, 127.63, 124.39, 124.39, 122.19, 122.11, 121.57, 102.40, 60.01, 32.32, 13.92. HRMS-FAB (*m/z*): calculated for $[C_{47}H_{38}N_{10}O_{10}S_2 + H]^+$ 967.0010, observed 967.209. Combustion analysis for $C_{47}H_{38}N_{10}O_{10}S_2$: Calculated. C 58.38, H 3.96, N 14.48, S 6.63; found C 58.11, H 4.03, N 14.53, S, 6.49.

Diethyl 2,6-bis[(5-(2-hydroxyphenyl)-4-phenyl-4H-1,2,4-triazol-3-ylthio)methyl]-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate ***(10c)***

Yield 7090 mg (78 %). Yellow solid; m.p.: 185-187 °C. IR (KBr): 3272w, 3202w, 3065m, 2977m, 1686s, 1505s, 1345m, 1284m, 1218m, 1164m, 1094s, 1039m, 915w, 767m, 696m, 602w, cm^{-1}. ^1H NMR (300 MHz, DMSO-d_6, δ): 10.21 (*s*, 2H, 2×OH), 7.95-8.05 (*m*, 2H, ArH), 9.63 (*s*, 1H, NH), 7.59 (*d*, 1H, *J* = 7.2, ArH), 7.51 (*t*, 1H, *J* = 7.5, ArH), 7.35-7.45 (*m*, 6H, ArH), 7.02-7.35 (*m*, 6H, ArH), 7.13 (*d*, 2H, *J* = 7.2, ArH), 6.70-6.85 (*m*, 4H, ArH), 4.98 (*s*, 1H, CH), 4.44 (*s*, 4H, 2×CH_2S), 3.98 (*q*, 4H, *J* = 6.9, 2×OCH_2), 1.10 (*t*, 6H, *J* = 6.9, 2×CH_3).

^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.60, 155.90, 153.67, 150.50, 148.61, 147.41, 145.17, 134.31, 133.87, 131.60, 130.16, 129.74, 129.45, 129.30, 127.85, 126.89, 122.08, 121.47, 118.74, 115.97, 113.31, 102.48, 59.91, 32.24, 13.85. (+)ESI-HRMS (*m/z*): calculated for $[C_{47}H_{40}N_8O_8S_2 + H]^+$ 908.2411, observed 908.6. Combustion analysis for $C_{47}H_{40}N_8O_8S_2$: Calculated. C 62.10, H 4.44, N 12.33, S 7.06; found C 61.92, H 4.63, N 12.45, S 6.95.

Diethyl 2,6-bis[(5-(2-chlorophenyl)-4-phenyl-4H-1,2,4-triazol-3-ylthio)methyl]-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate ***(10d)***

Yield 7570 mg (80 %). Yellow solid; m.p.: 140-142 °C. IR (KBr): 3279w, 3204w, 3066w, 2978w, 1689s, 1642w, 1599w, 1525s, 1497s, 1435m, 1385w, 1348m, 1312w, 1283m, 1252m, 1216m, 1164m, 1093s, 1039m, 764m, 734w, 694m, 602w, cm^{-1}. ^{1}H NMR (300 MHz, DMSO-d_6, *δ*): 9.63 (*s*, 1H, NH), 7.95-8.05 (*m*, 2H, ArH), 7.20-7.65 (*m*, 20H, ArH), 5.00 (*s*, 1H, CH), 4.47 (*s*, 4H, 2×CH_2S), 3.99 (*q*, 4H, *J* = 7.2, 2×OCH_2), 1.10 (*t*, 6H, *J* = 7.2, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.64, 153.03, 150.74, 148.62, 147.49, 145.14, 134.34, 133.12, 132.63, 132.25, 129.78, 129.70, 129.49, 129.40, 127.23, 126.92, 126.35, 122.11, 121.56, 102.62, 59.99, 32.35, 13.88. (+)ESI-HRMS (*m/z*): calculated for $[C_{47}H_{38}Cl_2N_8O_6S_2 + H]^+$ 944.1733, observed 944.35. Combustion analysis for $C_{47}H_{38}Cl_2N_8O_6S_2$: Calculated. C 59.68, H 4.05, N 11.85, S 6.78; found C 59.41, H 4.33, N 11.94, S 6.58.

Diethyl 2,6-bis[(4-amino-5-phenyl-4H-1,2,4-triazol-3-ylthio)methyl]-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate ***(11a)***

Yield 5660 mg (75 %). Yellow solid; m.p.: 189-191 °C. IR (KBr): 3351w, 3276w, 3172w, 3071w, 2978w, 2937w, 1691s, 1636m, 1526s, 1499s, 1348m, 1285m, 1260w, 1212m, 1162m, 1092s, 1043m, 770w, 691m, cm^{-1}. ^{1}H NMR (300 MHz, DMSO-d_6, *δ*): 9.68 (*s*, 1H, NH), 7.90-8.10 (*m*, 6H, ArH), 7.40-7.60 (*m*, 8H, ArH), 6.19 (*s*, 4H, 2×NH_2), 5.04 (*s*, 1H, CH), 4.51 (*d*, 2H, *J* = 13.5, CH_2S), 4.36 (*d*, 2H, *J* = 13.2, CH_2S), 4.02 (*q*, 4H, *J* = 6, 2×OCH_2), 1.14 (*t*, 6H, *J* = 6.9, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.82, 154.34, 153.00, 148.79, 147.48, 145.89, 134.44, 129.88, 129.81, 129.31, 128.51, 127.86, 126.72, 126.34, 122.16, 121.55, 102.34, 60.03, 31.27, 13.96. HRMS-FAB (*m/z*): calculated for $[C_{35}H_{34}N_{10}O_6S_2 + H]^+$ 754.8410, observed 755.217. Combustion analysis for $C_{35}H_{34}N_{10}O_6S_2$: Calculated. C 55.69, H 4.54, N 18.58, S 8.50; found C 55.41, H 4.73, N 18.68, S 8.38.

Diethyl 2,6-bis[(4-amino-5-(3-nitrophenyl)-4H-1,2,4-triazol-3-ylthio)methyl]-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate ***(11b)***

Yield 5740 mg (68 %). Yellow solid; m.p.: 202-204 °C. IR (KBr): 3356w, 3272w, 3167m, 3065w, 2975m, 1690s, 1634m, 1506s, 1345m, 1272m, 1210m, 1156m, 1091s, 773m, 689m, 588w, cm^{-1}. ^{1}H NMR (300 MHz, DMSO-d_6, *δ*): 9.65 (*s*, 1H, NH), 8.81 (*s*, 1H, ArH), 8.37 (*d*, 2H, *J* = 9.3, ArH), 8.27 (*d*, 2H, *J* = 8.1, ArH), 7.95-8.05 (*m*, 2H, ArH), 7.65-7.80 (*m*, 3H, ArH), 7.45-7.60 (*m*,

2H, ArH), 6.28 (*s*, 4H, 2×NH_2), 6.28 (*s*, 1H, CH), 4.37 (*d*, 2H, *J* = 13.2, CH_2S), 4.53 (*d*, 2H, *J* = 13.2, CH_2S), 4.03 (*q*, 4H, *J* = 7.2, 2×OCH_2), 1.13 (*t*, 6H, *J* = 7.2, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.71, 153.65, 152.21, 148.70, 147.67, 154.68, 134.31, 133.69, 130.12, 129.67, 128.11, 124.20, 122.18, 121.92, 121.44, 102.34, 59.93, 31.38, 13.88. (+)ESI-HRMS (*m/z*): calculated for $[C_{35}H_{32}N_{12}O_{10}S_2 + H]^+$ 844.1806, observed 844.2. Combustion analysis for $C_{35}H_{32}N_{12}O_{10}S_2$: Calculated. C 49.76, H 3.82, N 19.90, S 7.59; found C 49.61, H 3.93, N 20.11, S 7.42.

Diethyl 2,6-bis[(4-amino-5-(2-hydroxyphenyl)-4H-1,2,4-triazol-3-ylthio)methyl]-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate ***(11c)***

Yield 5510 mg (70 %). Yellow solid; m.p.: 204.5-206.5 °C. IR (KBr): 3194m, 3075s, 2978s, 1690s, 1632m, 1593m, 1494s, 1403m, 1361m, 1285s, 1248s, 1157s, 1091s, 750s, 698s, 612w, cm^{-1}. ^{1}H NMR (300 MHz, DMSO-d_6, *δ*): 11.01 (*s*, 2H, 2×OH), 9.69 (*s*, 1H, NH), 8.00-8.02 (*m*, 1H, ArH), 7.98 (*d*, 1H, *J* = 8.7, ArH), 7.82 (*d*, 2H, *J* = 7.5, ArH), 7.66 (*d*, 1H, *J* = 7.8, ArH), 7.52 (*t*, 1H, *J* = 7.5, ArH), 7.36 (*t*, 2H, *J* = 7.5, ArH), 7.11 (*d*, 2H, *J* = 7.8, ArH), 6.93 (*t*, 2H, *J* = 7.8, ArH), 6.06 (*s*, 4H, 2NH_2), 5.04 (*s*, 1H, CH), 4.54 (*d*, 2H, *J* = 13.8, CH_2S), 4.38 (*d*, 2H, *J* = 13.2, CH_2S), 4.02 (*q*, 4H, *J* = 5.7, 2×OCH_2), 1.13 (*t*, 6H, *J* = 7.2, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.71, 155.68, 153.96, 152.49, 148.74, 145.72, 134.34, 131.59, 129.81, 129.48, 122.09, 121.48, 119.15, 116.38, 112.69, 102.33, 59.95, 30.91, 13.90. HRMS-FAB (*m/z*): calculated for $[C_{35}H_{34}N_{10}O_8S_2 + H]^+$ 786.8390, observed 787.206. Combustion analysis for $C_{35}H_{34}N_{10}O_8S_2$: Calculated. C 53.43, H 4.36, N 17.80, S 8.15; found C 53.09, H 4.52, N 18.20, S 8.03.

Diethyl 2,6-bis[(4-amino-5-(2-chlorophenyl)-4H-1,2,4-triazol-3-ylthio)methyl]-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylate ***(11d).***

Yield 6260 mg (76 %). Yellow solid; m.p.: 174-176 °C. IR (KBr, cm^{-1}): 3330m, 3208w, 3071w, 2977m, 1684s, 1636m, 1523s, 1456m, 1345m, 1287m, 1215m, 1164m, 1098s, 1043m, 757m, cm^{-1}. ^{1}H NMR (300 MHz, DMSO-d_6, *δ*): 9.76 (*s*, 1H, NH), 7.95-8.05 (*m*, 2H, ArH), 7.40-7.70 (*m*, 10H, ArH), 5.93 (*s*, 4H, 2×NH_2), 5.05 (*s*, 1H, CH), 4.57 (*d*, 2H, *J* = 13.5, CH_2S), 4.42 (*d*, 2H, *J* = 13.2, CH_2S), 4.04 (*q*, 4H, *J* = 4.5, 2×OCH_2), 1.15 (*t*, 6H, *J* = 6.6, 2×CH_3). ^{13}C NMR (100 MHz, DMSO-d_6, δ): 165.67, 152.11, 148.70, 147.40, 145.69, 134.37, 133.35, 132.41, 131.77, 131.10, 130.93, 129.85, 129.64, 127.65, 127.01, 126.11, 122.09, 121.48, 102.42, 59.96, 31.11, 13.89. (+)ESI-HRMS (*m/z*): calculated for $[C_{35}H_{32}Cl_2N_{10}O_6S_2 + H]^+$ 822.1325, observed 822.2. Combustion analysis for $C_{35}H_{32}Cl_2N_{10}O_6S_2$: Calculated. C 51.03, H 3.92, N 17.00, S 7.79; found C 50.94, H 3.98, N 17.13, S 7.61.

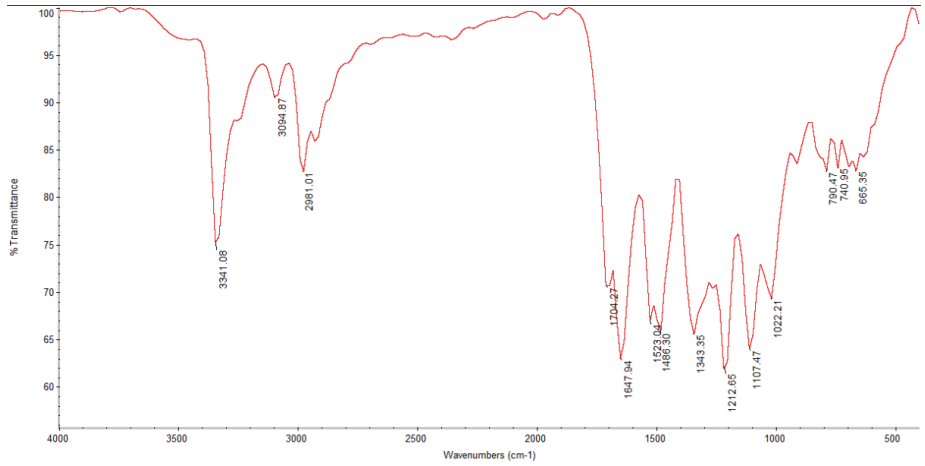

Fig. S-1. FT-IR spectra of compound (**7**)

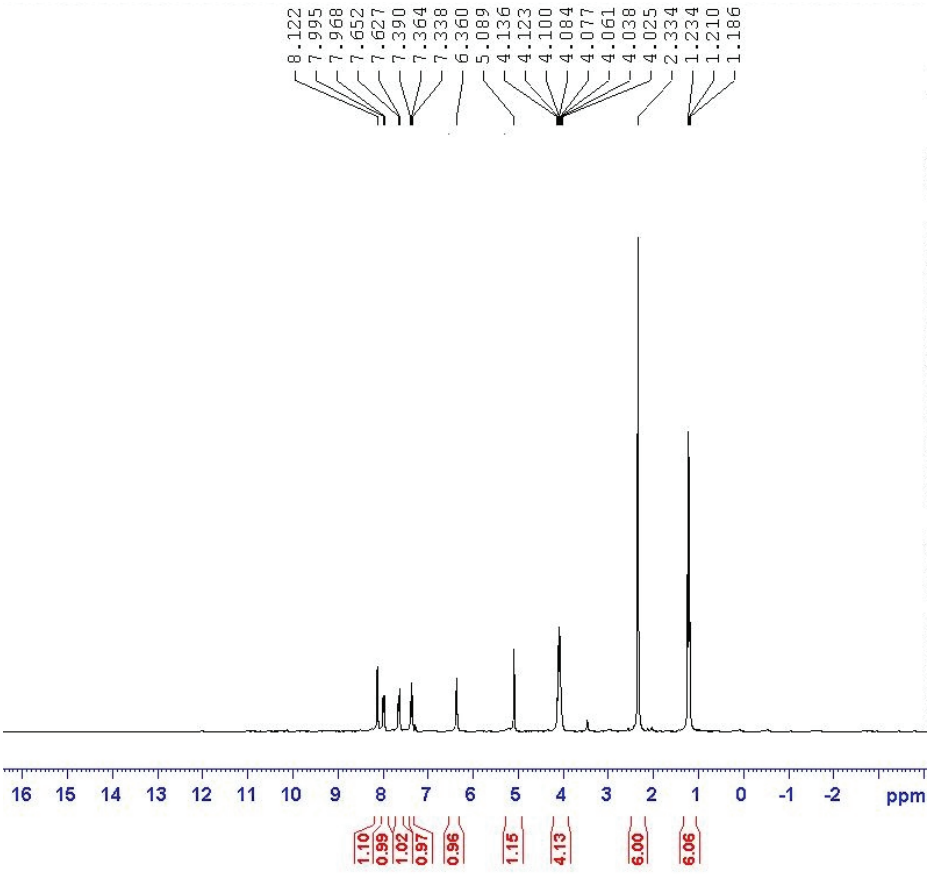

Fig. S-2. ^{1}H-NMR spectra of compound (**7**)

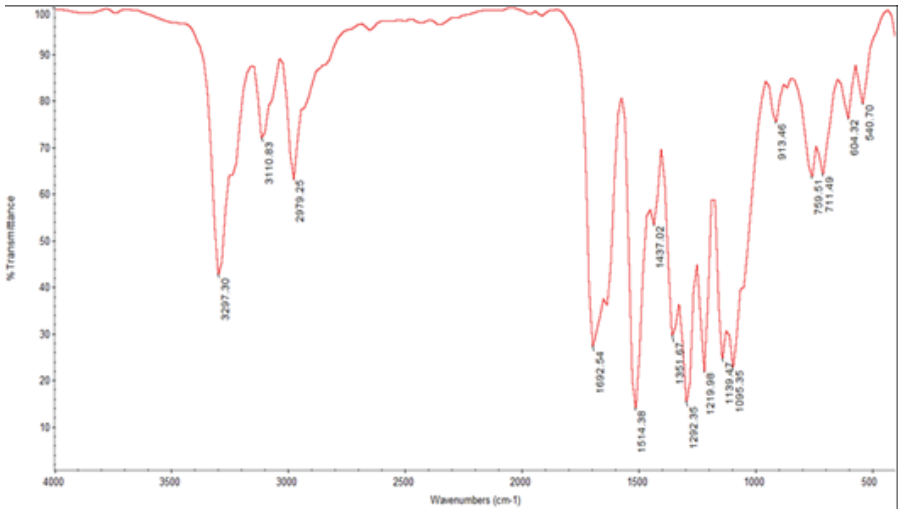

Fig. S-3. FT-IR spectra of compound (**8**)

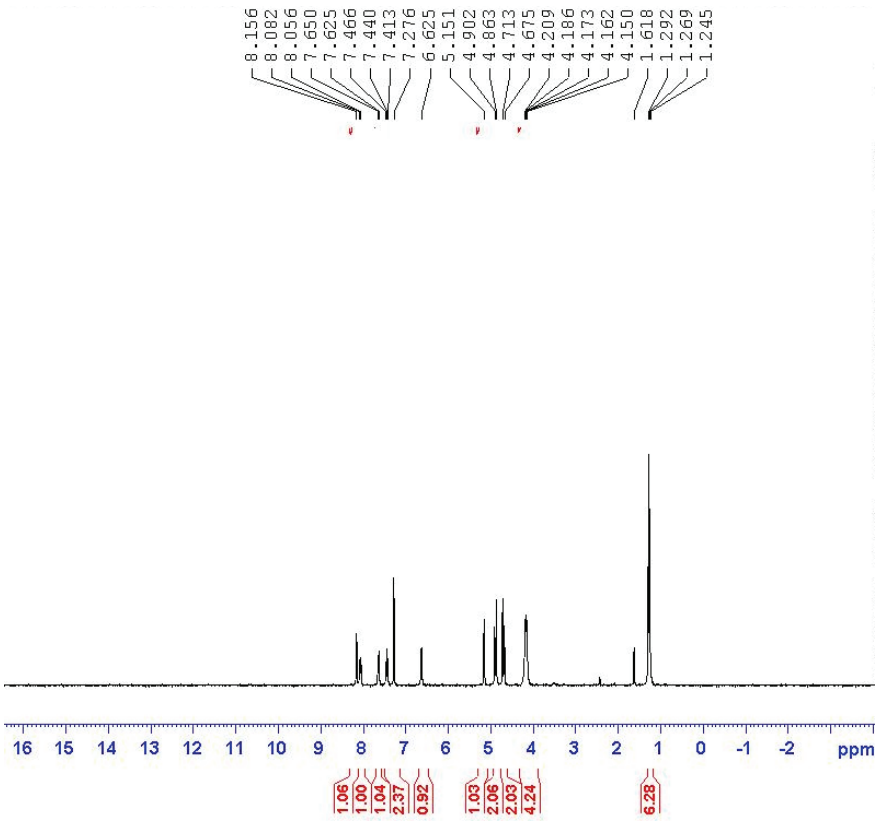

Fig. S-4. ^{1}H-NMR spectra of compound (**8**)

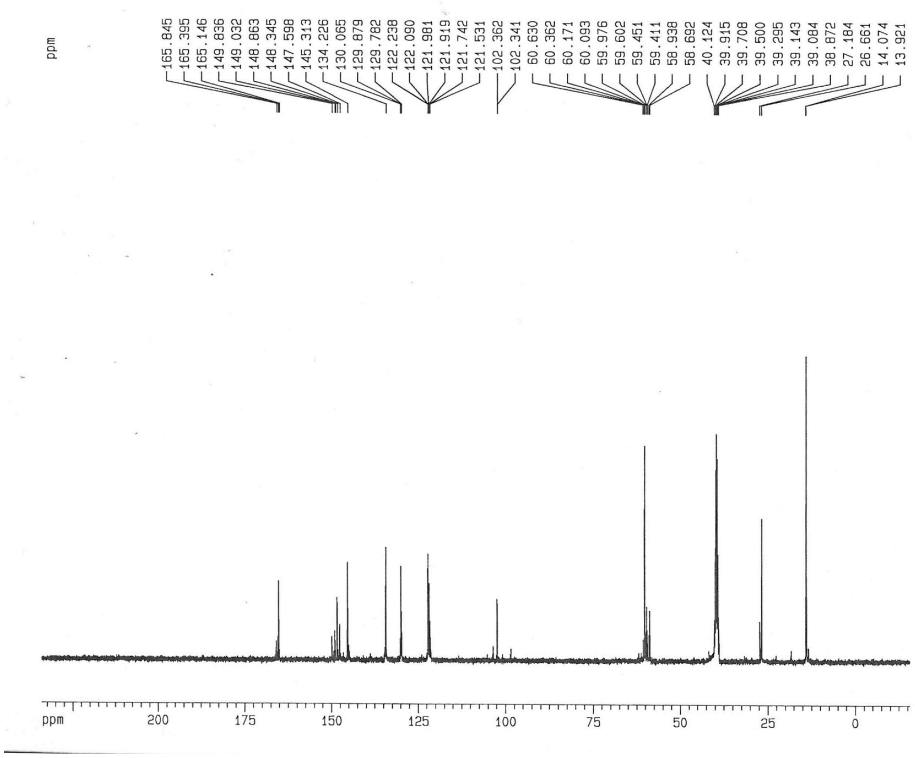

Fig. S-5. ^{13}C-NMR spectra of compound (**8**)

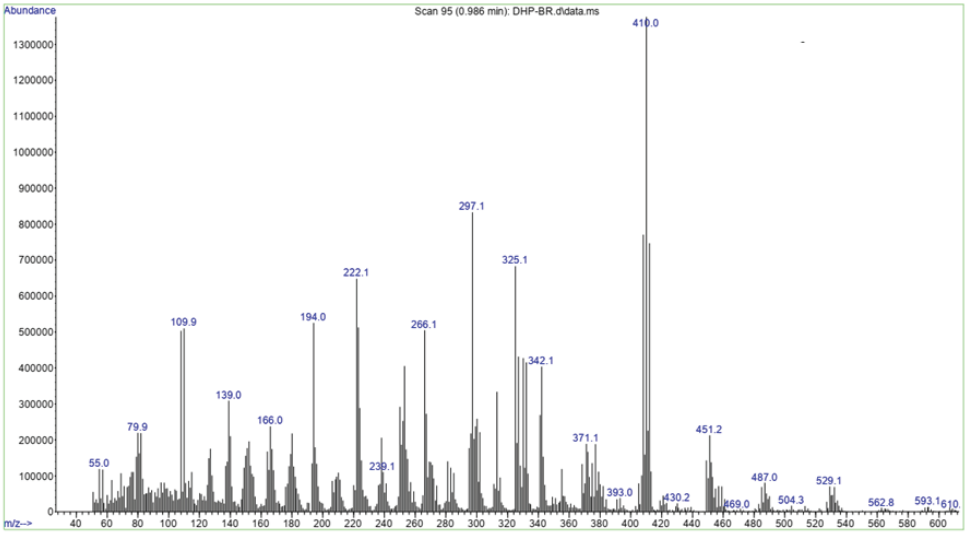

Fig. S-6. ESI-HRMS spectra of compound (**8**)

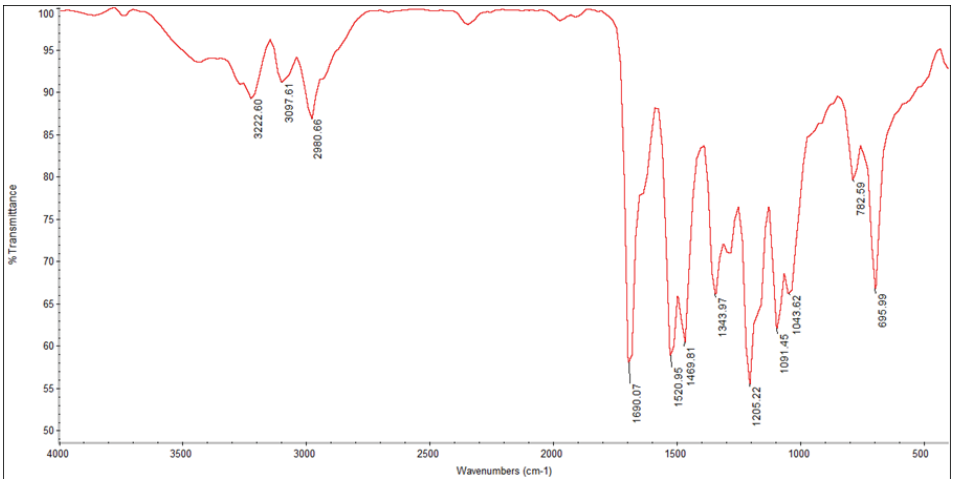

Fig. S-7. FT-IR spectra of compound (**9a**)

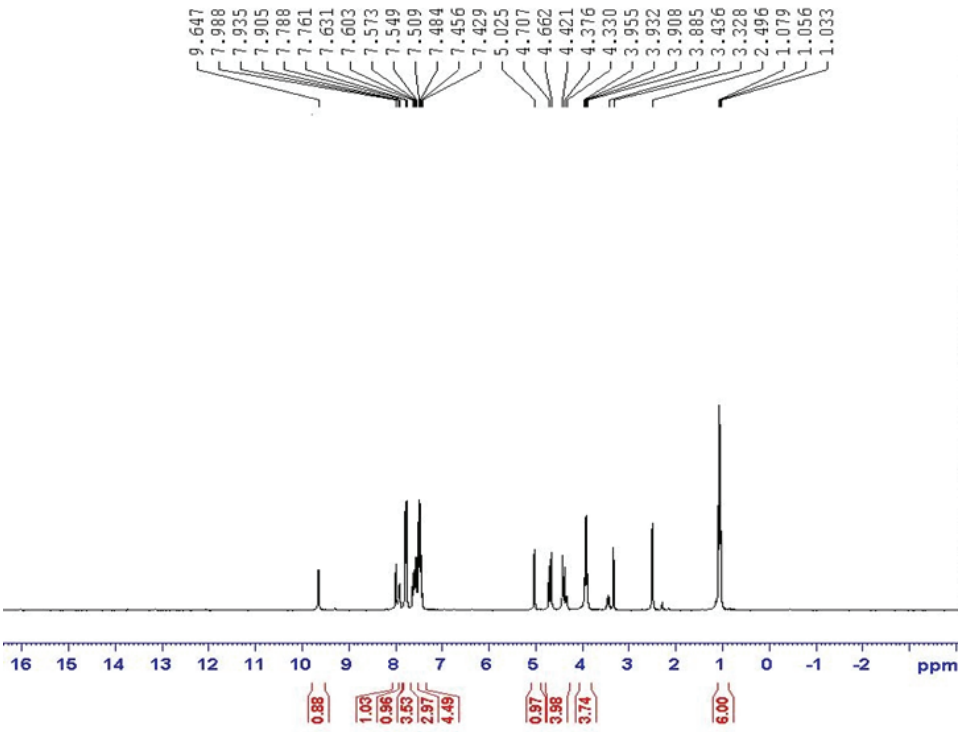

Fig. S-8. ^{1}H-NMR spectra of compound (**9a**)

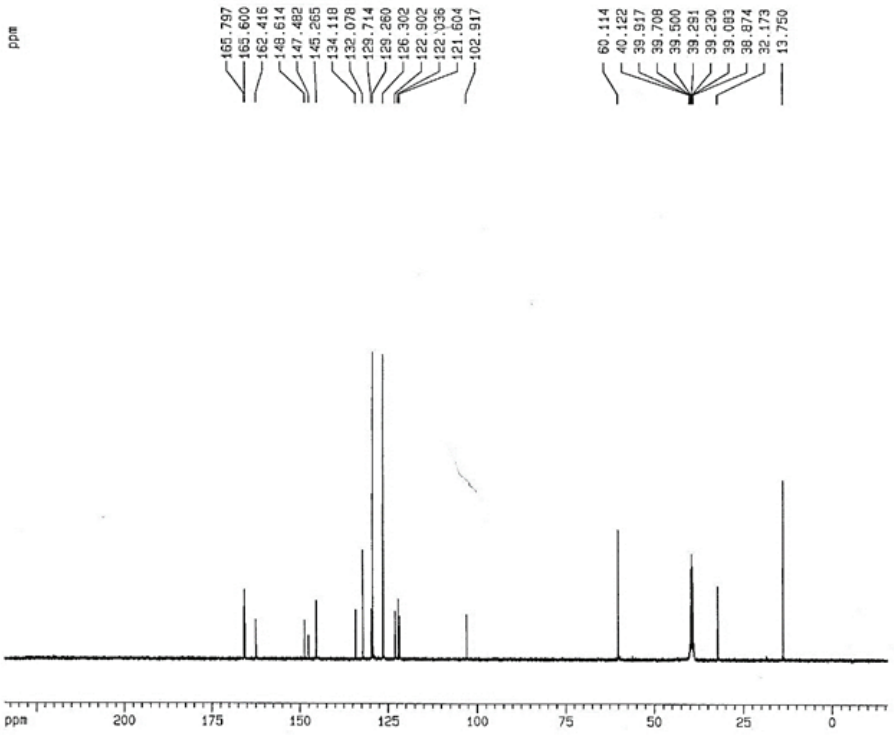

Fig. S-9. ^{13}C-NMR spectra of compound (**9a**)

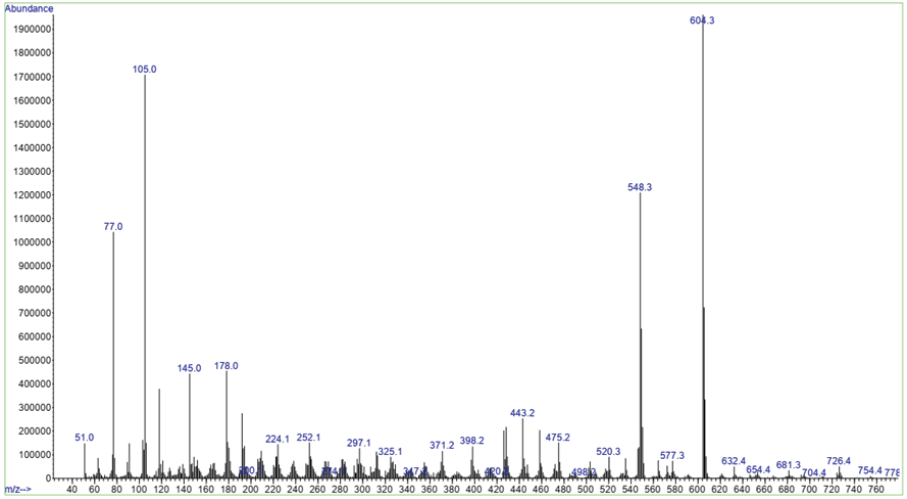

Fig. S-10. ESI-HRMS spectra of compound (**9a**)

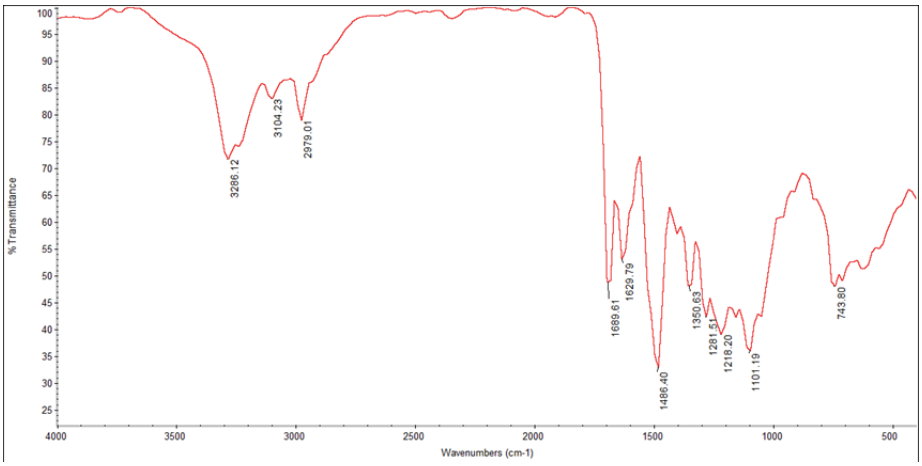

Fig. S-11. FT-IR spectra of compound (**9b**)

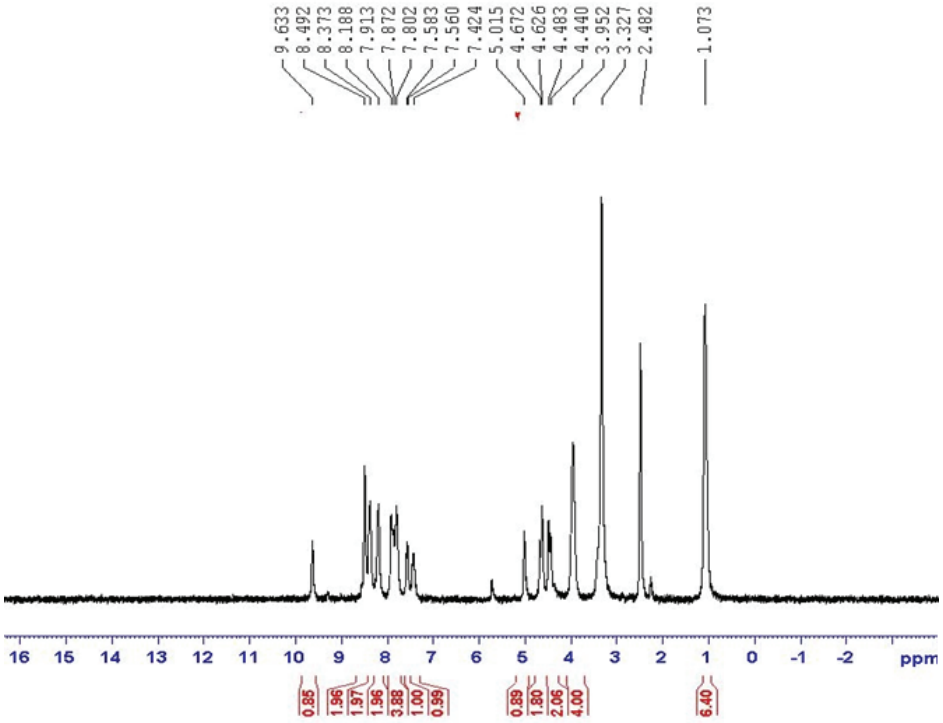

Fig. S-12. ^{1}H-NMR spectra of compound (**9b**)

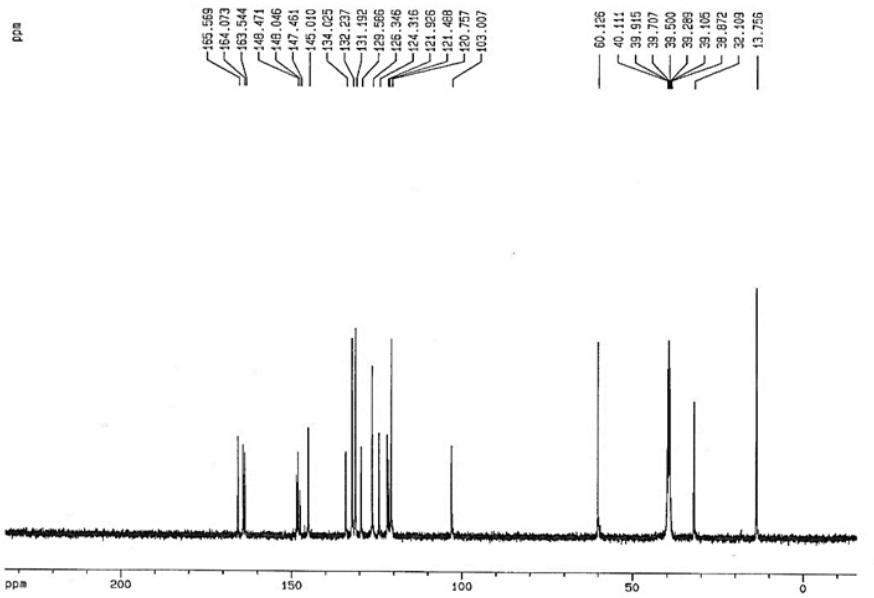

Fig. S-13. ^{13}C-NMR spectra of compound (**9b**)

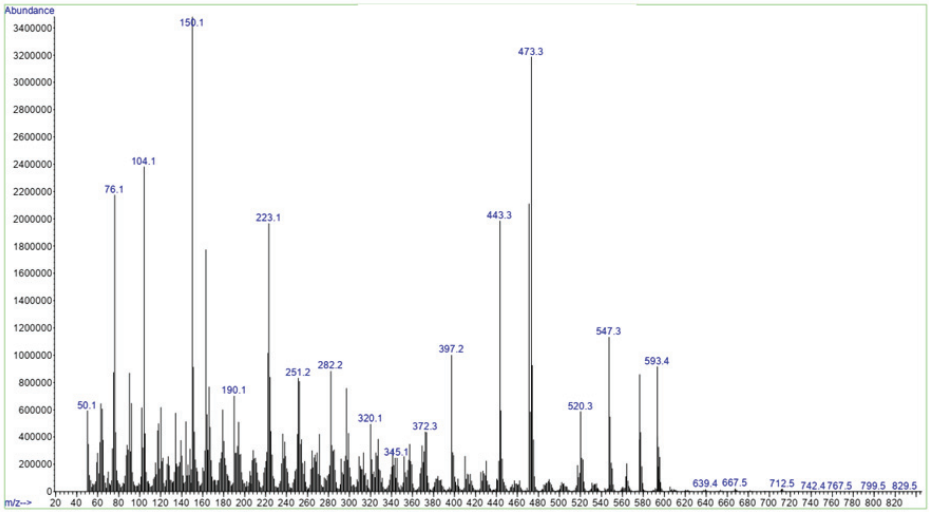

Fig. S-14. ESI-HRMS spectra of compound (**9b**)

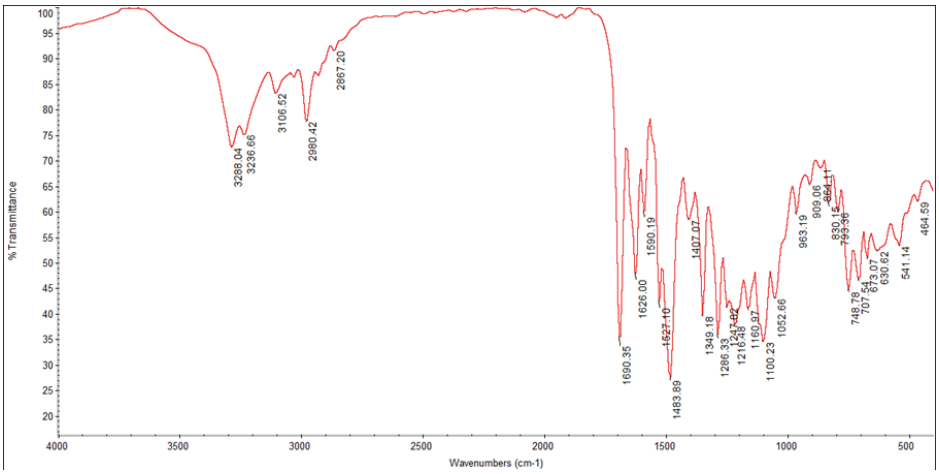

Fig. S-15. FT-IR spectra of compound (**9c**)

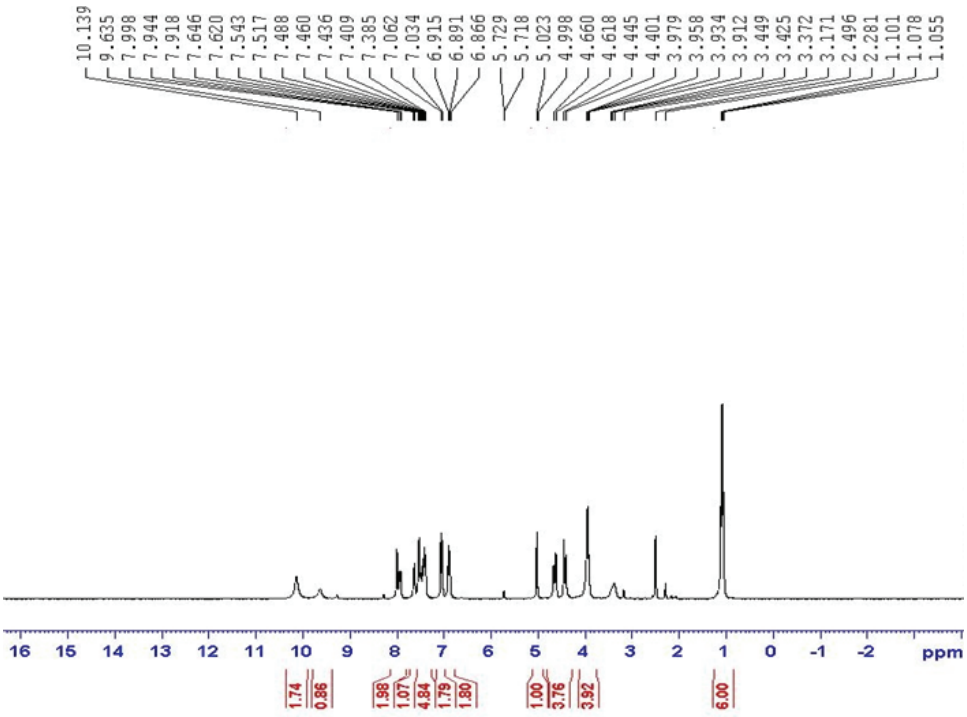

Fig. S-16. ^{1}H-NMR spectra of compound (**9c**)

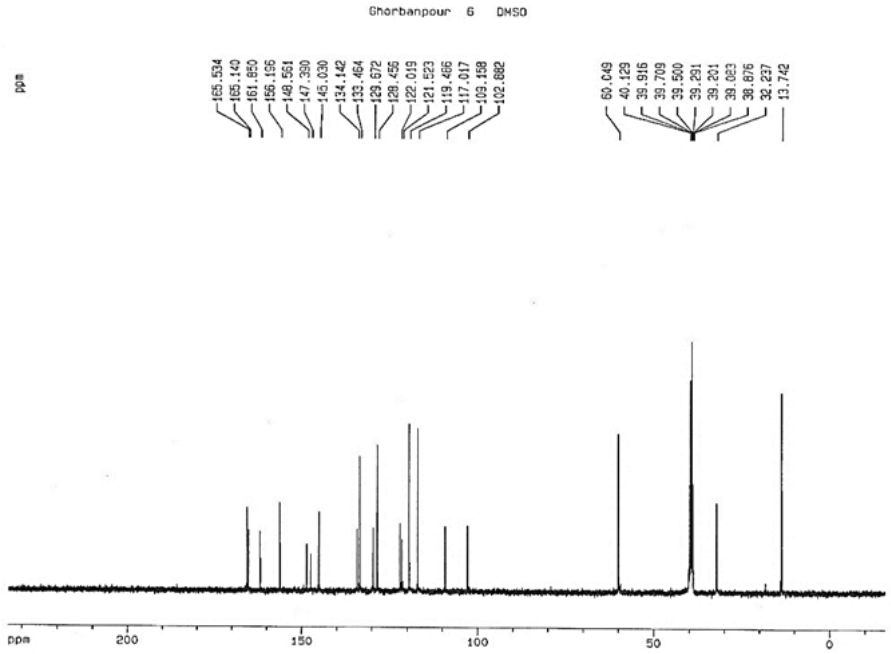

Fig. S-17. ^{13}C-NMR spectra of compound (**9c**)

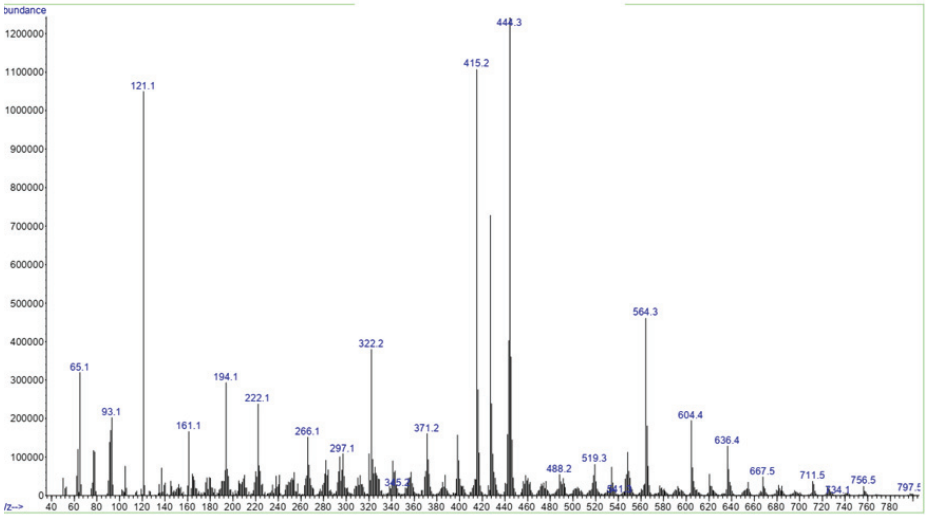

Fig. S-18. ESI-HRMS spectra of compound (**9c**)

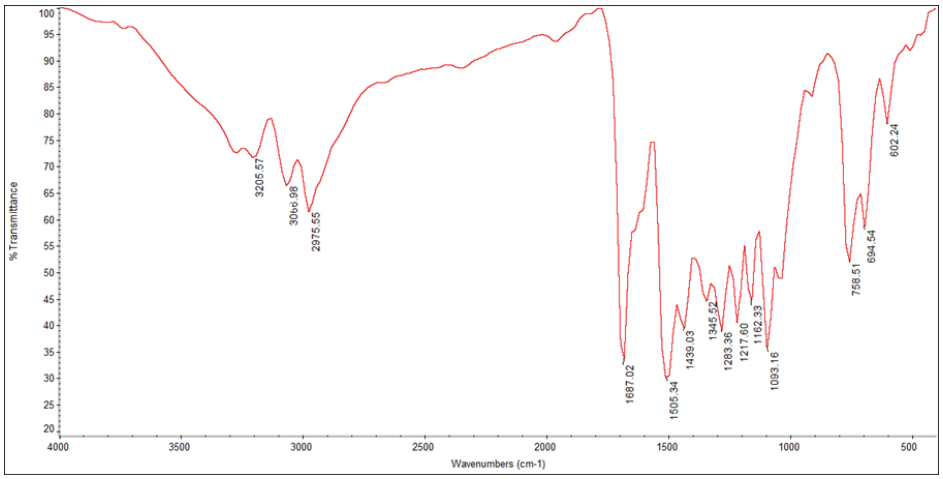

Fig. S-19. FT-IR spectra of compound (**9d**)

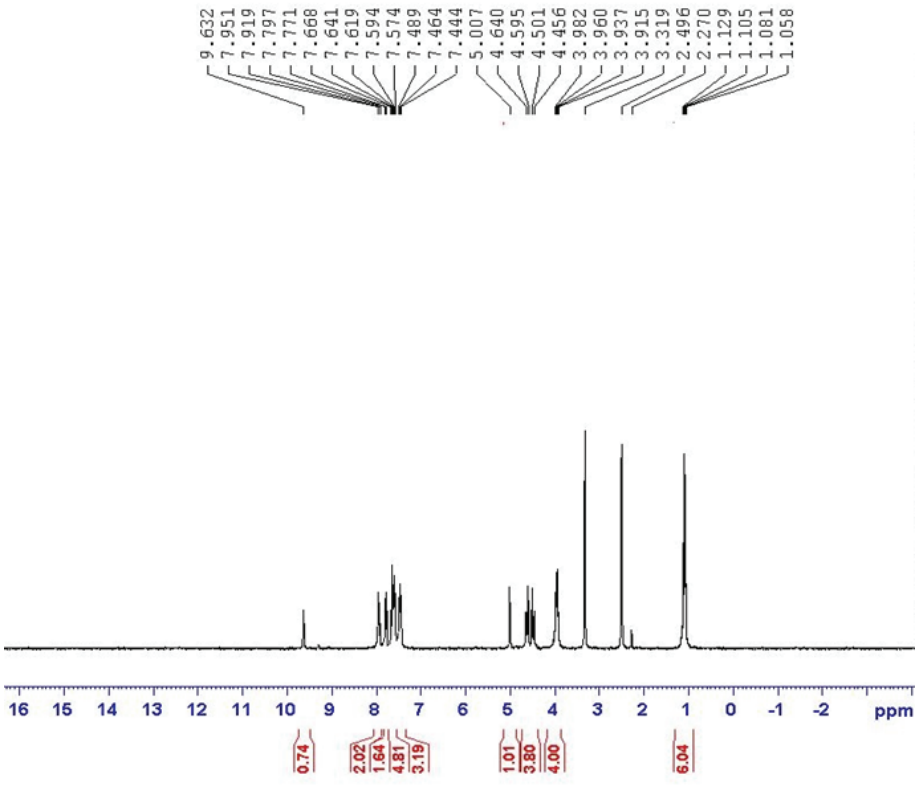

Fig. S-20. ^{1}H-NMR spectra of compound (**9d**)

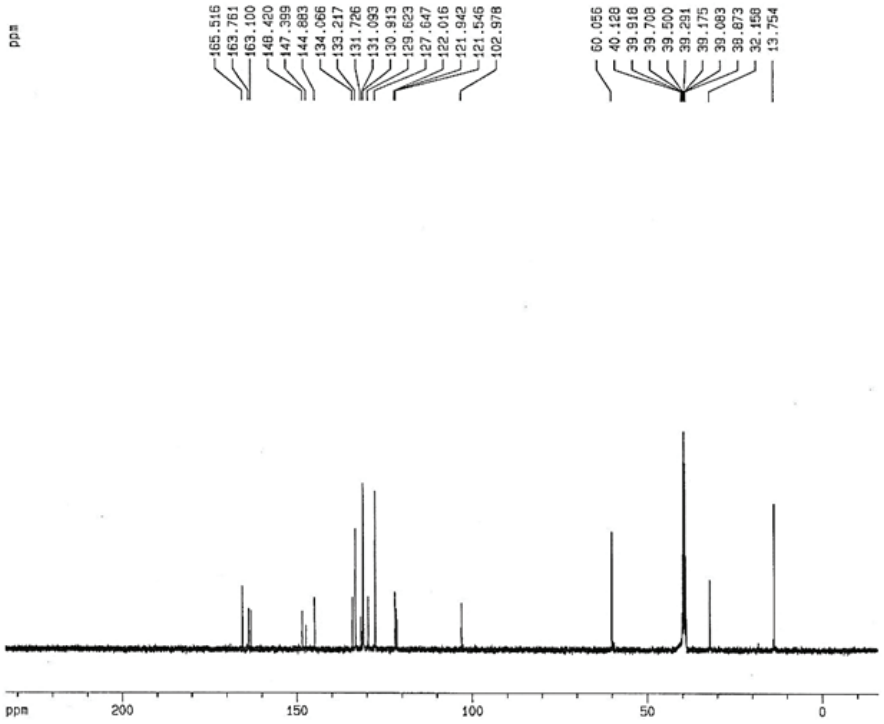

Fig. S-21. ^{13}C-NMR spectra of compound (**9d**)

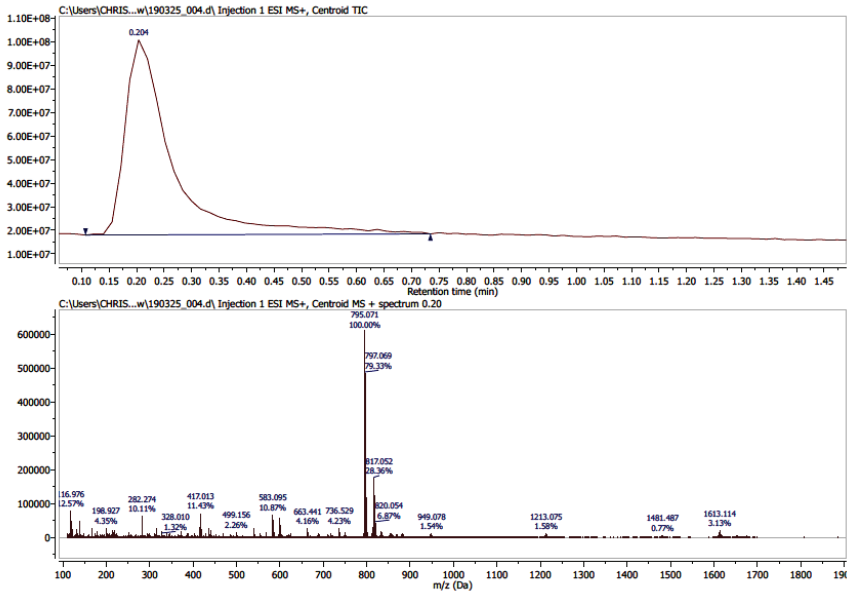

Fig. S-22. HRMS-FAB spectra of compound (**9d**)

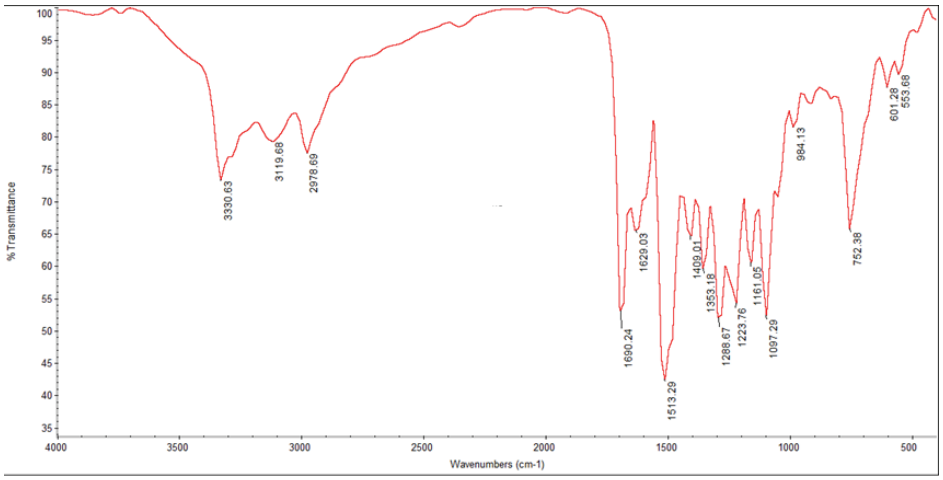

Fig. S-23. FT-IR spectra of compound (**10a**)

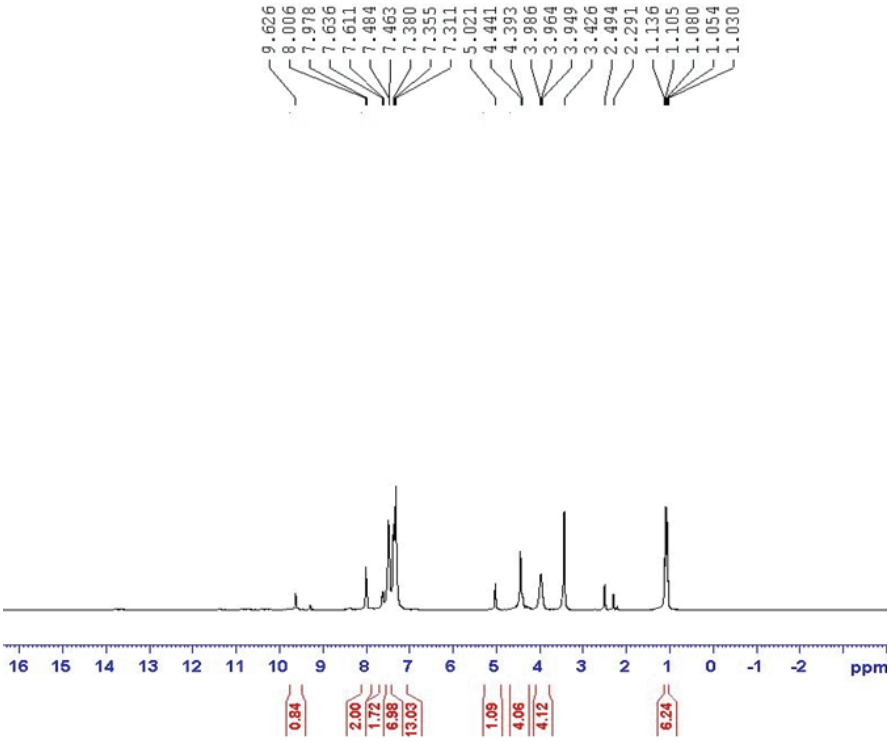

Fig. S-24. ^{1}H-NMR spectra of compound (**10a**)

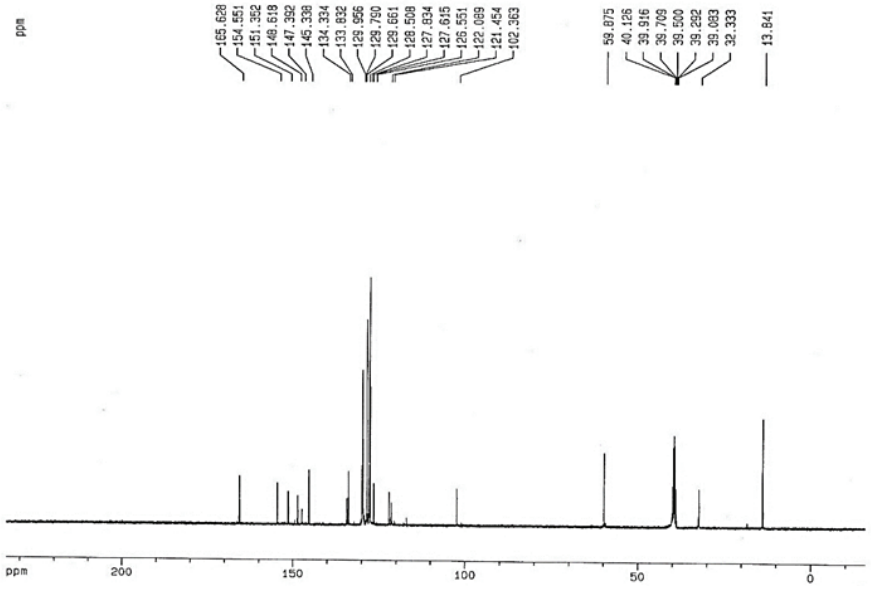

Fig. S-25. ^{13}C-NMR spectra of compound (**10a**)

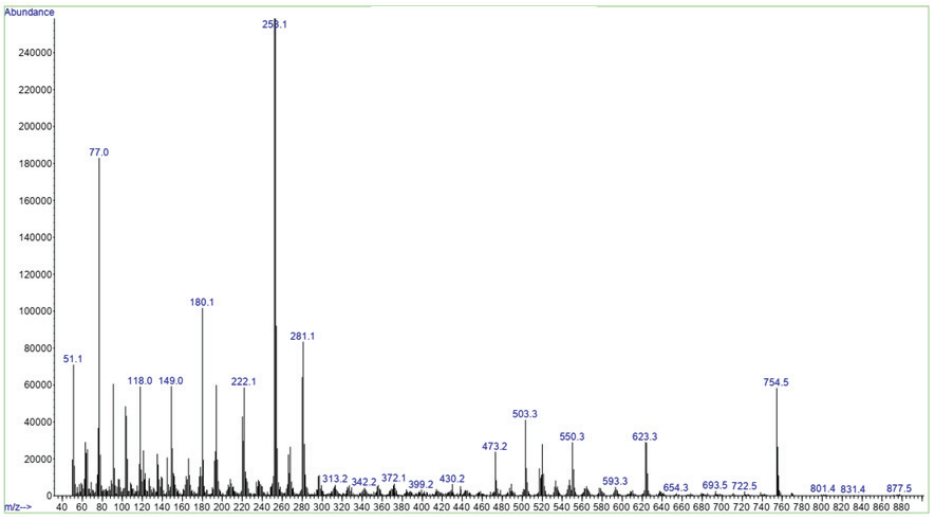

Fig. S-26. ESI-HRMS spectra of compound (**10a**)

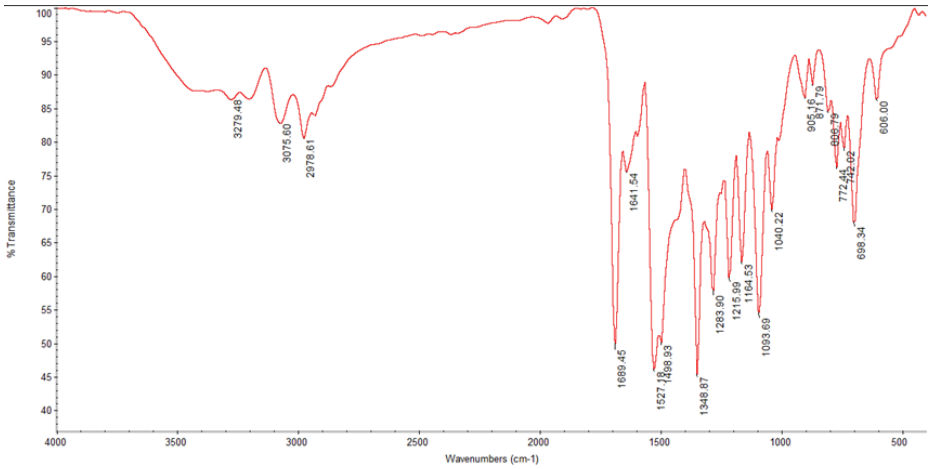

Fig. S-27. FT-IR spectra of compound (**10b**)

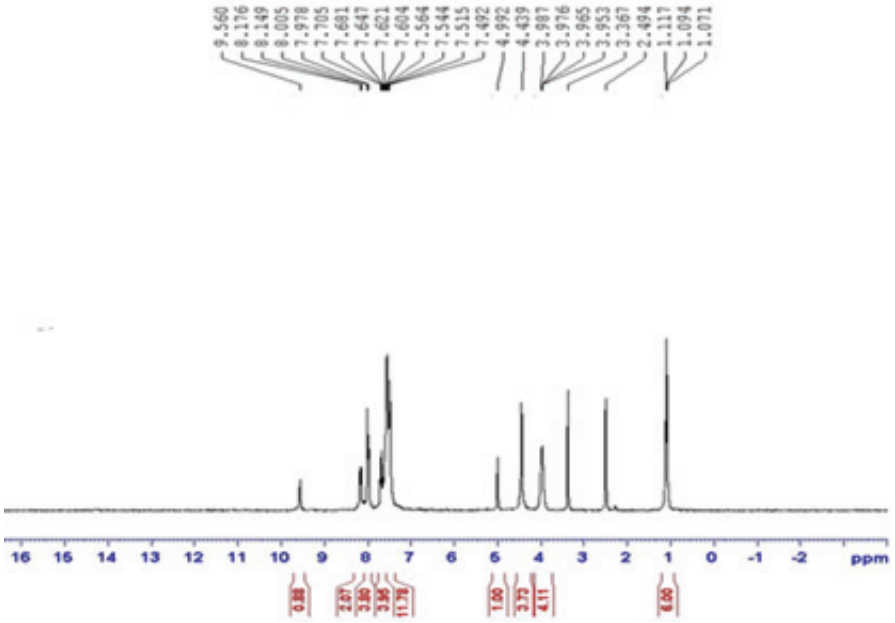

Fig. S-28. ^{1}H-NMR spectra of compound (**10b**)

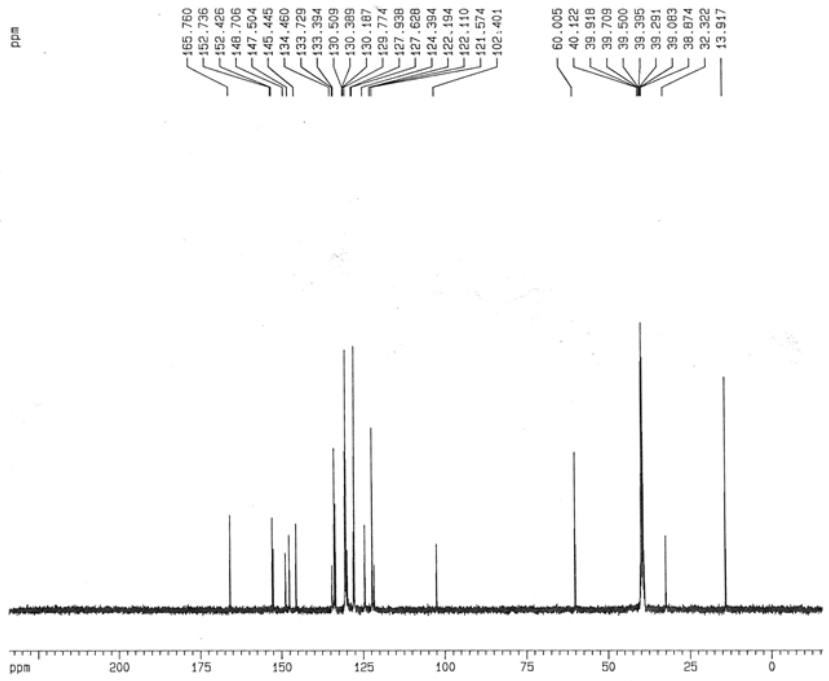

Fig. S-29. ^{13}C-NMR spectra of compound (**10b**)

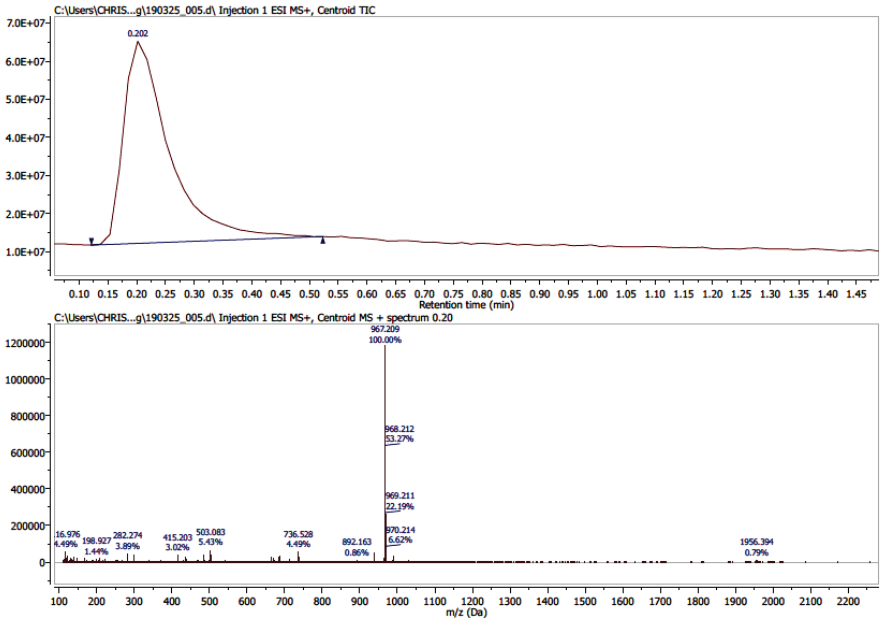

Fig. S-30. HRMS-FAB spectra of compound (**10b**)

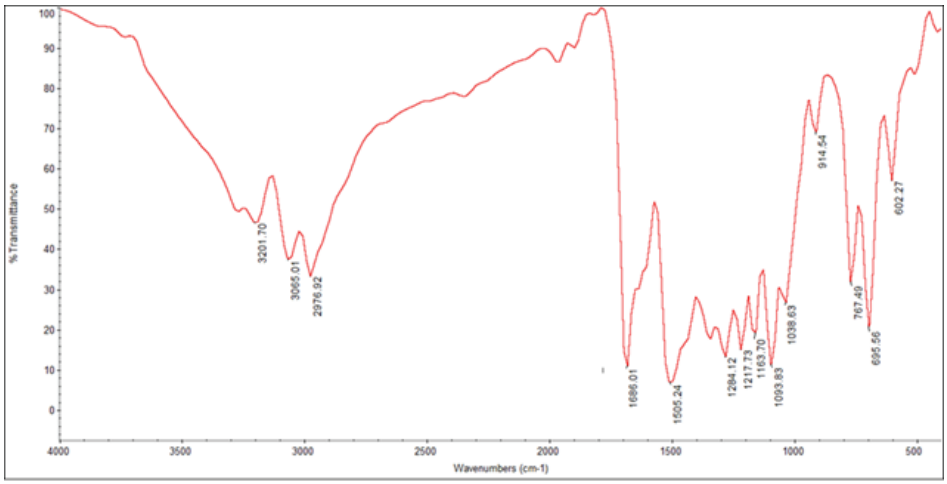

Fig. S-31. FT-IR spectra of compound (**10c**)

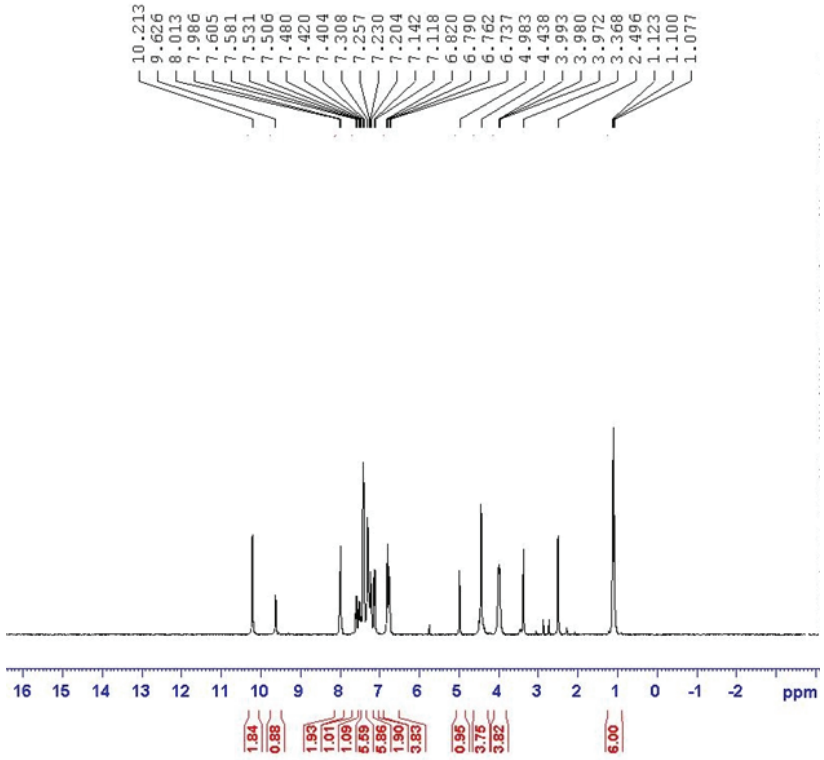

Fig. S-32. ^{1}H-NMR spectra of compound (**10c**)

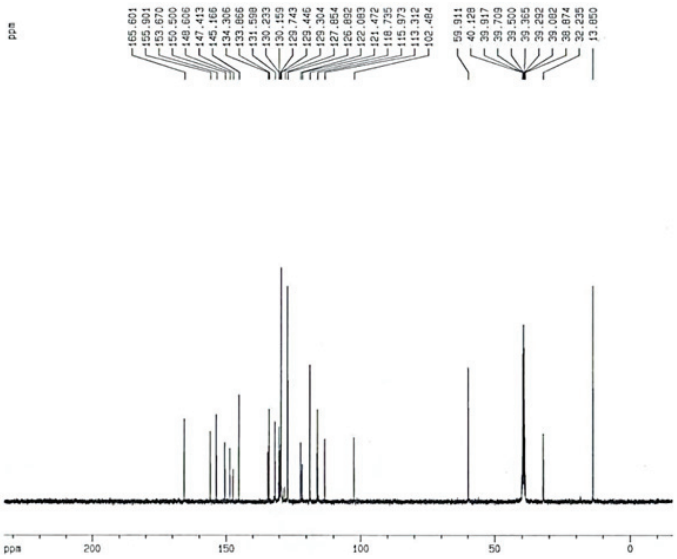

Fig. S-33. ^{13}C-NMR spectra of compound (**10c**)

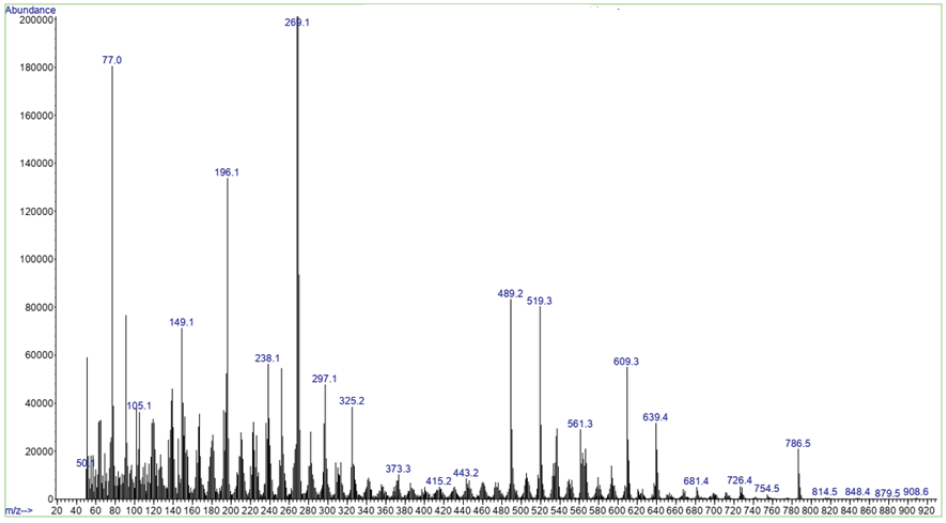

Fig. S-34. ESI-HRMS spectra of compound (**10c**)

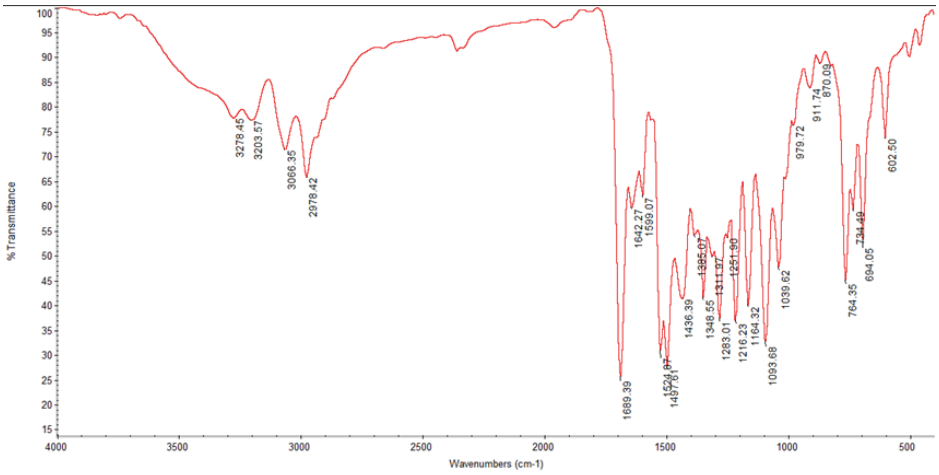

Fig. S-35. FT-IR spectra of compound (**10d**)

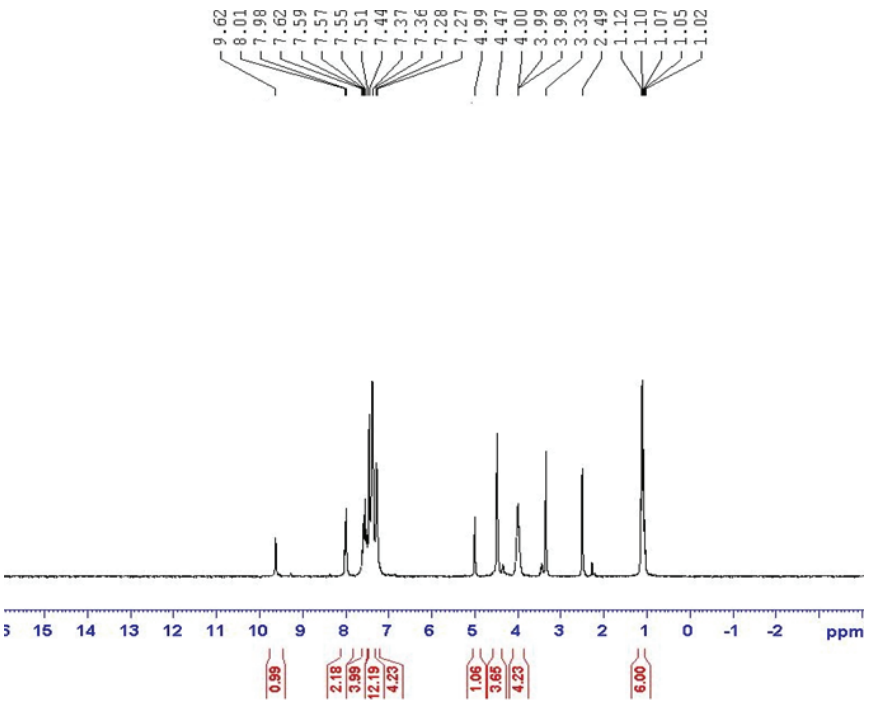

Fig. S-36. ^{1}H-NMR spectra of compound (**10d**)

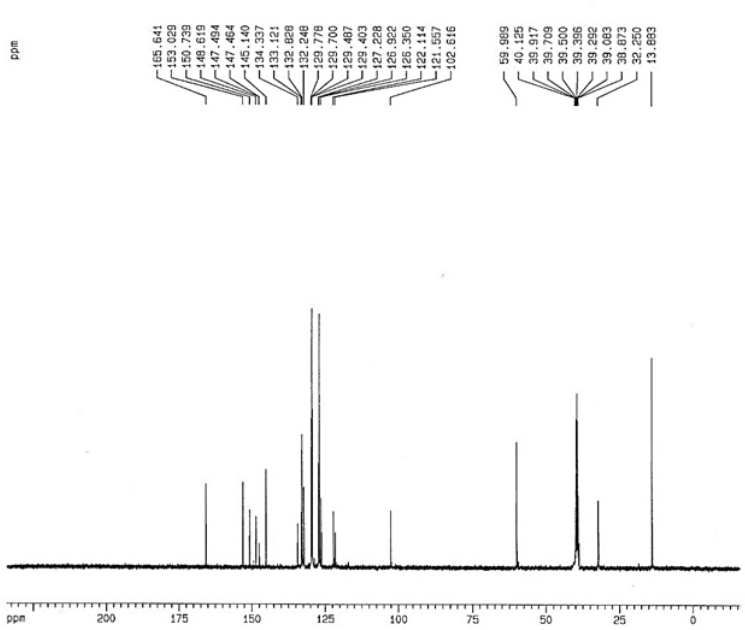

Fig. S-37. ^{13}C-NMR spectra of compound (**10d**)

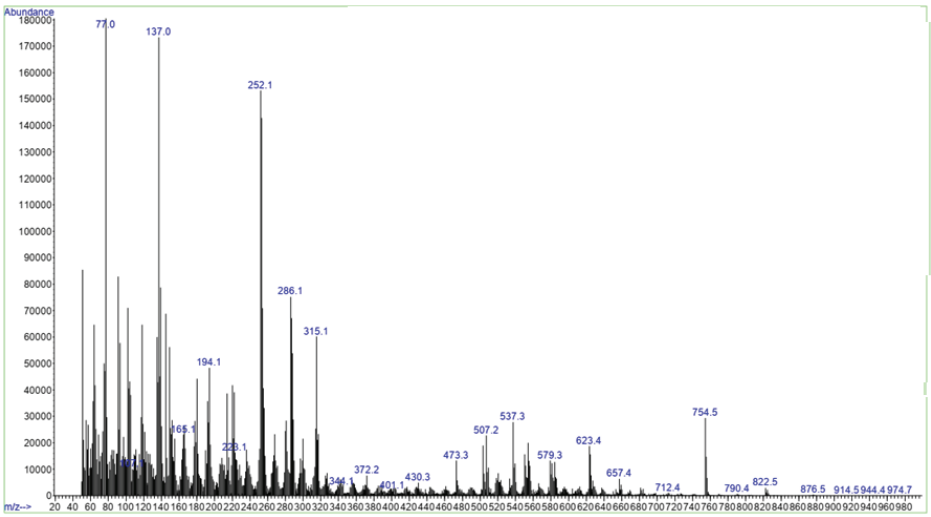

Fig. S-38. ESI-HRMS spectra of compound (**10d**)

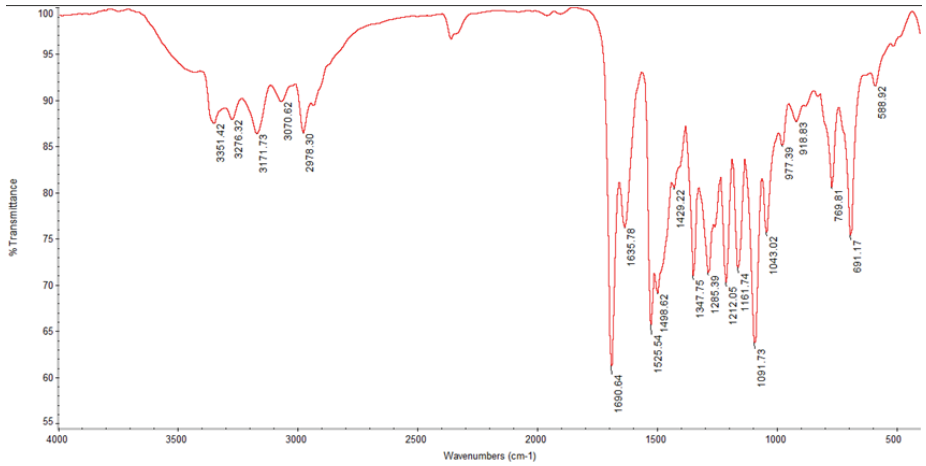

Fig. S-39. FT-IR spectra of compound (**11a**)

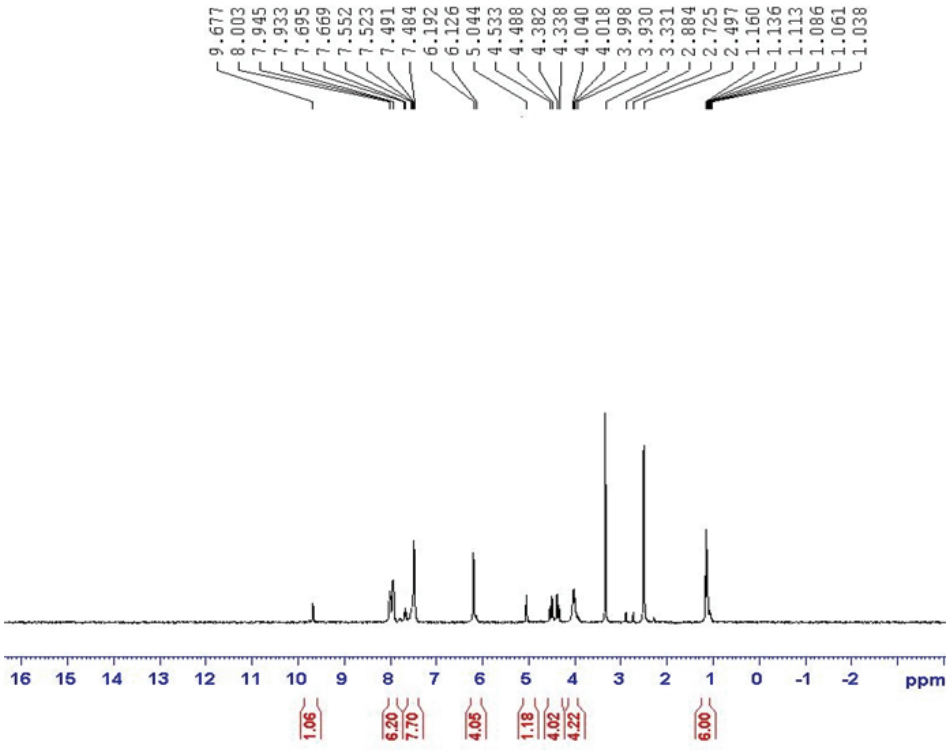

Fig. S-40. ^{1}H-NMR spectra of compound (**11a**)

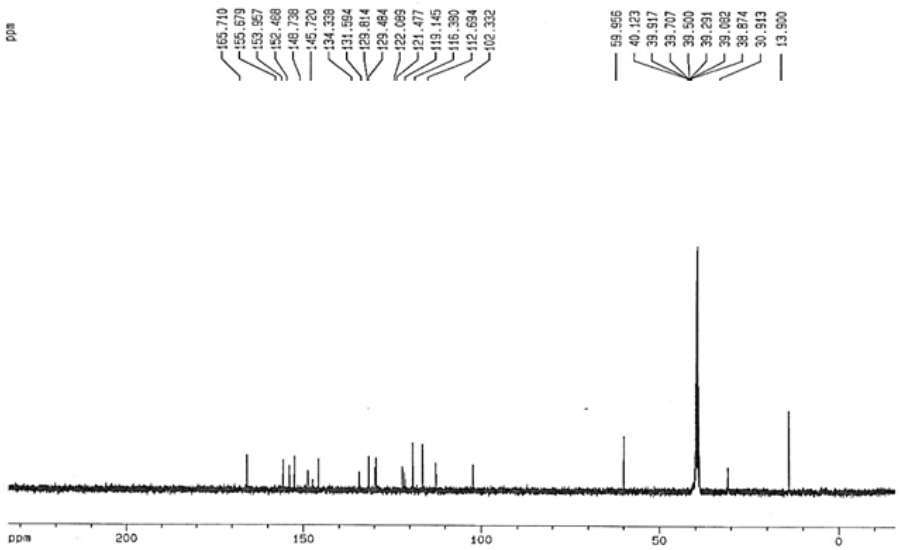

Fig. S-41. ^{13}C-NMR spectra of compound (**11a**)

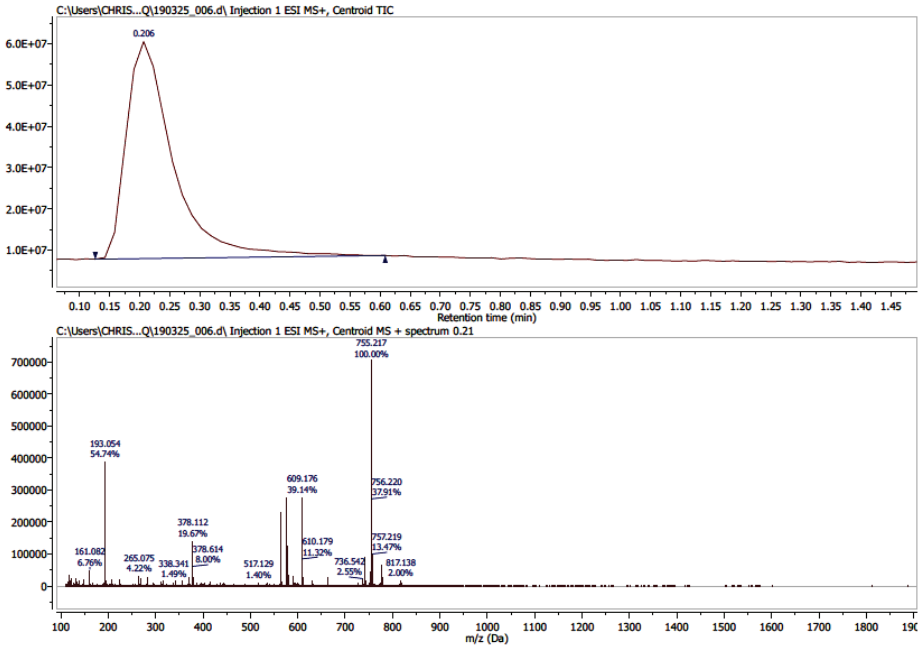

Fig. S-42. HRMS-FAB spectra of compound (**11a**)

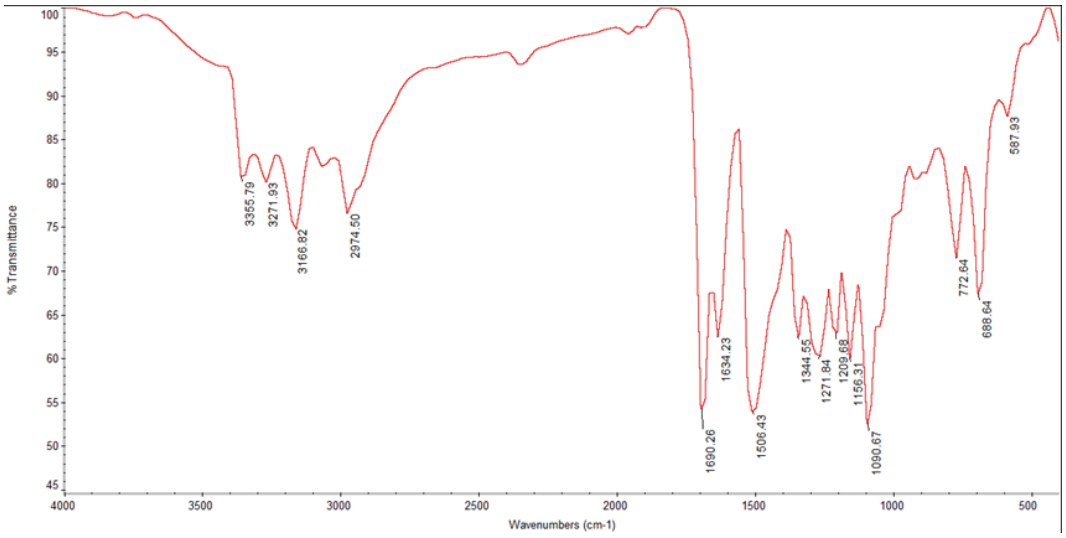

Fig. S-43. FT-IR spectra of compound (**11b**)

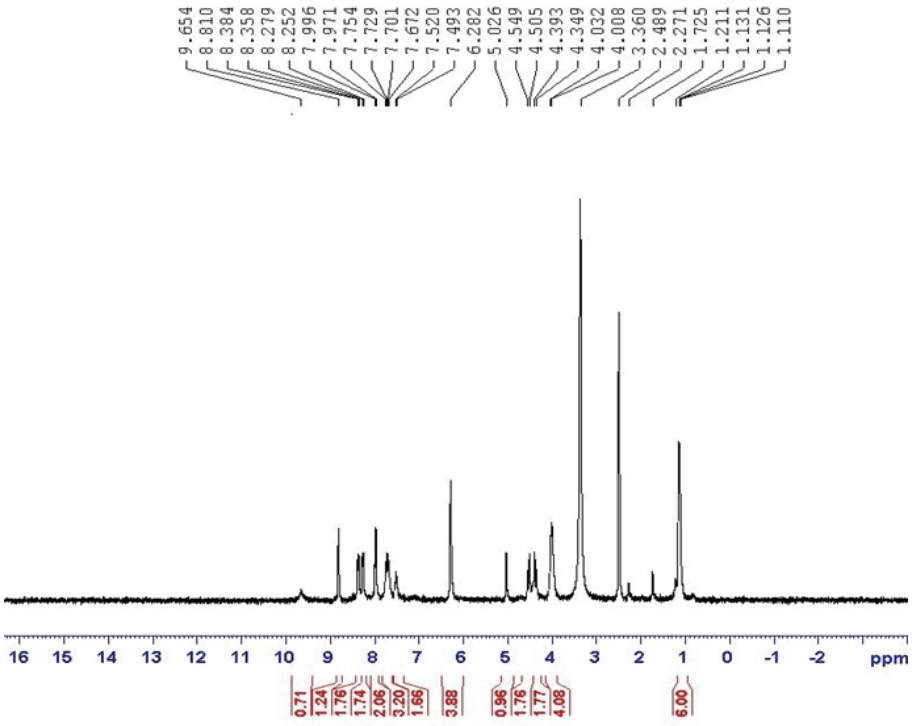

Fig. S-44. ^{1}H-NMR spectra of compound (**11b**)

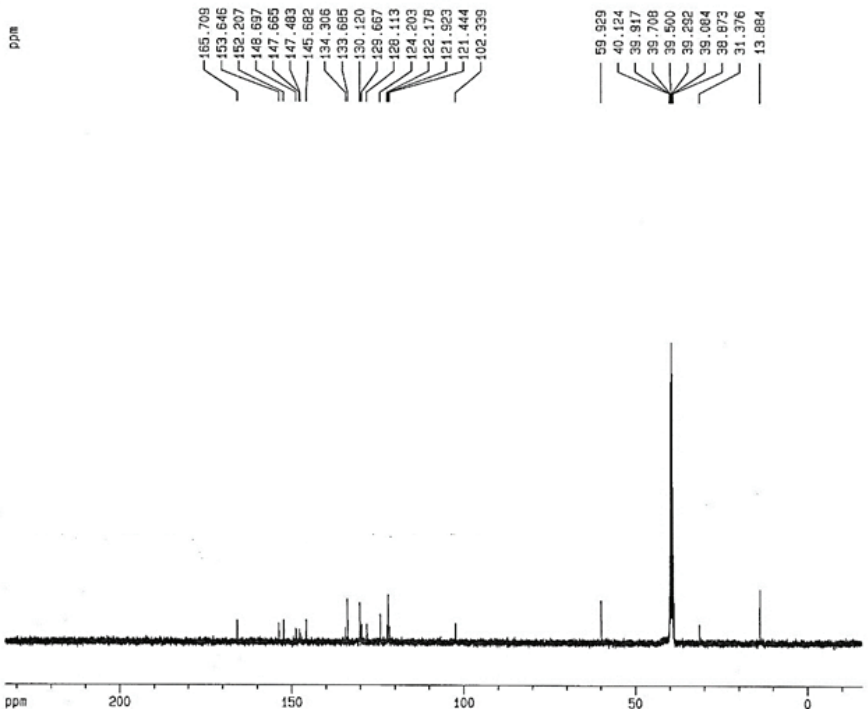

Fig. S-45. ^{13}C-NMR spectra of compound (**11b**)

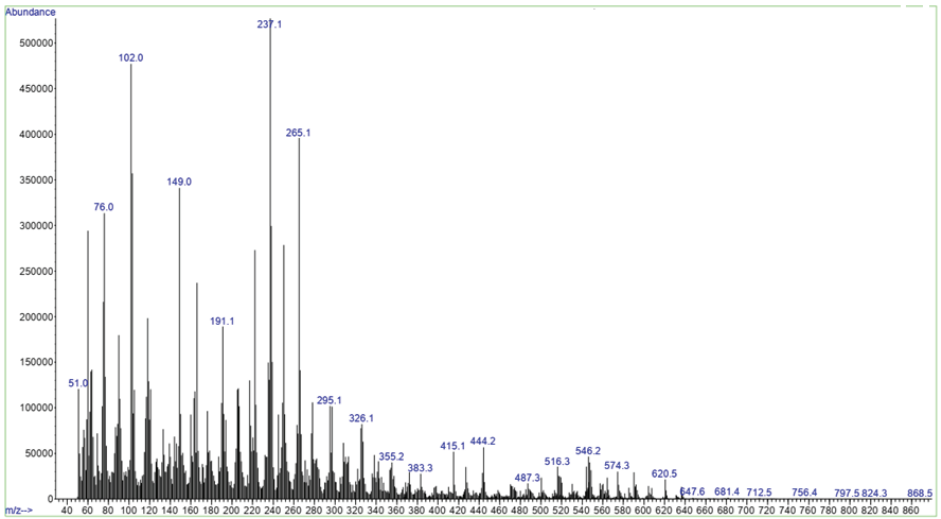

Fig. S-46. ESI-HRMS spectra of compound (**11b**)

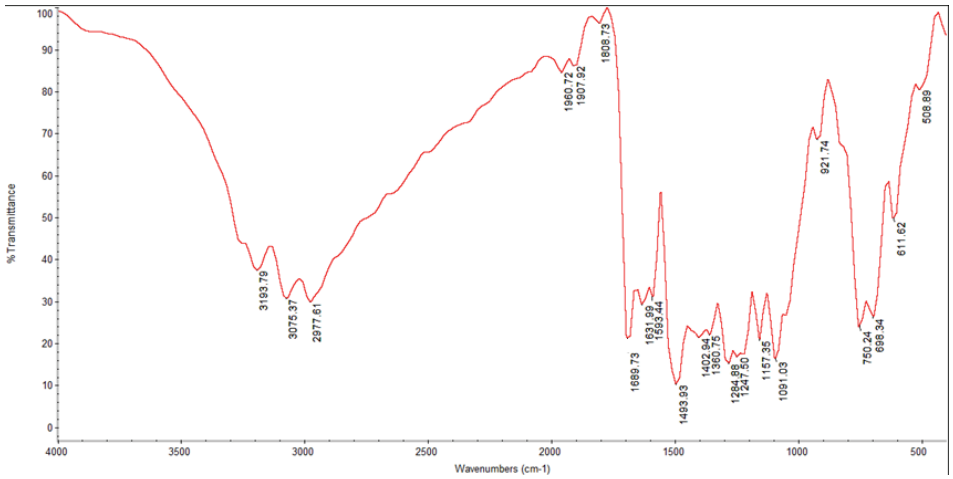

Fig. S-47. FT-IR spectra of compound (**11c**)

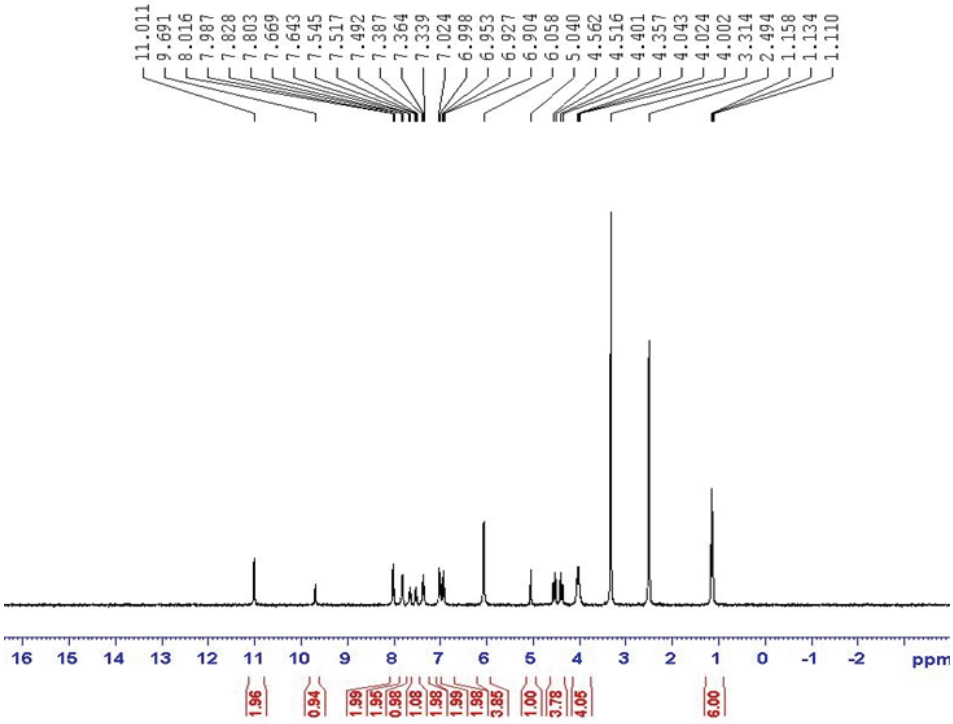

Fig. S-48. ^{1}H-NMR spectra of compound (**11c**)

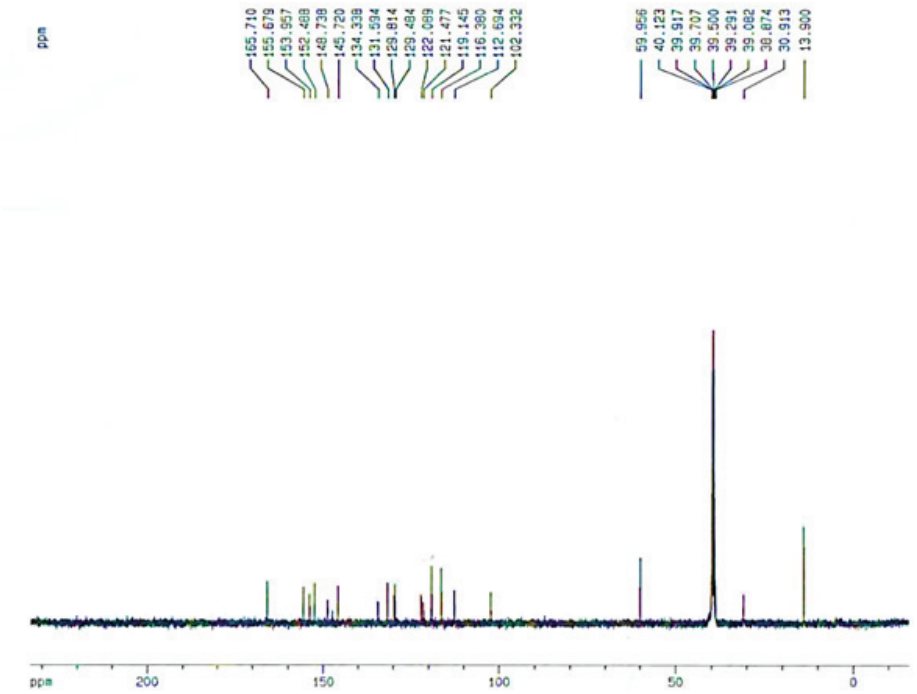

Fig. S-49. ^{13}C-NMR spectra of compound (**11c**)

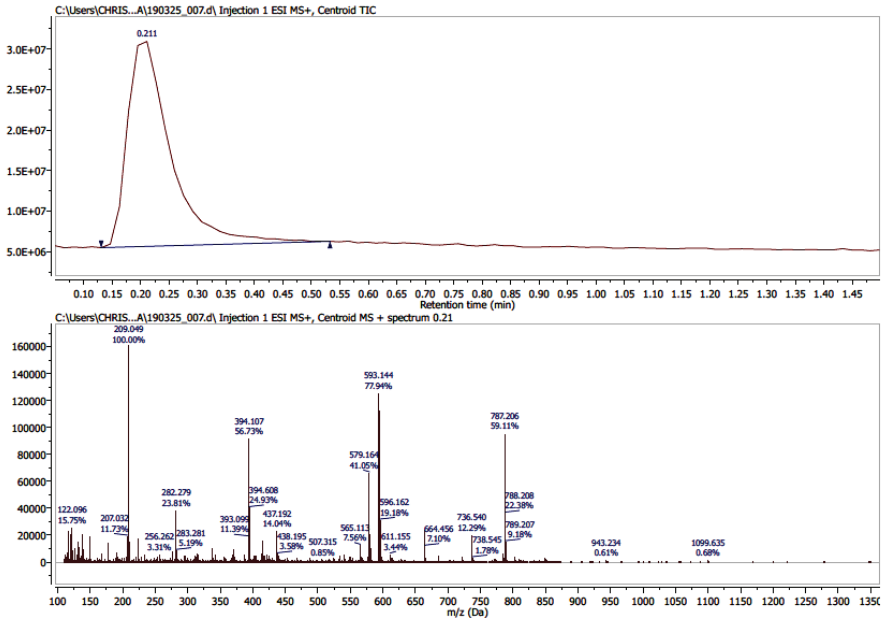

Fig. S-50. HRMS-FAB spectra of compound (**11c**)

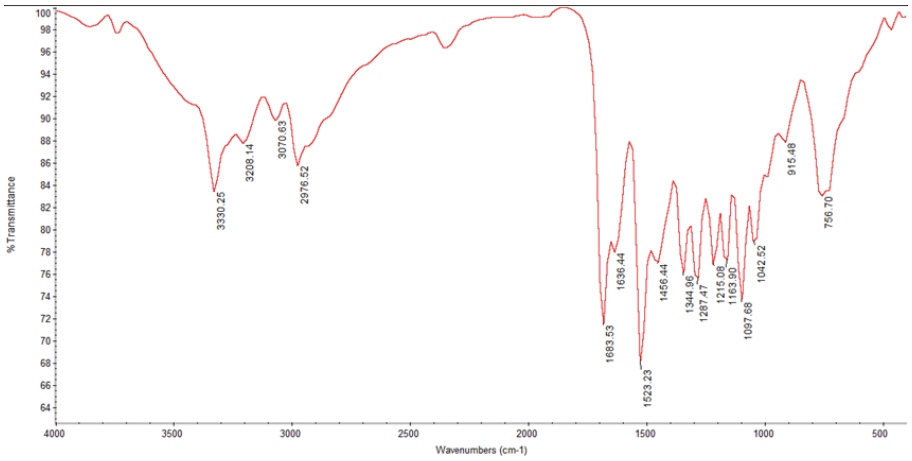

Fig. S-51. FT-IR spectra of compound (**11d**)

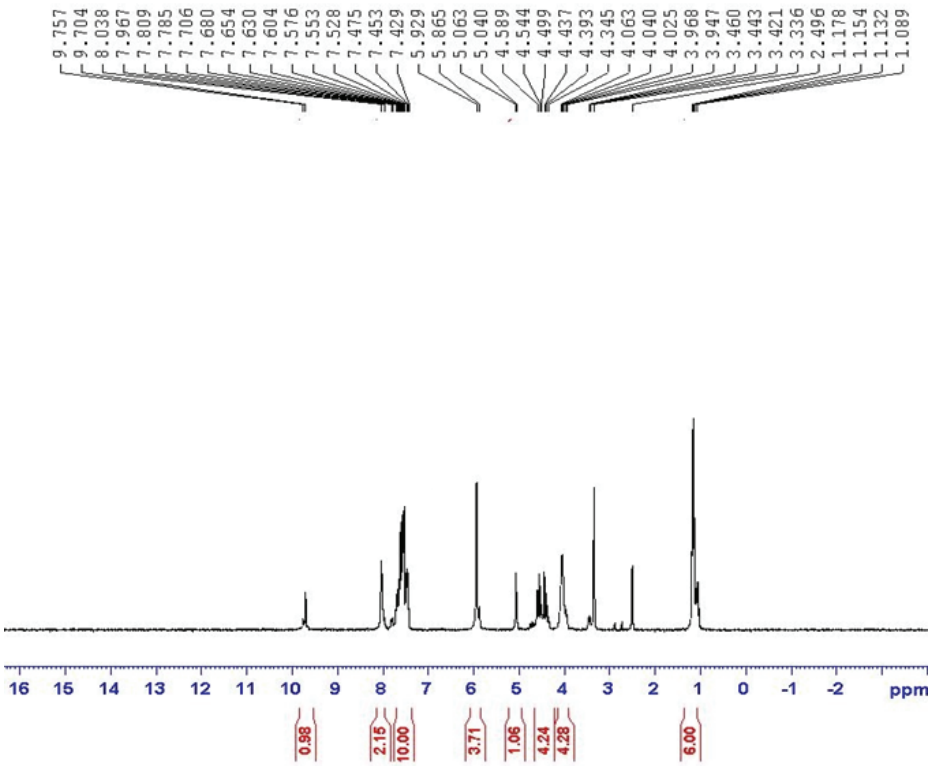

Fig. S-52. ^{1}H-NMR spectra of compound (**11d**)

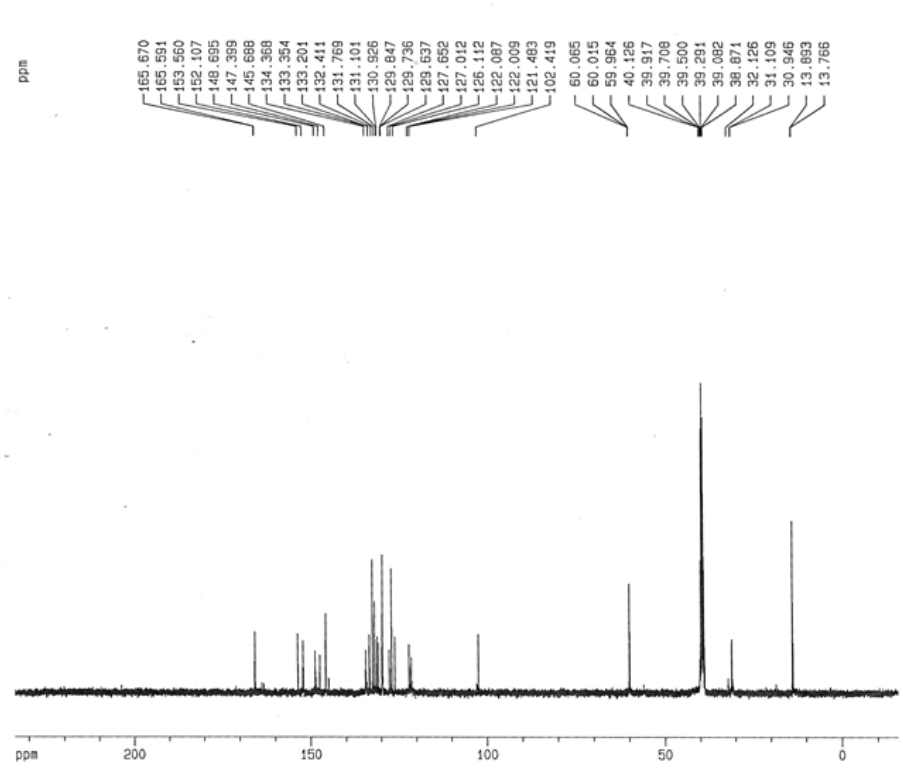

Fig. S-53. ^{13}C-NMR spectra of compound (**11d**)

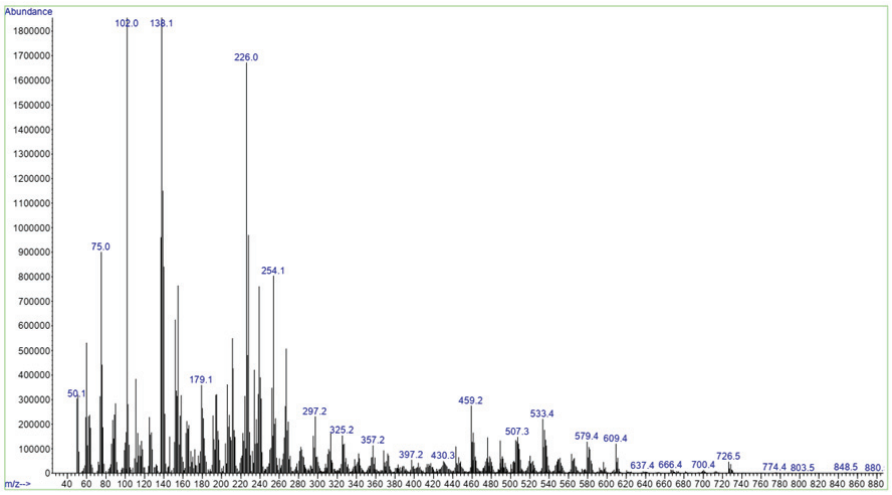

Fig. S-54. ESI-HRMS spectra of compound (**11d**).