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SUPPLEMENTARY MATERIAL TO

Regioselective synthesis, characterization and antimicrobial evaluation of amide–ether-linked 1,4-disubstituted 1,2,3-triazoles

CHANDER PRAKASH KAUSHIK[1]*, KRISHAN KUMAR[1], DEVINDER KUMAR[1], SATBIR MOR[1], ASHWANI KUMAR[2] and DEEPAK KUMAR JINDAL[2]

[1]*Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar, Haryana, India and* [2]*Department of Pharmaceutical Sciences, Guru Jambheshwar University of Science & Technology, Hisar, Haryana, India*

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CHARACTERIZATION DATA OF THE SYNTHESIZED COMPOUNDS

*2-{4-[(Naphthalen-1-yloxy)methyl]-1*H*-1,2,3-triazol-1-yl}*-N*-phenylacetamide (**7a**)*. Yield: 68 %; white solid; m.p.: 242–244 °C; FTIR (KBr, cm^{-1}): 3296 (N–H str., amide), 3138 (C–H str., triazole ring), 3055 (C–H str., aromatic ring), 2929, 1664 (C=O str., amide), 1583, 1508, 1465 (C=C str., aromatic ring), 1267 (C–O asym. str., ether), 1101 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.42 (2H, *s*, OCH_2), 5.58 (2H, *s*, NCH_2), 7.05–7.11 (1H, *m*, Ar-H), 7.22–7.55 (7H, *m*, Ar-H), 7.58–7.89 (3H, *m*, Ar-H), 8.14 (1H, *d*, *J* = 8.0 Hz, Ar-H), 8.43 (1H, *s*, C–H triazole), 11.14 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.7, 62.1, 106.2, 119.7, 120.8, 122.0, 124.3, 125.4, 125.8, 126.6, 126.7 (C5 triazole), 126.9, 128.0, 134.5, 138.9, 143.2 (C4 triazole), 145.0, 154.0, 165.7 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{21}H_{18}N_4O_2+H]^+$: 359.1430. Found: 359.2213.

N-*(4-Methoxyphenyl)-2-{4-[(naphthalen-1-yloxy)methyl]-1*H*-1,2,3-triazol-1-yl}acetamide (**7b**)*. Yield: 75 %; dark brown solid; m.p.: 210–212 °C; FTIR (KBr, cm^{-1}): 3269 (N–H str., amide), 3143 (C–H str., triazole ring), 3093 (C–H str., aromatic ring), 2945, 1662 (C=O str., amide), 1606, 1558, 1474 (C=C str., aromatic ring), 1242 (C–O asym. str., ether), 1103 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 3.73 (3H, *s*, OCH_3), 5.35 (2H, *s*, OCH_2), 5.39 (2H, *s*, NCH_2), 6.91 (2H, *d*, *J* = 8.0 Hz, Ar-H), 7.22 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.44–7.55 (6H, *m*, Ar-H), 7.88 (1H, *d*, *J* = 8.0 Hz, Ar-H), 8.13 (1H, *d*, *J* = = 8.0 Hz, Ar-H), 8.38 (1H, *s*, C–H triazole), 10.38 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.6, 55.6, 62.1, 106.2, 114.5, 120.8,

* Corresponding author. E-mail: kaushikcp@gmail.com

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122.0, 125.4, 125.6, 125.8, 126.6, 126.8 (C5 triazole), 126.9, 128.0, 132.0, 134.5, 143.2 (C4 triazole), 154.0, 156.0, 165.8 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{22}H_{20}N_4O_3+H]^+$: 389.1535. Found: 389.0061.

N-*(4-Bromophenyl)-2-{4-[(naphthalen-1-yloxy)methyl]-1*H-*1,2,3-triazol-1-yl}acetamide (**7c**)*. Yield: 65 %; dark brown solid; m.p.: 186–188 °C; FTIR (KBr, cm^{-1}): 3261 (N–H str., amide), 3126 (C–H str., triazole ring), 3059 (C–H str., aromatic ring), 2943, 1668 (C=O str., amide), 1585, 1550, 1489 (C=C str., aromatic ring), 1269 (C–O asym. str., ether), 1101 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.39 (2H, *s*, OCH_2), 5.39 (2H, *s*, NCH_2), 7.23 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.44–7.55 (8H, *m*, Ar-H), 7.87 (1H, *d*, *J* = 8.0 Hz, Ar-H), 8.13 (1H, *d*, *J* = 8.0 Hz, Ar-H), 8.38 (1H, *s*, C–H triazole), 10.65 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.7, 62.1, 106.2, 115.9, 120.8, 122.0, 125.4, 125.8, 126.6, 126.7 (C5 triazole), 126.9, 128.0, 132.2, 134.5, 143.2 (C4 triazole), 154.0, 165.8 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{21}H_{17}BrN_4O_2+H]^+$: 437.0535. Found: 436.8784.

*2-{4-[(Naphthalen-1-yloxy)methyl]-1*H-*1,2,3-triazol-1-yl}*-N-*(4-nitrophenyl)acetamide (**7d**)*. Yield: 95 %; light brown solid; m.p.: 204–206 °C; FTIR (KBr, cm^{-1}): 3251 (N–H str., amide), 3157 (C–H str., triazole ring), 3055 (C–H str., aromatic ring), 2949, 1670 (C=O str., amide), 1616, 1564, 1496 (C=C str., aromatic ring), 1502 (N–O asym. str., NO_2), 1344 (N–O sym. str., NO_2), 1263 (C–O asym. str., ether), 1103 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.41 (2H, *s*, OCH_2), 5.49 (2H, *s*, NCH_2), 7.22 (1H, *d*, *J* = = 8.0 Hz, Ar-H), 7.44–7.55 (4H, *m*, Ar-H), 7.85 (2H, *d*, *J* = 8.0 Hz, Ar-H), 7.88 (1H, *d*, *J* = 8.0 Hz, Ar-H), 8.14 (1H, *d*, *J* = 8.0 Hz, Ar-H), 8.26 (2H, *d*, *J* = 8.0 Hz, Ar-H), 8.41 (1H, *s*, C–H triazole), 11.14 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.8, 62.1, 106.2, 119.5, 120.8, 122.0, 125.4, 125.6, 125.8, 126.6, 126.7 (C5 triazole), 126.9, 128.0, 134.5, 143.1, 143.2 (C4 triazole), 145.0, 154.0, 165.9 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{21}H_{17}N_5O_4+H]^+$: 404.1281 Found: 403.9596.

N-*(Naphthalen-1-yl)-2-{4-[(naphthalen-1-yloxy)methyl]-1*H-*1,2,3-triazol-1-yl}acetamide (**7e**)*: Yield: 91 %; light yellow solid; m.p.: 182–184 °C; FTIR (KBr, cm^{-1}): 3255 (N–H str., amide), 3152 (C–H str., triazole ring), 3055 (C–H str., aromatic ring), 2985, 1672 (C=O str., amide), 1610, 1550, 1508 (C=C str., aromatic ring), 1267 (C–O asym. str., ether), 1101 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.40 (2H, *s*, OCH_2), 5.60 (2H, *s*, NCH_2), 7.23 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.46–7.54 (7H, *m*, Ar-H), 7.59 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.74 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.80 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.88 (1H, *d*, *J* = 8.0 Hz, Ar-H), 8.14 (2H, *d*, *J* = 8.0 Hz, Ar-H), 8.44 (1H, *s*, C–H triazole), 10.47 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.6, 62.1, 106.2, 120.8, 122.0, 123.1, 125.4, 125.8, 126.2, 126.5, 126.8 (C5 triazole), 126.9, 128.0, 128.7, 133.2, 134.2, 134.5, 143.2 (C4 triazole), 154.0,

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165.6 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{25}H_{20}N_4O_2+H]^+$: 409.1586. Found: 408.9689.

*2-{4-[(Naphthalen-2-yloxy]methyl}-1*H-*1,2,3-triazol-1-yl)*-N-*phenylacetamide (**10a**)*. Yield: 67 %; white solid; m.p.: 202–204 °C; FTIR (KBr, cm^{-1}): 3267 (N–H str., amide), 3136 (C–H str., triazole ring), 3084 (C–H str., aromatic ring), 2927, 1668 (C=O str., amide), 1608, 1554, 1504 (C=C str., aromatic ring), 1261 (C–O asym. str., ether), 1178 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.31 (2H, *s*, OCH_2), 5.38 (2H, *s*, NCH_2), 7.10 (1H, *t*, *J* = = 8.0 Hz, Ar-H), 7.22 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.33–7.39 (3H, *m*, Ar-H), 7.55– –7.59 (2H, *m*, Ar-H), 7.60 (2H, *d*, *J* = 8.0 Hz, Ar-H), 7.85 (3H, *d*, *J* = 8.0 Hz, Ar-H), 8.34 (1H, *s*, C–H triazole), 10.51 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.7, 61.5, 107.6, 119.2, 119.7, 124.2, 124.3, 126.9 (C5 triazole), 127.2, 128.0, 129.1, 129.4, 129.8, 134.7, 138.9, 142.9 (C4 triazole), 156.4, 164.7 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{21}H_{18}N_4O_2+H]^+$: 359.1430. Found: 358.9767.

N-*(4-Methoxyphenyl)-2-{4-[(naphthalen-1-yloxy)methyl]-1*H-*1,2,3-triazol- -1-yl}acetamide (**10b**)*. Yield: 62 %; white solid; m.p.: 198–200 °C; FTIR (KBr, cm^{-1}): 3282 (N–H str., amide), 3138 (C–H str., triazole ring), 3059 (C–H str., aromatic ring), 2947, 1678 (C=O str., amide), 1600, 1546, 1514 (C=C str., aromatic ring), 1240 (C–O asym. str., ether), 1178 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 3.73 (3H, *s*, OCH_3), 5.30 (2H, *s*, OCH_2), 5.33 (2H, *s*, NCH_2), 6.91 (2H, *d*, *J* = 12.0 Hz, Ar-H), 7.22 (1H, *d*, *J* = = 8.0 Hz, Ar-H), 7.37 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.48–7.55 (4H, *m*, Ar-H), 7.85 (3H, *d*, *J* = 8.0 Hz, Ar-H), 8.32 (1H, *s*, C–H triazole), 10.36 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.6, 55.6, 61.5, 107.6, 114.5, 119.2, 121.2, 124.2, 126.9 (C5 triazole), 127.2, 128.0, 129.1, 129.8, 132.0, 134.7, 142.8 (C4 triazole), 156.4, 164.1 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{22}H_{20}N_4O_3+H]^+$: 389.1535. Found: 388.9711.

N-*(4-Bromophenyl)-2-{4-[(naphthalen-1-yloxy)methyl]-1*H-*1,2,3-triazol- -1-yl}acetamide (**10c**)*. Yield: 87 %; light brown solid; m.p.: 226–228 °C; FTIR (KBr, cm^{-1}): 3258 (N–H str., amide), 3126 (C–H str., triazole ring), 3045 (C–H str., aromatic ring), 2918, 1664 (C=O str., amide), 1595, 1550, 1475 (C=C str., aromatic ring), 1267 (C–O asym. str., ether), 1182 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.31 (2H, *s*, OCH_2), 5.38 (2H, *s*, NCH_2), 7.21 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.38 (1H, *d*, *J* = 8.0 Hz, Ar-H), 7.46– –7.58 (6H, *m*, Ar-H), 7.84 (3H, *d*, *J* = 8.0 Hz, Ar-H), 8.33 (1H, *s*, C–H triazole), 10.66 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.7, 61.5, 107.6, 115.9, 119.2, 121.6, 124.2, 126.9 (C5 triazole), 127.2, 128.0, 129.1, 129.8, 132.2, 134.7, 138.3, 142.9 (C4 triazole), 156.4, 164.9 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{21}H_{17}BrN_4O_2+H]^+$: 437.0535. Found: 436.9047.

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*2-{4-[(Naphthalen-2-yloxy)methyl]-1*H-*1,2,3-triazol-1-yl}*-N-*(4-nitrophenyl)acetamide (**10d**)*. Yield: 78 %; brown solid; m.p.: 218–220 °C; FTIR (KBr, cm^{-1}): 3317 (N–H str., amide), 3153 (C–H str., triazole ring), 3061 (C–H str., aromatic ring), 2945, 1699 (C=O str., amide), 1610, 1583, 1478 (C=C str., aromatic ring), 1504 (N–O asym., str., NO_2), 1340 (N–O sym., str., NO_2), 1257 (C–O asym. str., ether), 1180 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.32 (2H, *s*, OCH_2), 5.48 (2H, *s*, NCH_2), 7.22 (1H, *d*, J = 8.0 Hz, Ar-H), 7.37 (1H, *d*, J = 8.0 Hz, Ar-H), 7.48–7.54 (2H, *m*, Ar-H), 7.84–7.85 (5H, *m*, Ar-H), 8.26 (2H, *d*, J = 8.0 Hz, Ar-H), 8.35 (1H, *s*, C–H triazole), 11.14 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.8, 61.5, 107.6, 119.2, 119.5, 124.2, 125.6, 126.9 (C5 triazole), 127.2, 128.0, 129.1, 129.9, 134.7, 143.0 (C4 triazole), 143.1, 145.0, 156.4, 165.8 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{21}H_{17}N_5O_4+H]^+$: 404.1281. Found: 403.8690.

N-*(Naphthalen-1-yl)-2-{4-[(naphthalen-1-yloxy)methyl]-1*H-*1,2,3-triazol-1-yl}acetamide (**10e**)*. Yield: 92 %; white solid; m.p.: 220–222 °C; FTIR (KBr, cm^{-1}): 3259 (N–H str., amide), 3165 (C–H str., triazole ring), 3055 (C–H str., aromatic ring), 2916, 1678 (C=O str., amide), 1601, 1544, 1462 (C=C str., aromatic ring), 1263 (C–O asym. str., ether), 1178 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.38 (2H, *s*, OCH_2), 5.59 (2H, *s*, NCH_2), 7.22 (1H, *d*, J = 8.0 Hz, Ar-H), 7.37 (1H, *d*, J = 8.0 Hz, Ar-H), 7.48–7.59 (5H, *m*, Ar-H), 7.73–7.98 (6H, *m*, Ar-H), 8.18 (1H, *d*, J = 8.0 Hz, Ar-H), 8.39 (1H, *s*, C–H triazole), 10.47 (1H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.5, 61.6, 107.6, 119.2, 122.0, 123.1, 124.2, 126.1, 126.2, 126.5, 126.7, 126.9 (C5 triazole), 127.2, 128.0, 128.7, 129.1, 129.8, 133.2, 134.2, 134.7, 143.0 (C4 triazole), 156.4, 165.6 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{25}H_{20}N_4O_2+H]^+$: 409.1586. Found: 408.9673.

*2,2'-[1,4-Phenylenebis(oxymethylene-1*H-*1,2,3-triazole-4,1-diyl)]bis[*N-*phenylacetamide] (**13a**)*. Yield: 83 %; dark brown solid; m.p.: >250 °C; FTIR (KBr, cm^{-1}): 3278 (N–H str., amide), 3142 (C–H str., triazole ring), 3095 (C–H str., aromatic ring), 2947, 1680 (C=O str., amide), 1604, 1556, 1508 (C=C str., aromatic ring), 1236 (C–O asym. str., ether), 1056 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.08 (4H, *s*, OCH_2), 5.36 (4H, *s*, NCH_2), 7.01 (4H, *s*, Ar-H), 7.09 (2H, *t*, J = 8.0 Hz, Ar-H), 7.34 (2H, *t*, J = 8.0 Hz, Ar-H), 7.59 (4H, *d*, J = 8.0 Hz, Ar-H), 8.24 (2H, *s*, C–H triazole), 10.49 (2H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.7, 62.1, 116.0, 119.7, 124.2, 126.6 (C5 triazole), 129.4, 138.9, 143.2 (C4 triazole), 152.8, 164.7 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{28}H_{26}N_8O_4+H]^+$: 539.2077. Found: 539.2239.

*2,2'-[1,4-Phenylenebis(oxymethylene-1*H-*1,2,3-triazole-4,1-diyl)]bis[*N-*(4-methoxyphenyl)acetamide] (**13b**)*. Yield: 88 %; dark brown solid; m.p.: >250 °C; FTIR (KBr, cm^{-1}): 3275 (N–H str., amide), 3140 (C–H str., triazole ring), 3089

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(C–H str., aromatic ring), 2951, 1674 (C=O str., amide), 1606, 1552, 1510 (C=C str., aromatic ring), 1238 (C–O asym. str., ether), 1053 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 3.72 (6H, *s*, OCH_3), 5.11 (4H, *s*, OCH_2), 5.31 (4H, *s*, NCH_2), 6.92 (4H, *s*, Ar-H), 7.00 (4H, *d*, J = 8.0 Hz, Ar-H), 7.49 (4H, *d*, J = 8.0 Hz, Ar-H), 8.24 (2H, *s*, C–H triazole), 10.36 (2H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.6, 55.6, 61.9, 114.5, 116.2, 121.2, 126.6 (C5 triazole), 132.0, 143.2 (C4 triazole), 152.8, 156.0, 164.1 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{30}H_{30}N_8O_6+H]^+$: 599.2425. Found: 599.2288.

*2,2'-[1,4-Phenylenebis(oxymethylene-1*H*-1,2,3-triazole-4,1-diyl)]bis[*N*-(4--nitrophenyl)acetamide] (**13d**)*. Yield: 82 %; dark brown solid; m.p.: >250 °C; FTIR (KBr, cm^{-1}): 3253 (N–H str., amide), 3155 (C–H str., triazole ring), 3089 (C–H str., aromatic ring), 2954, 1705 (C=O str., amide), 1597, 1552, 1510 (C=C str., aromatic ring), 1506 (N–O asym. str., NO_2), 1342 (N–O sym. str., NO_2), 1261 (C–O asym. str., ether), 1060 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.13 (4H, *s*, OCH_2), 5.45 (4H, *s*, NCH_2), 7.00 (4H, *s*, Ar-H), 7.84 (4H, *d*, J = 8.0 Hz, Ar-H), 8.25 (2H, *s*, C–H triazole), 8.26 (4H, *d*, J = 8.0 Hz, Ar-H), 11.12 (2H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.7, 61.9, 116.1, 119.5, 125.6, 126.6 (C5 triazole), 143.2 (C4 triazole), 145.0, 152.8, 164.8 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{28}H_{24}N_{10}O_8+H]^+$: 629.1779. Found: 629.4429.

*2,2'-[1,4-Phenylenebis(oxymethylene-1*H*-1,2,3-triazole-4,1-diyl)]bis[*N*-(naphthalen-1-yl)acetamide] (**13e**)*. Yield: 85 %; dark brown solid; m.p.: >250 °C; FTIR (KBr, cm^{-1}): 3261 (N–H str., amide), 3138 (C–H str., triazole ring), 3088 (C–H str., aromatic ring), 2947, 1678 (C=O str., amide), 1597, 1543, 1508 (C=C str., aromatic ring), 1236 (C–O asym. str., ether), 1055 (C–O sym. str., ether); ^{1}H-NMR (400 MHz, DMSO-d_6, δ / ppm): 5.13 (4H, *s*, OCH_2), 5.56 (4H, *s*, NCH_2), 7.00 (4H, *s*, Ar-H), 7.49–7.82 (10H, *m*, Ar-H), 7.97 (2H, *d*, J = 8.0 Hz, Ar-H), 8.17 (2H, *d*, J = 8.0 Hz, Ar-H), 8.27 (2H, *s*, C–H triazole), 10.46 (2H, *s*, N–H amide); ^{13}C-NMR (100 MHz, DMSO-d_6, δ / ppm): 52.7, 62.1, 116.0, 122.0, 123.1, 126.1, 126.2, 126.5, 126.6 (C5 triazole), 126.8, 128.0, 128.7, 133.2, 134.2, 143.2 (C4 triazole), 152.8, 164.7 (C=O amide); ESI-HRMS (*m*/*z*) calcd. for $[C_{36}H_{30}N_8O_4+H]^+$: 639.2390. Found: 639.2136.

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^{1}H-NMR, ^{13}C-NMR AND HRMS SPECTRA OF THE COMPOUNDS

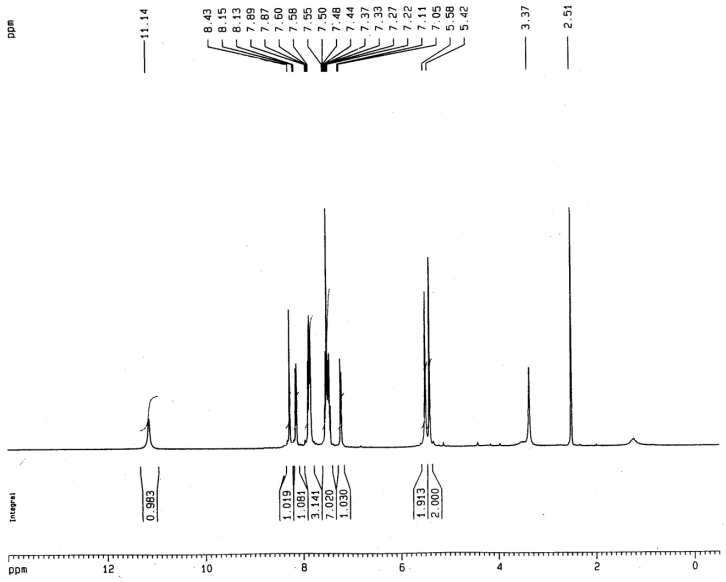

Fig. S-1. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **7a**.

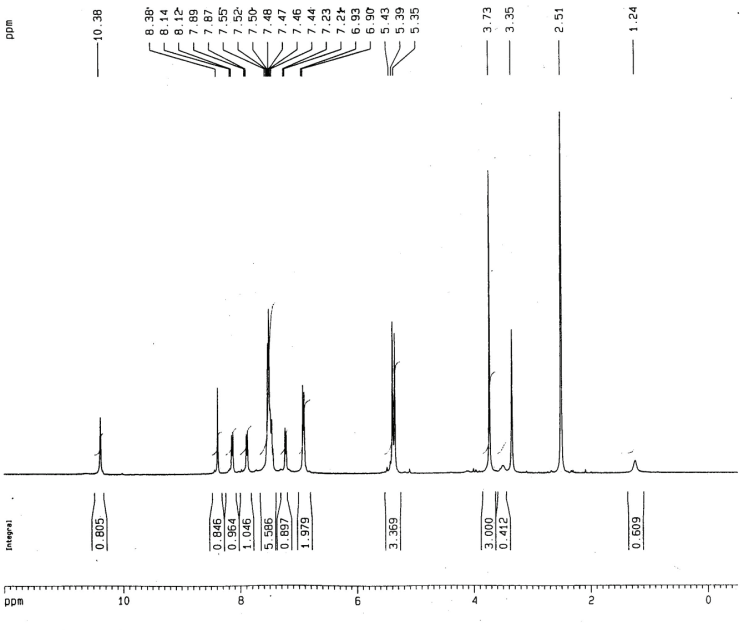

Fig. S-2. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **7b**.

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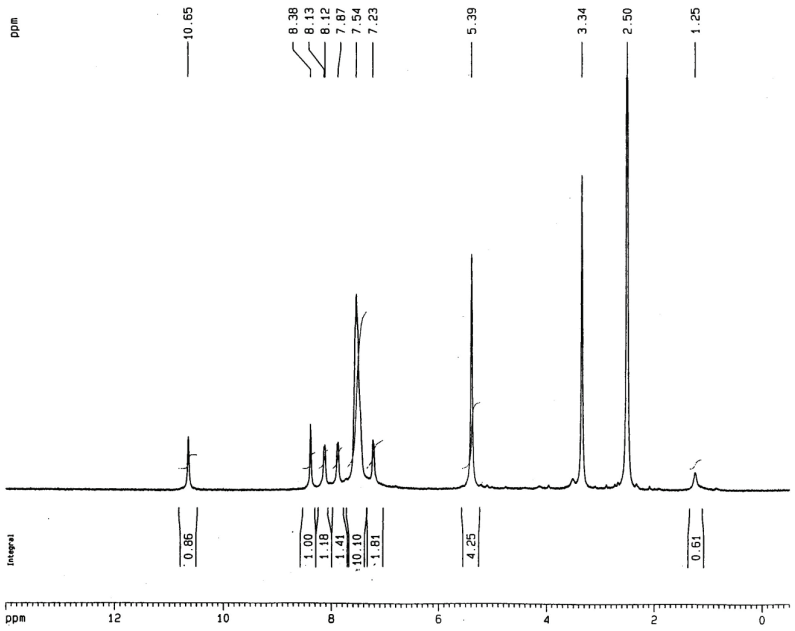

Fig. S-3. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **7c**.

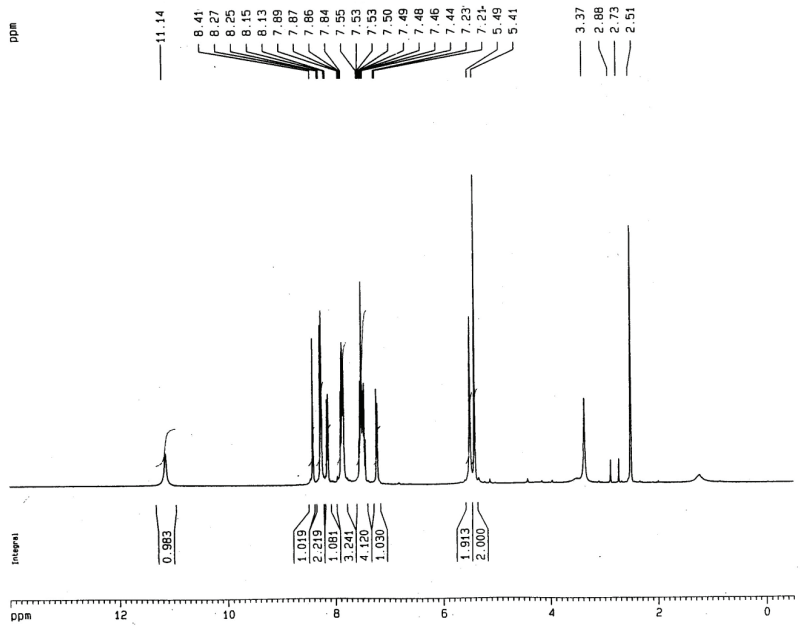

Fig. S-4. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **7d**.

(CC) 2017 SCS

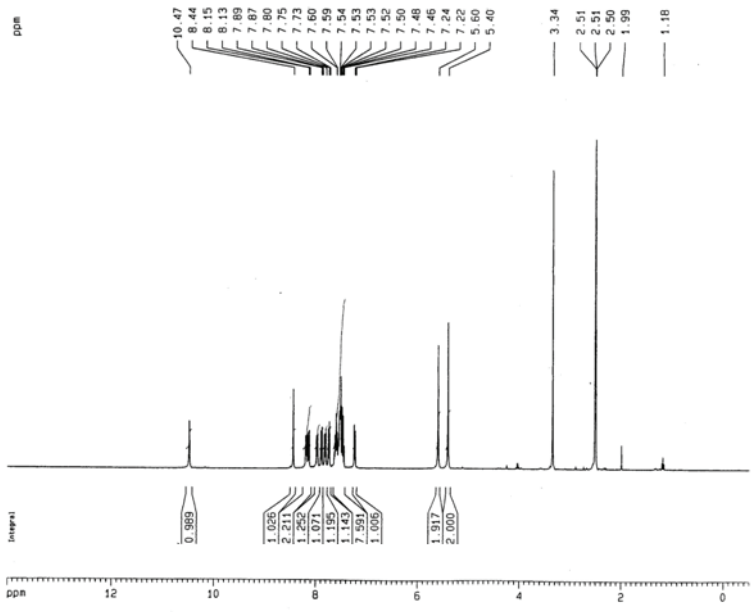

Fig. S-5. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **7e**.

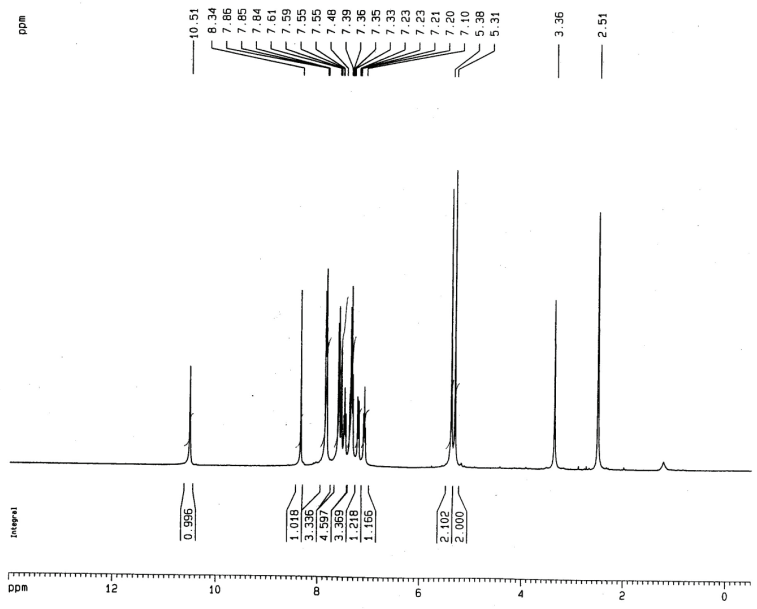

Fig. S-6. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **10a**.

(CC) 2017 SCS

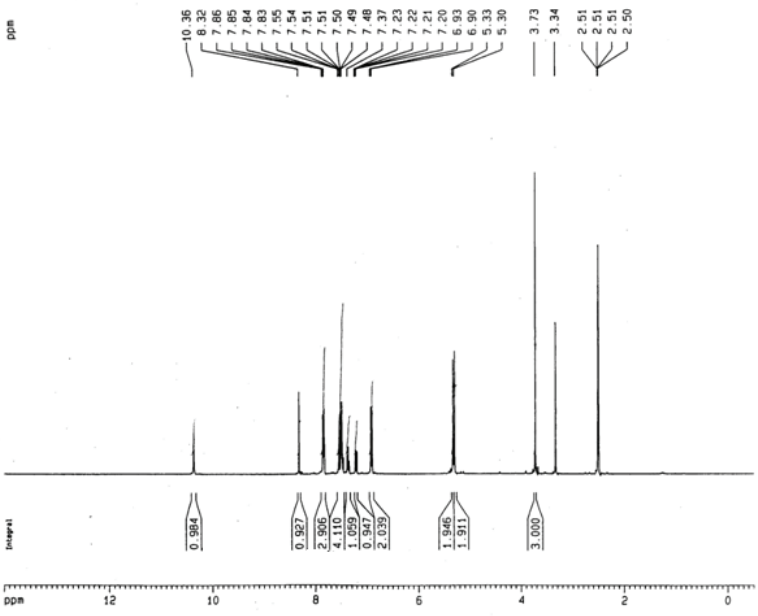

Fig. S-7. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **10b**.

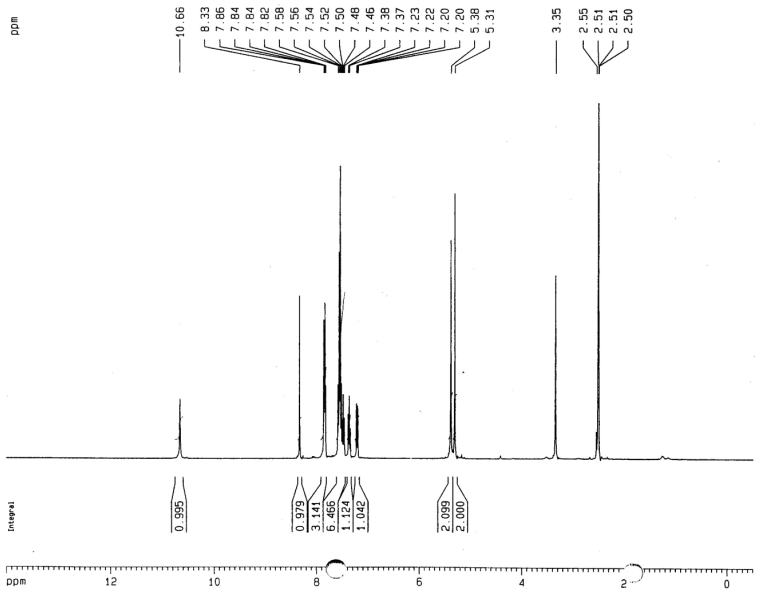

Fig. S-8. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **10c**.

(CC) 2017 SCS

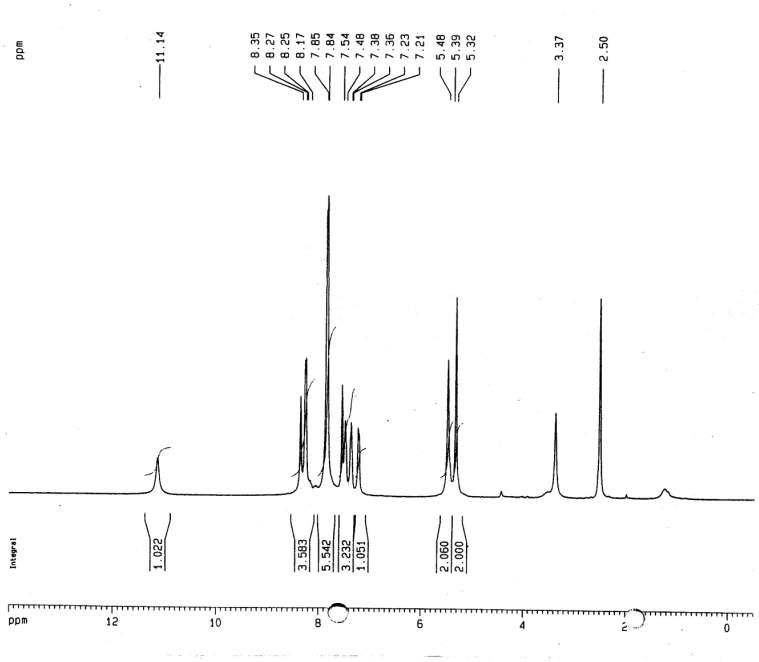

Fig. S-9. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **10d**.

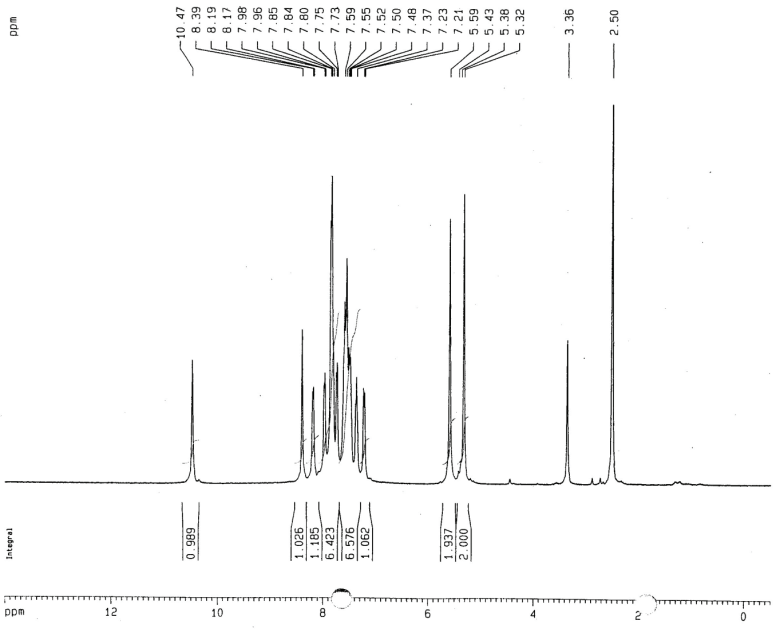

Fig. S-10. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **10e**.

(CC) 2017 SCS

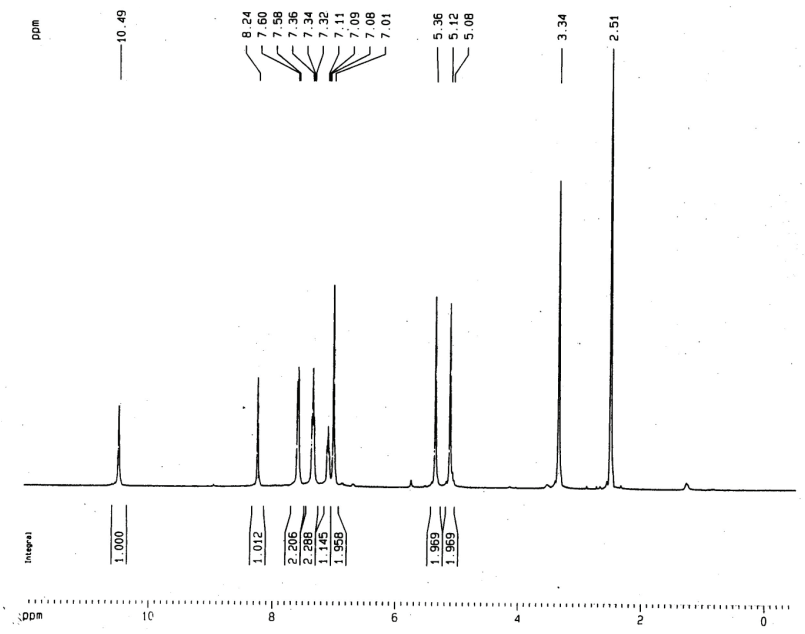

Fig. S-11. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **13a**.

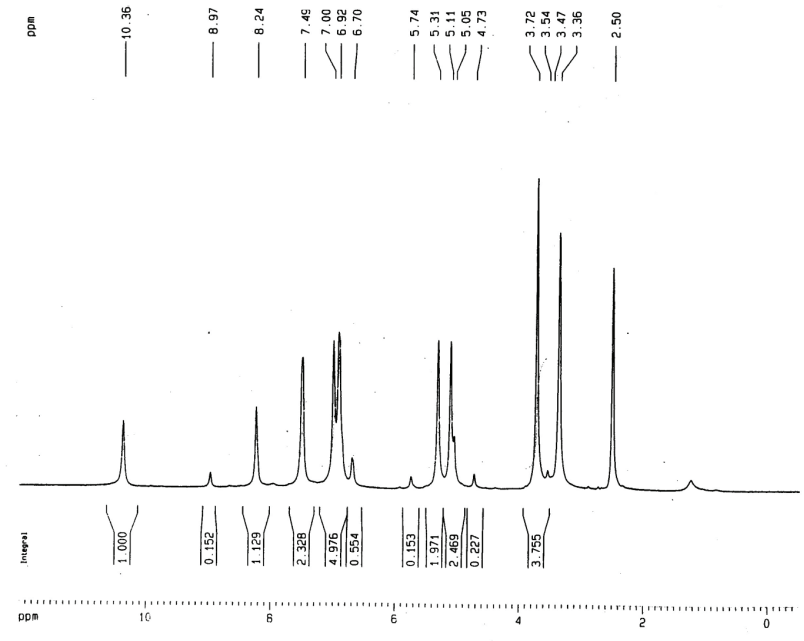

Fig. S-12. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **13b**.

(CC) 2017 SCS

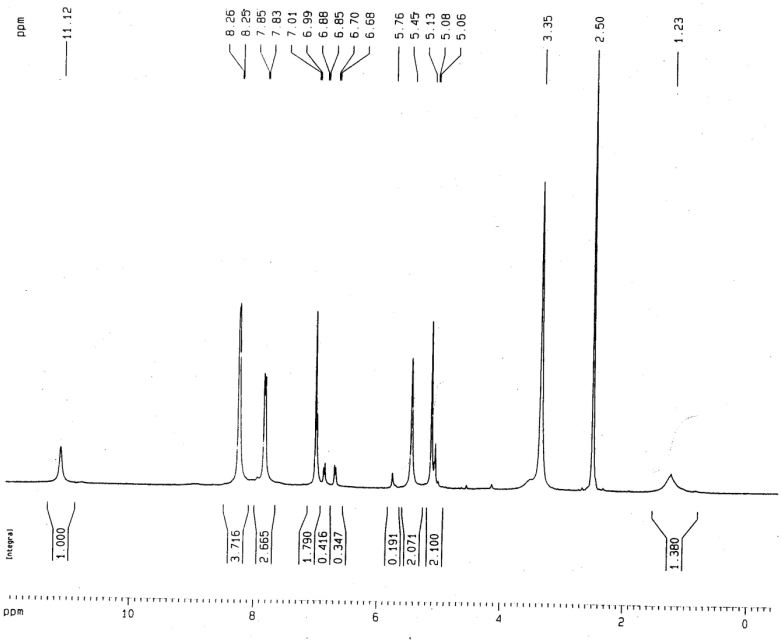

Fig. S-13. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **13d**.

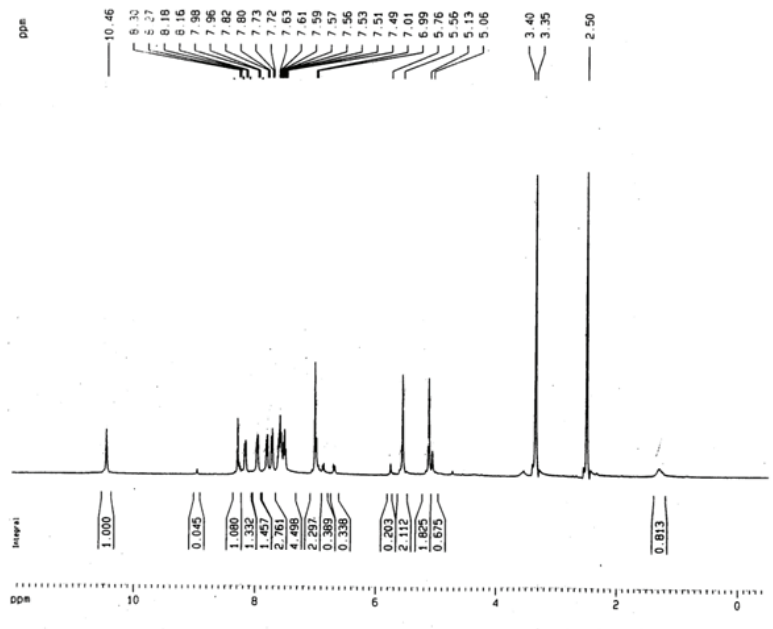

Fig. S-14. ^{1}H-NMR spectrum (DMSO-d_6, 400 MHz) of compound **13e**.

(CC) 2017 SCS

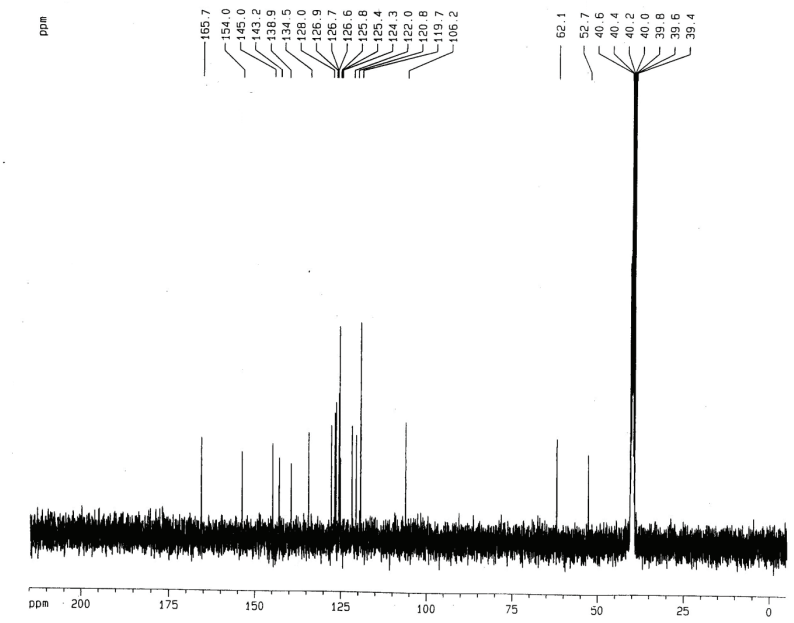

Fig. S-15. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **7a**.

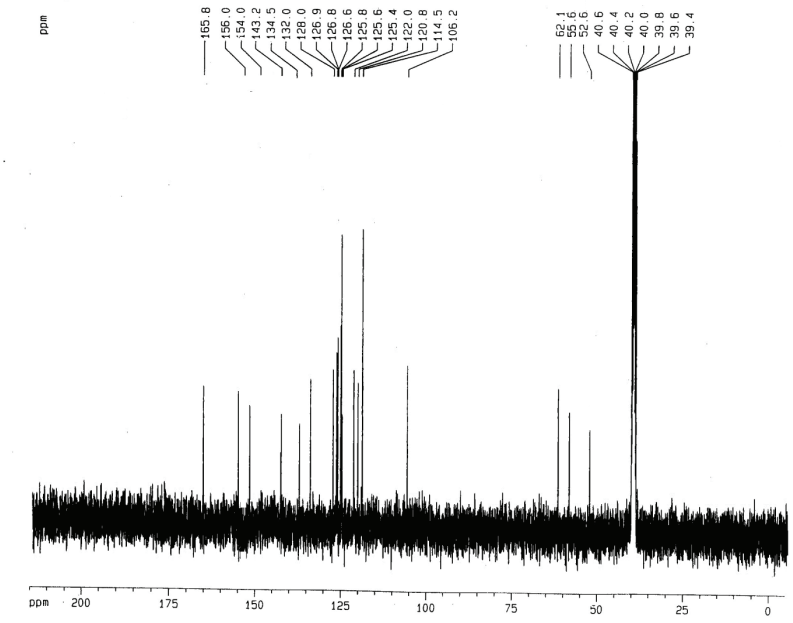

Fig. S-16. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **7b**.

(CC) 2017 SCS

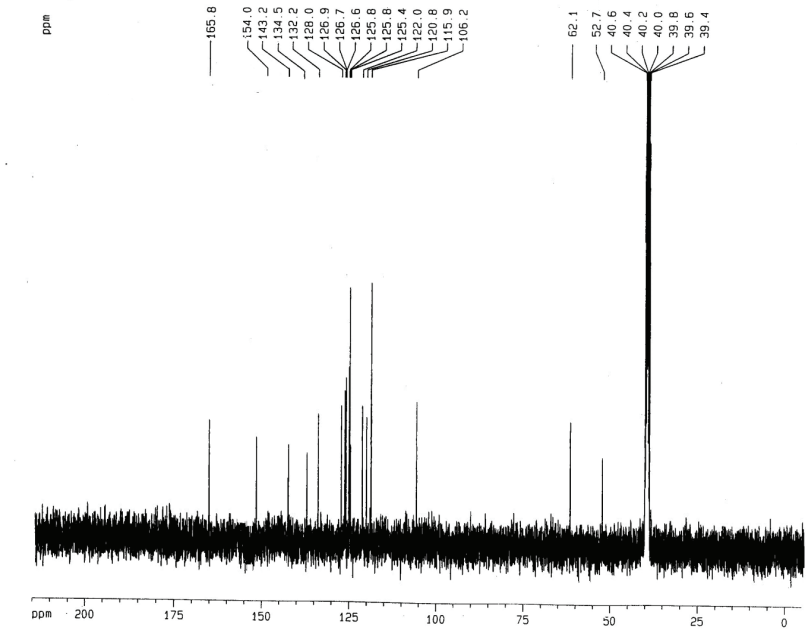

Fig. S-17. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **7c**.

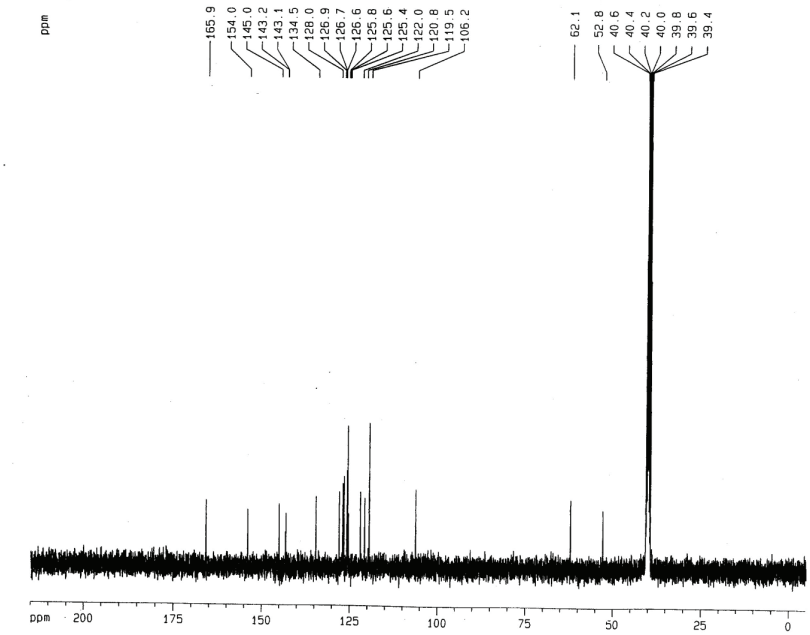

Fig. S-18. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **7d**.

(CC) 2017 SCS

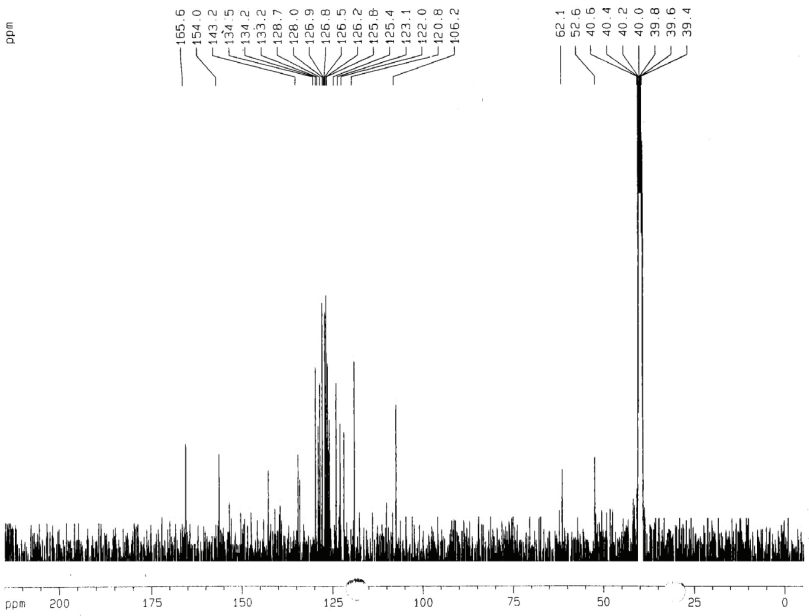

Fig. S-19. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **7e**.

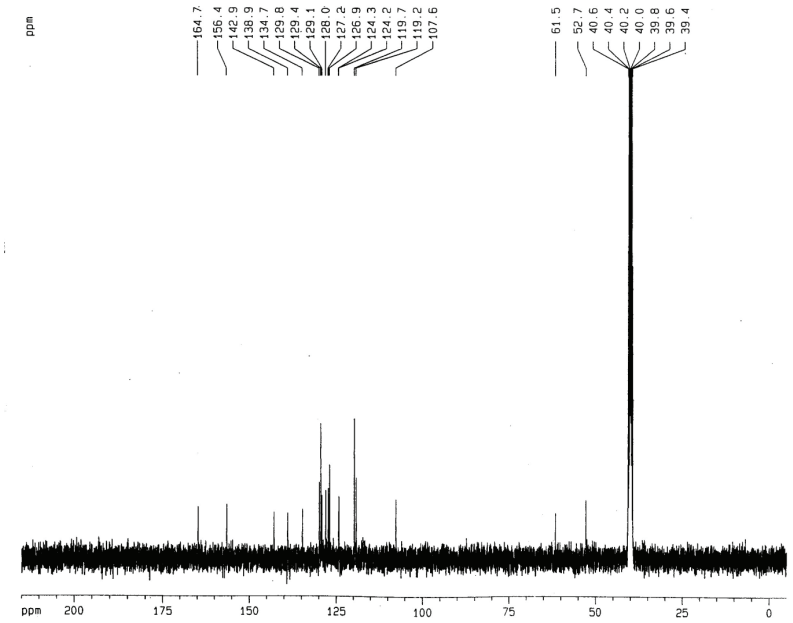

Fig. S-20. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **10a**.

(CC) 2017 SCS

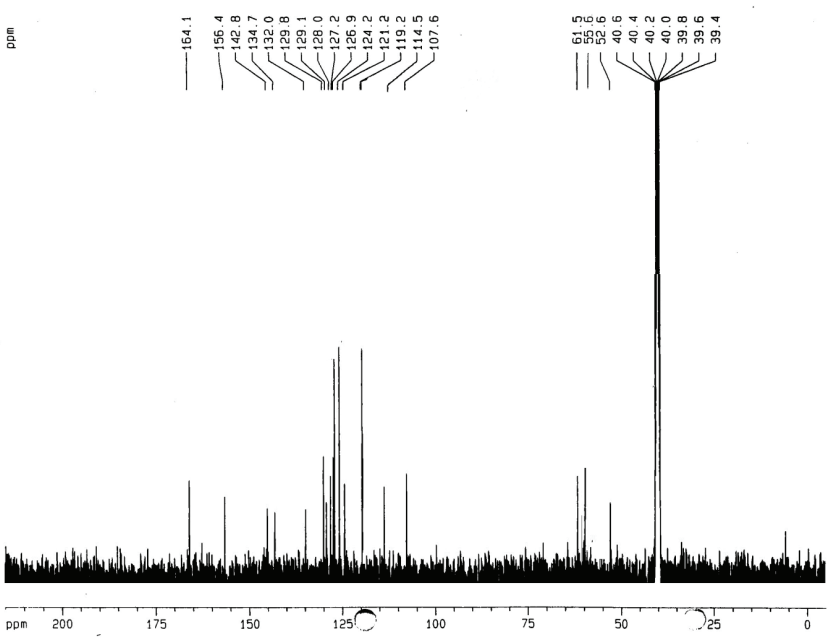

Fig. S-21. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **10b**.

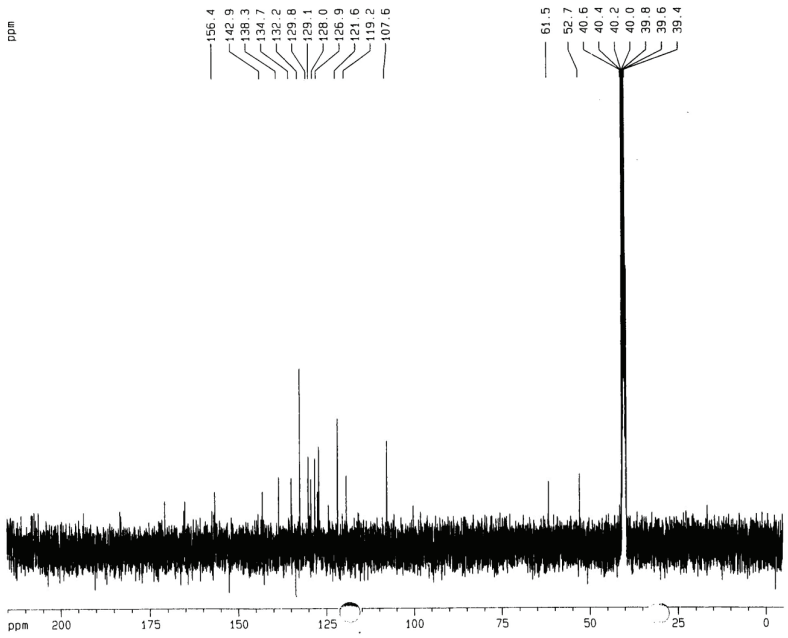

Fig. S-22. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **10c**.

(CC) 2017 SCS

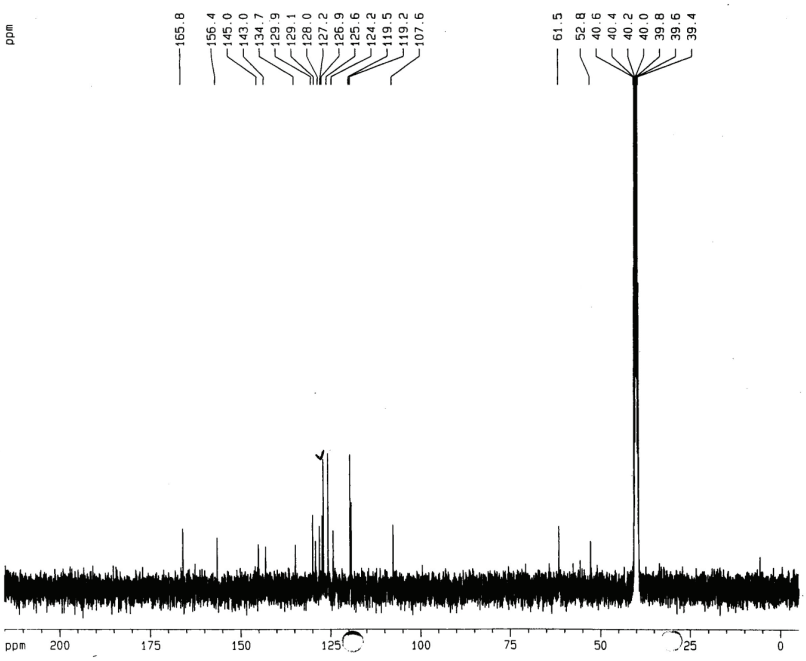

Fig. S-23. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **10d**.

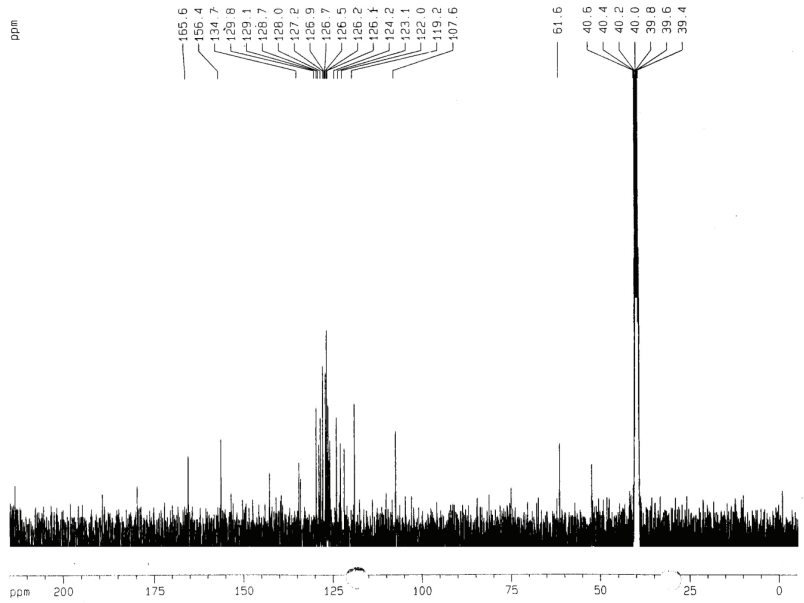

Fig. S-24. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **10e**.

(CC) 2017 SCS

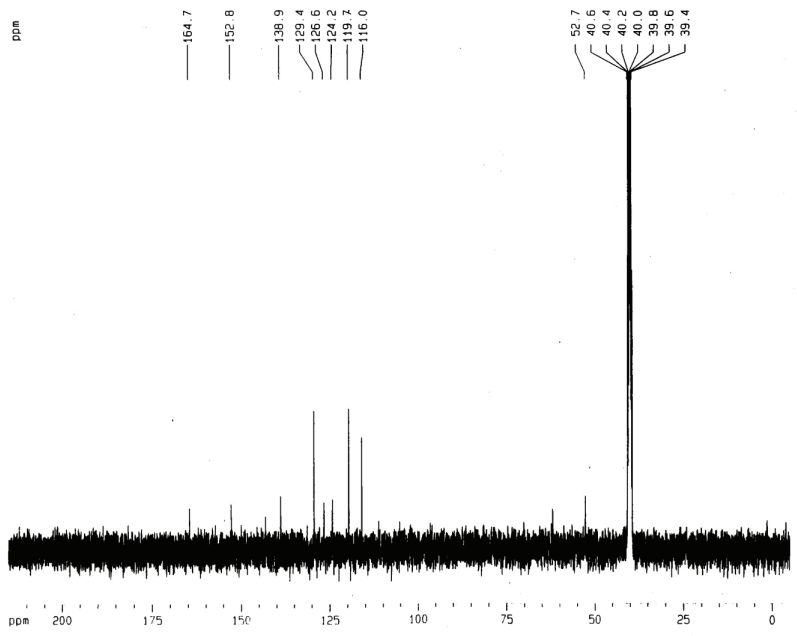

Fig. S-25. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **13a**.

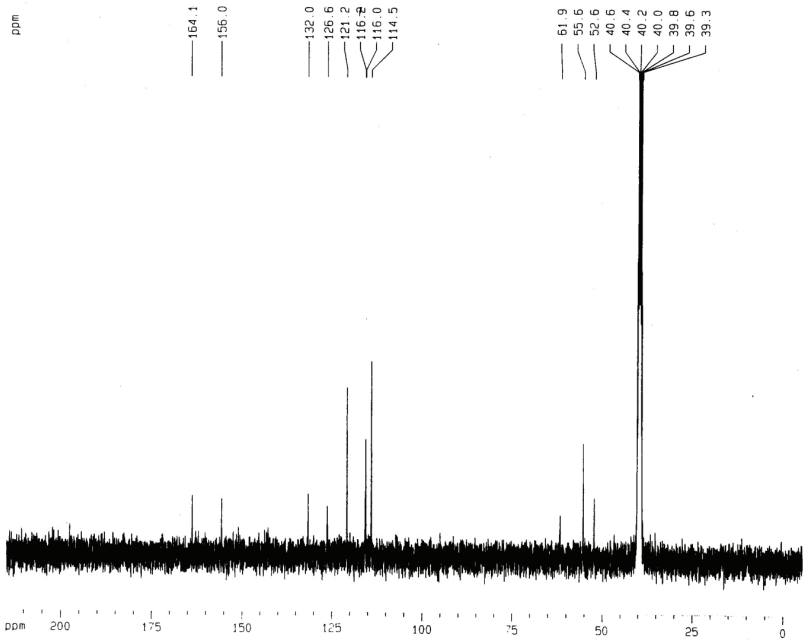

Fig. S-26. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **13b**.

(CC) 2017 SCS

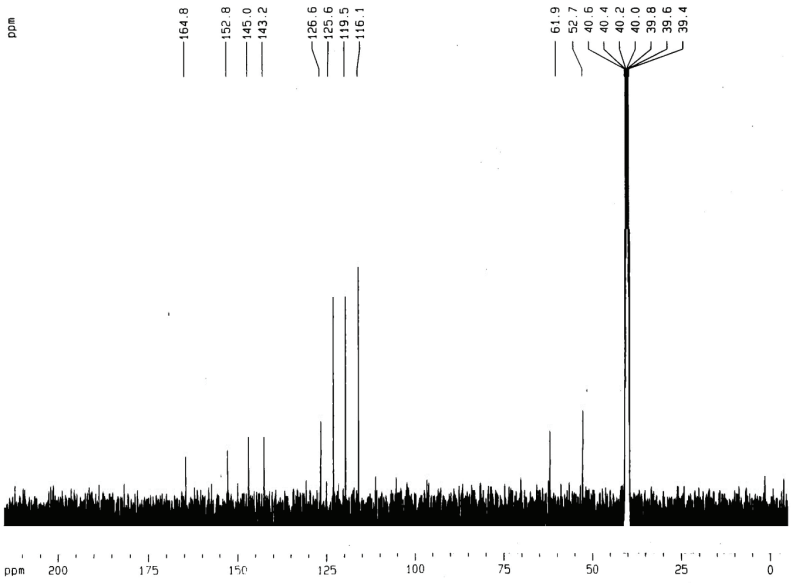

Fig. S-27. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **13d**.

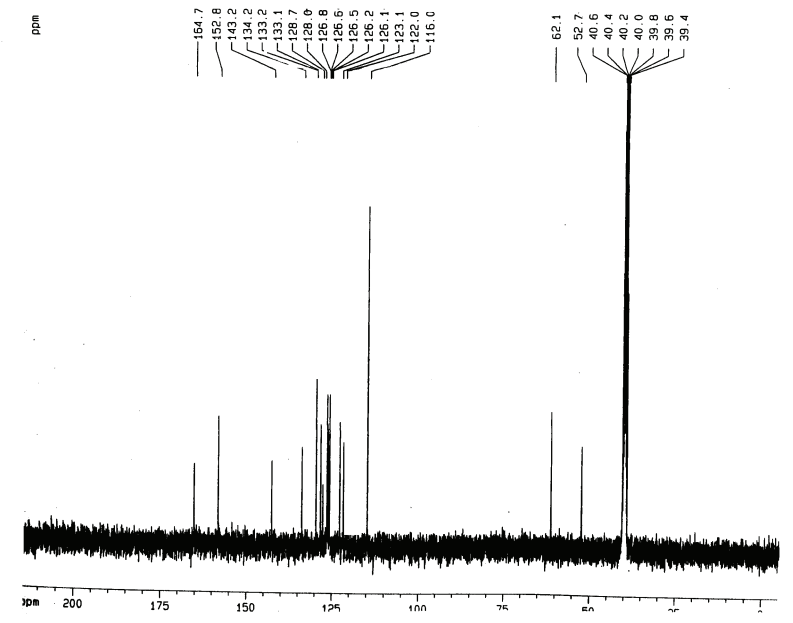

Fig. S-28. ^{13}C-NMR spectrum (DMSO-d_6, 100 MHz) of compound **13e**.

(CC) 2017 SCS

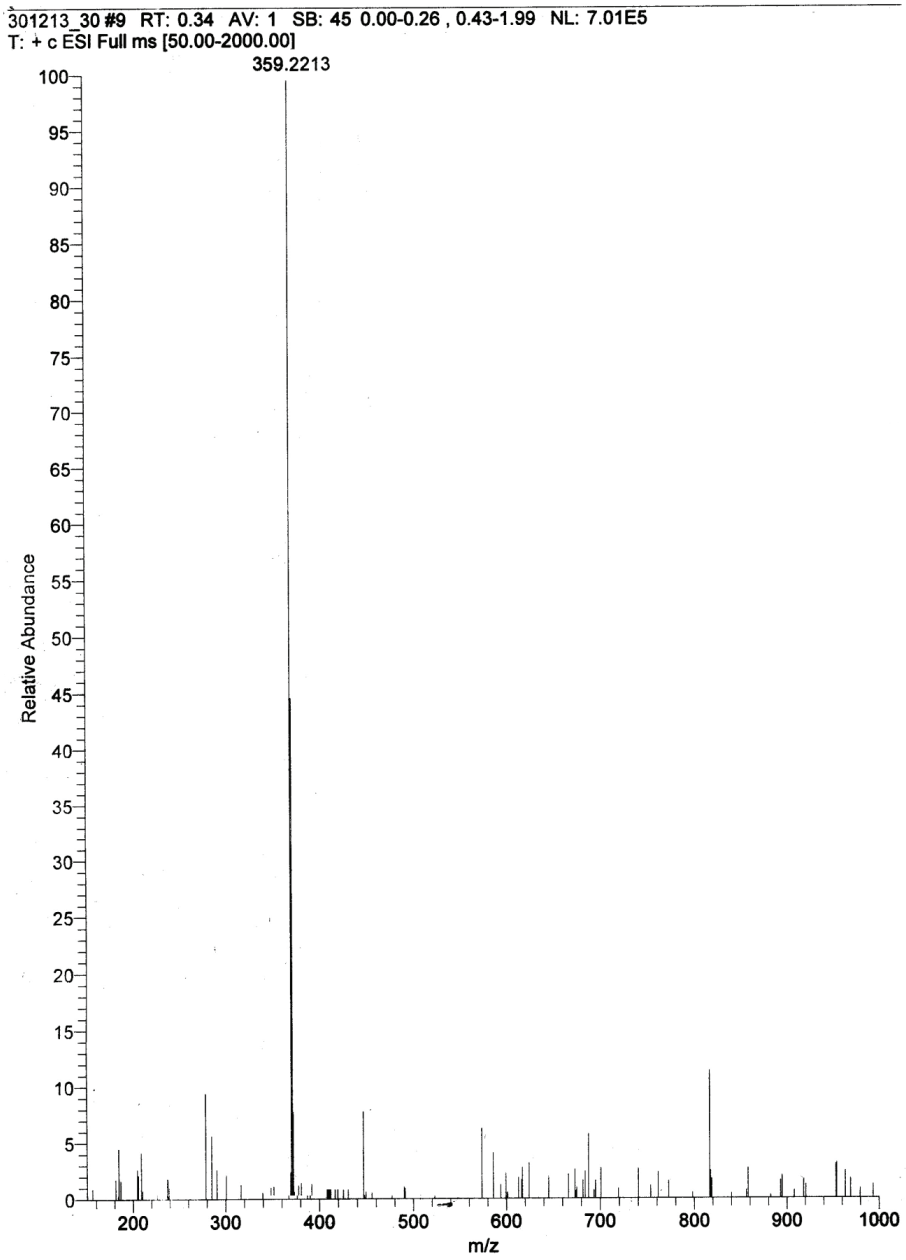

Fig. S-29. HRMS of compound **7a**.

(CC) 2017 SCS

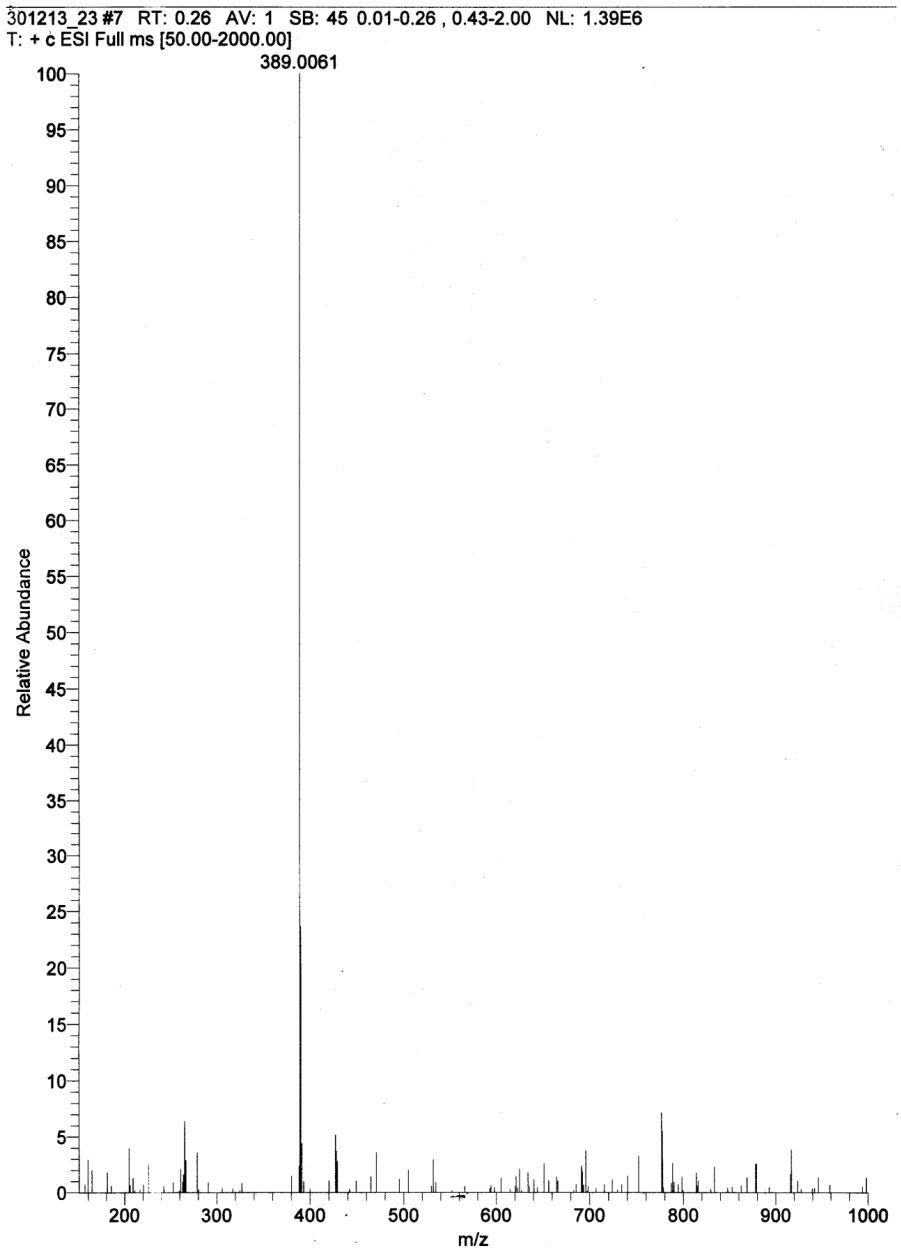

Fig. S-30. HRMS of compound **7b**.

(CC) 2017 SCS

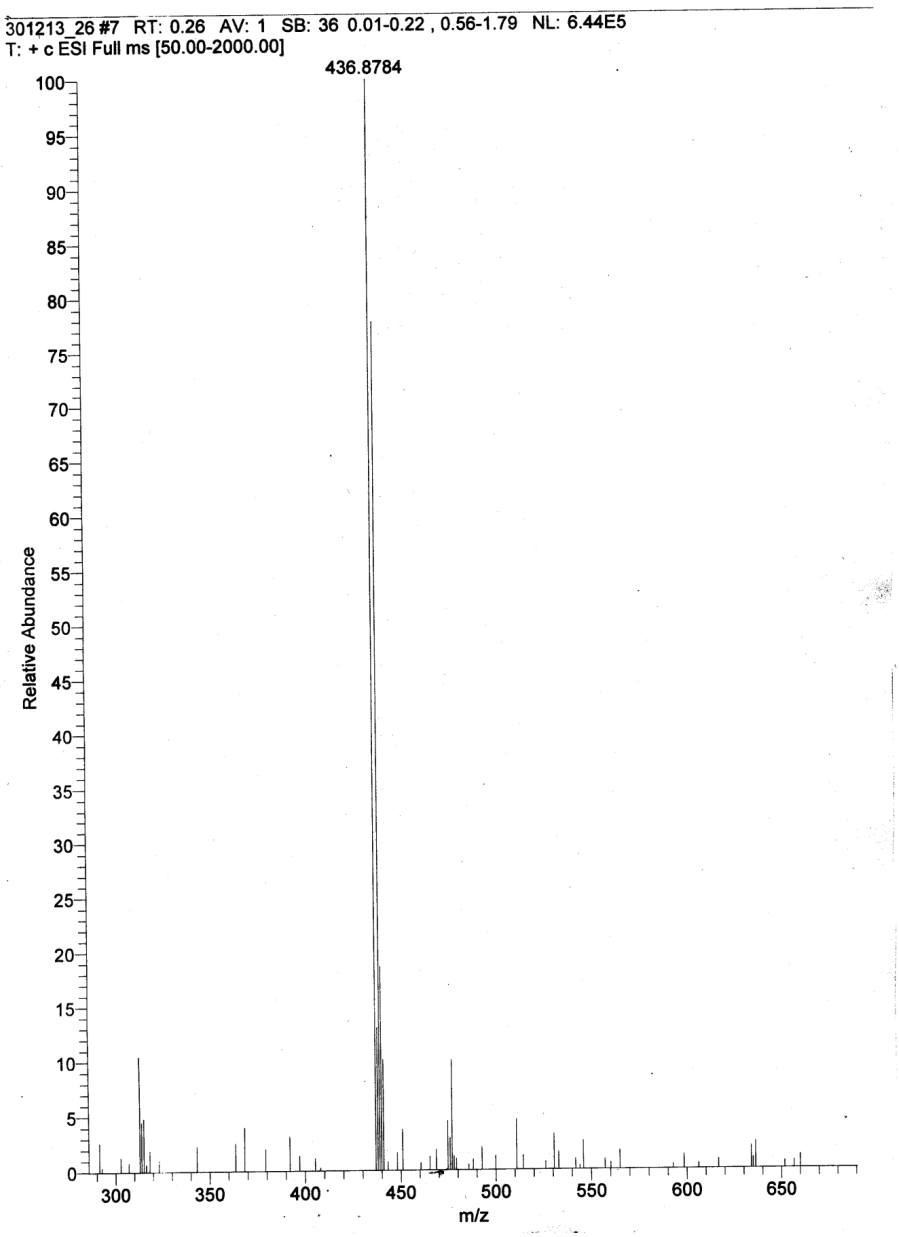

Fig. S-31. HRMS of compound **7c**.

(CC) 2017 SCS

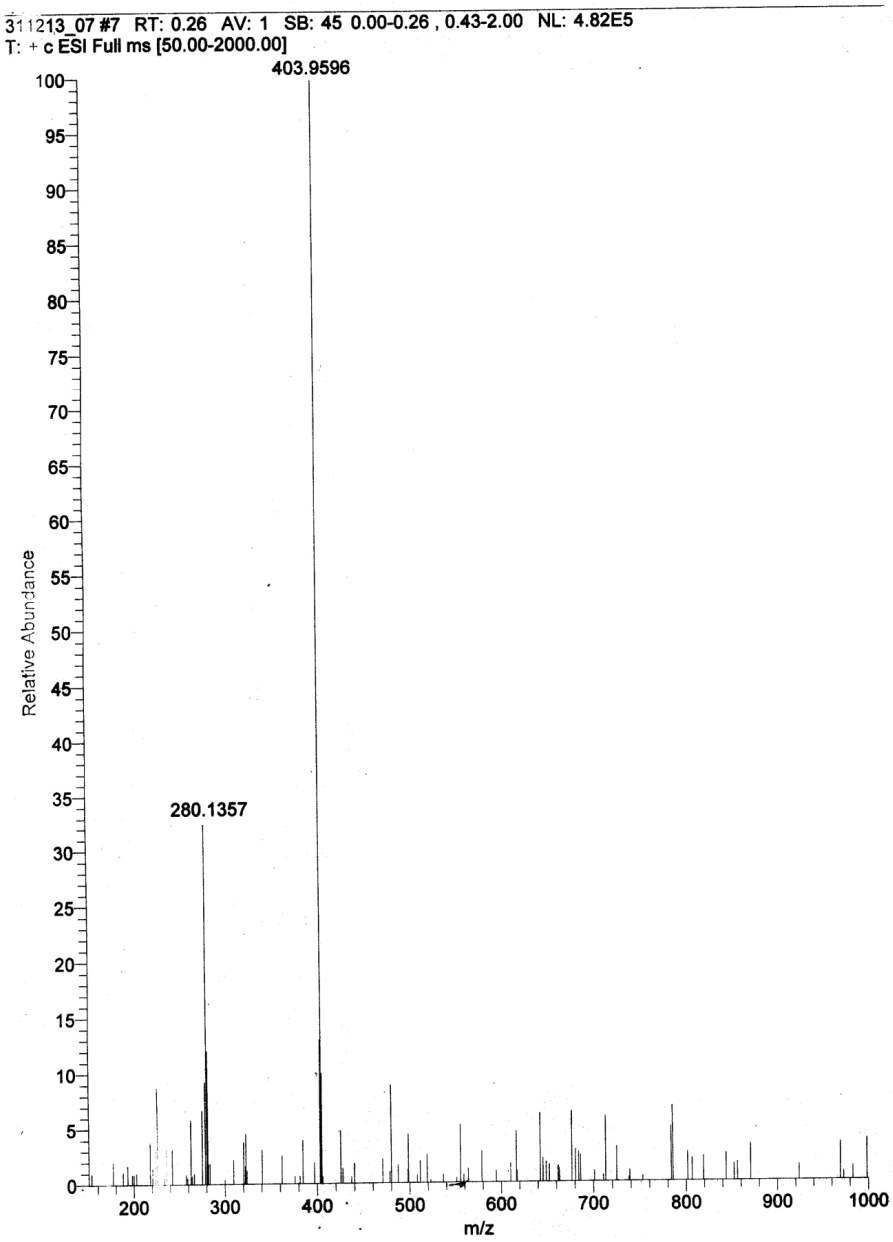

Fig. S-32. HRMS of compound **7d**.

(CC) 2017 SCS

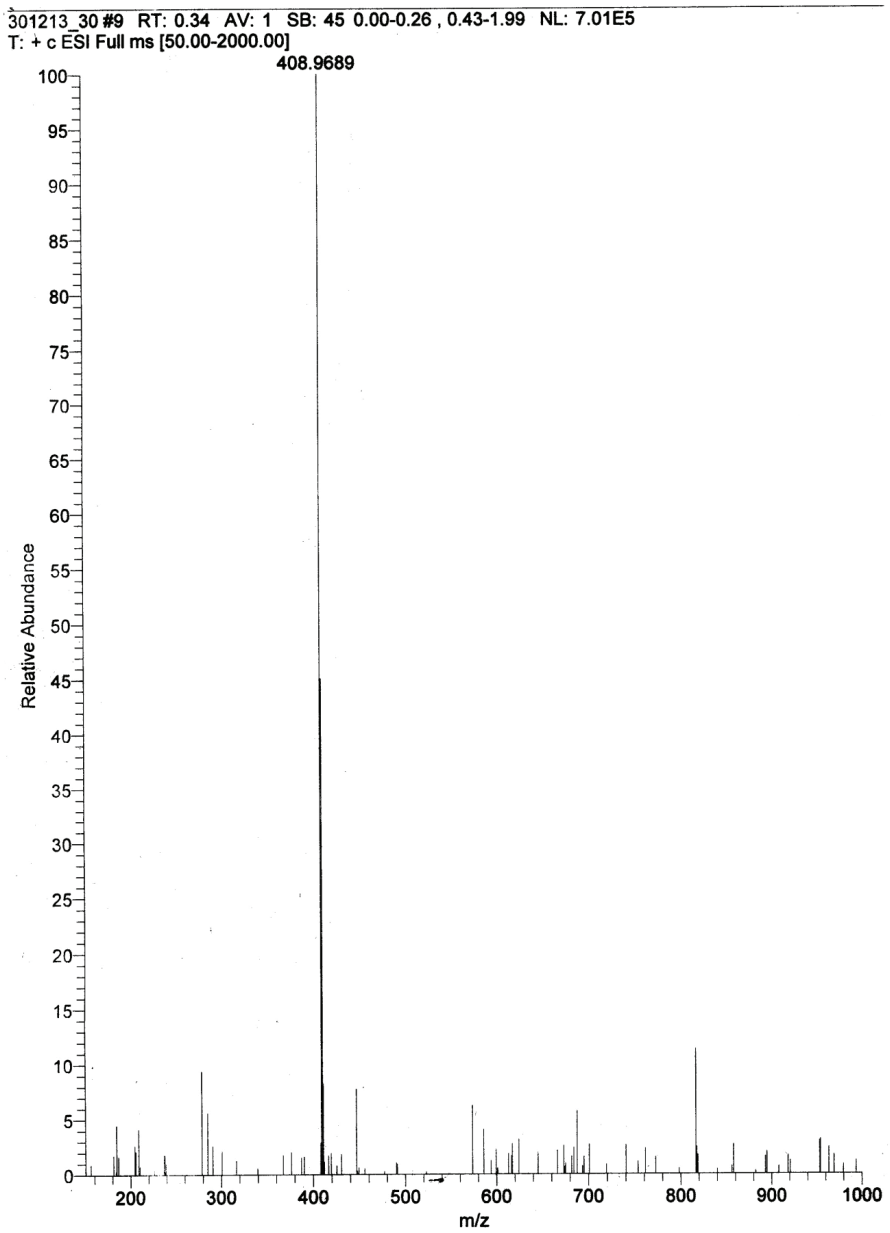

Fig. S-33. HRMS of compound **7e**.

(CC) 2017 SCS

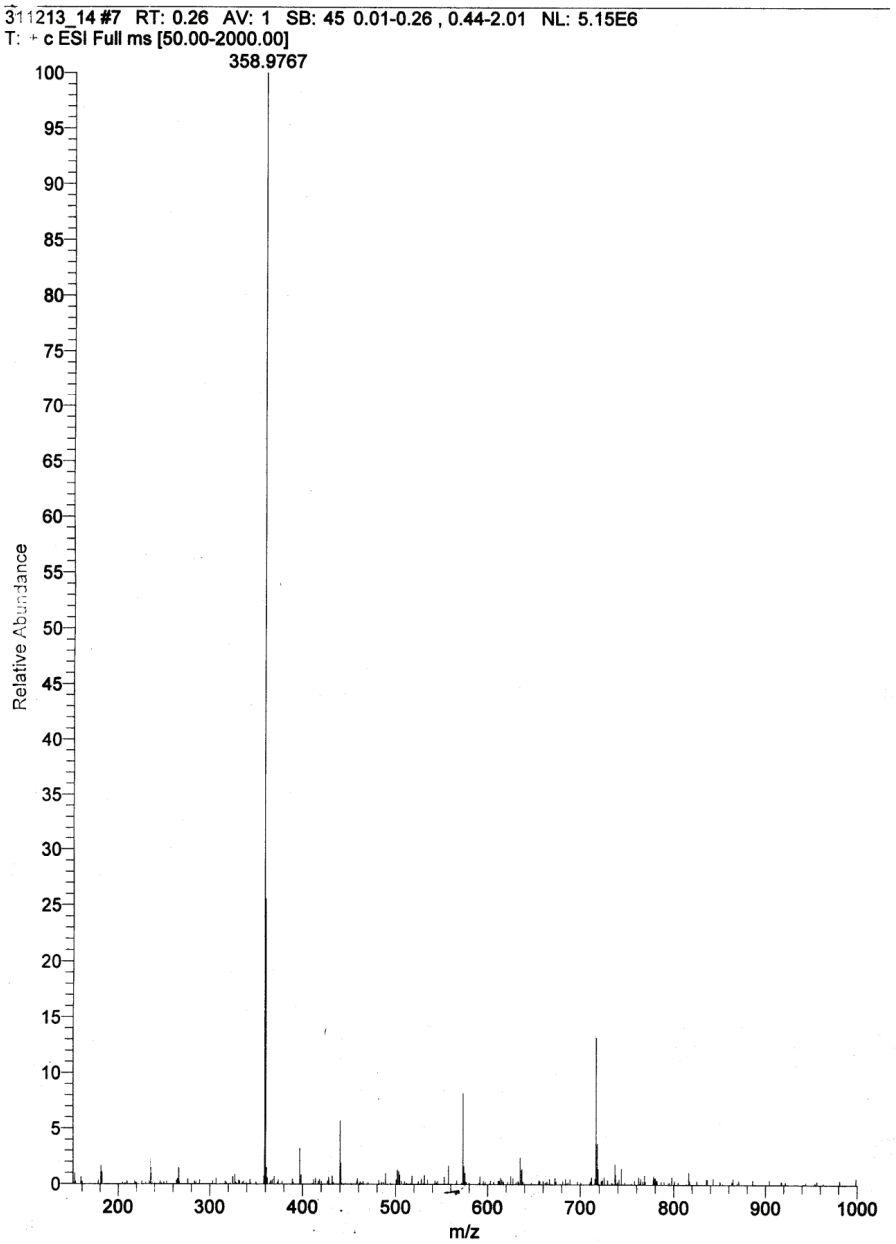

Fig. S-34. HRMS of compound **10a**,

(CC) 2017 SCS

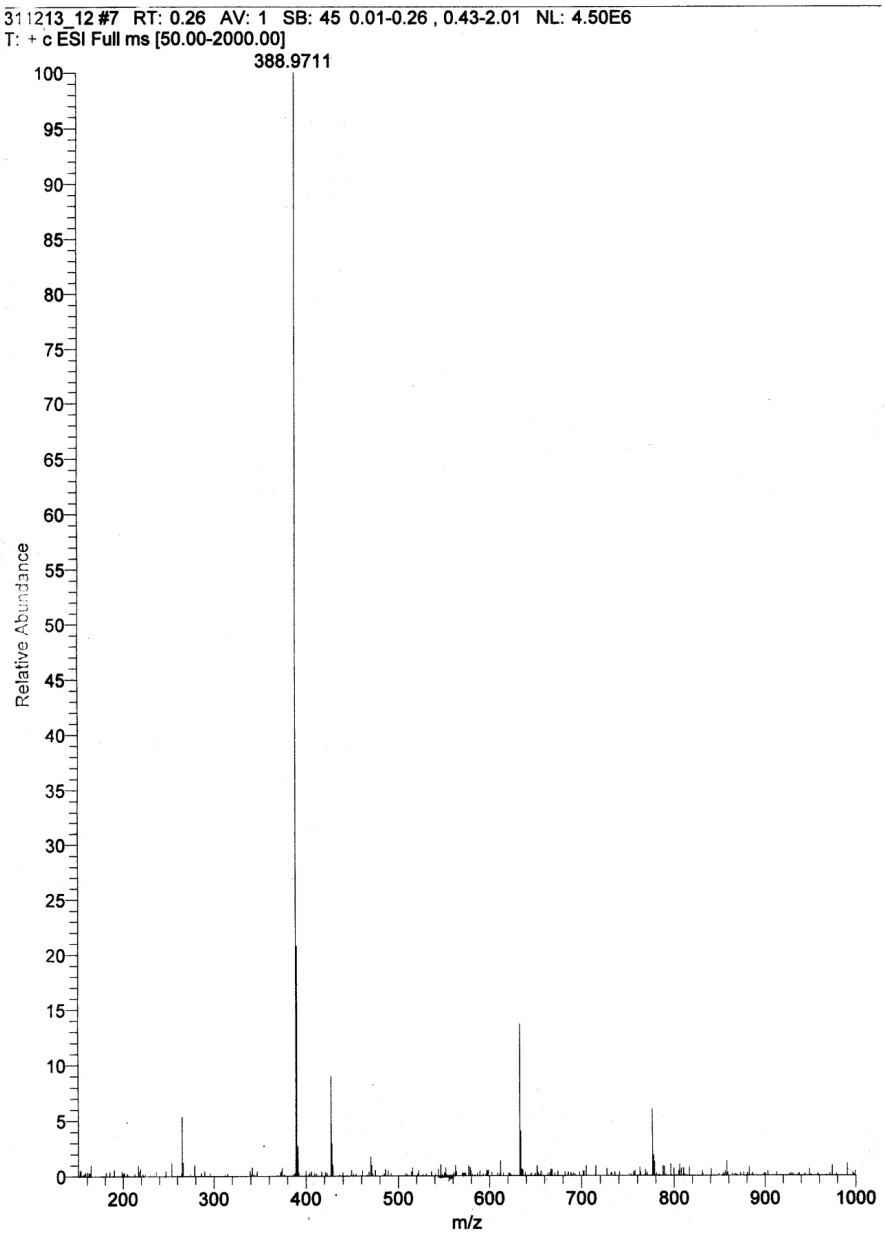

Fig. S-35. HRMS of compound **10b**.

(CC) 2017 SCS

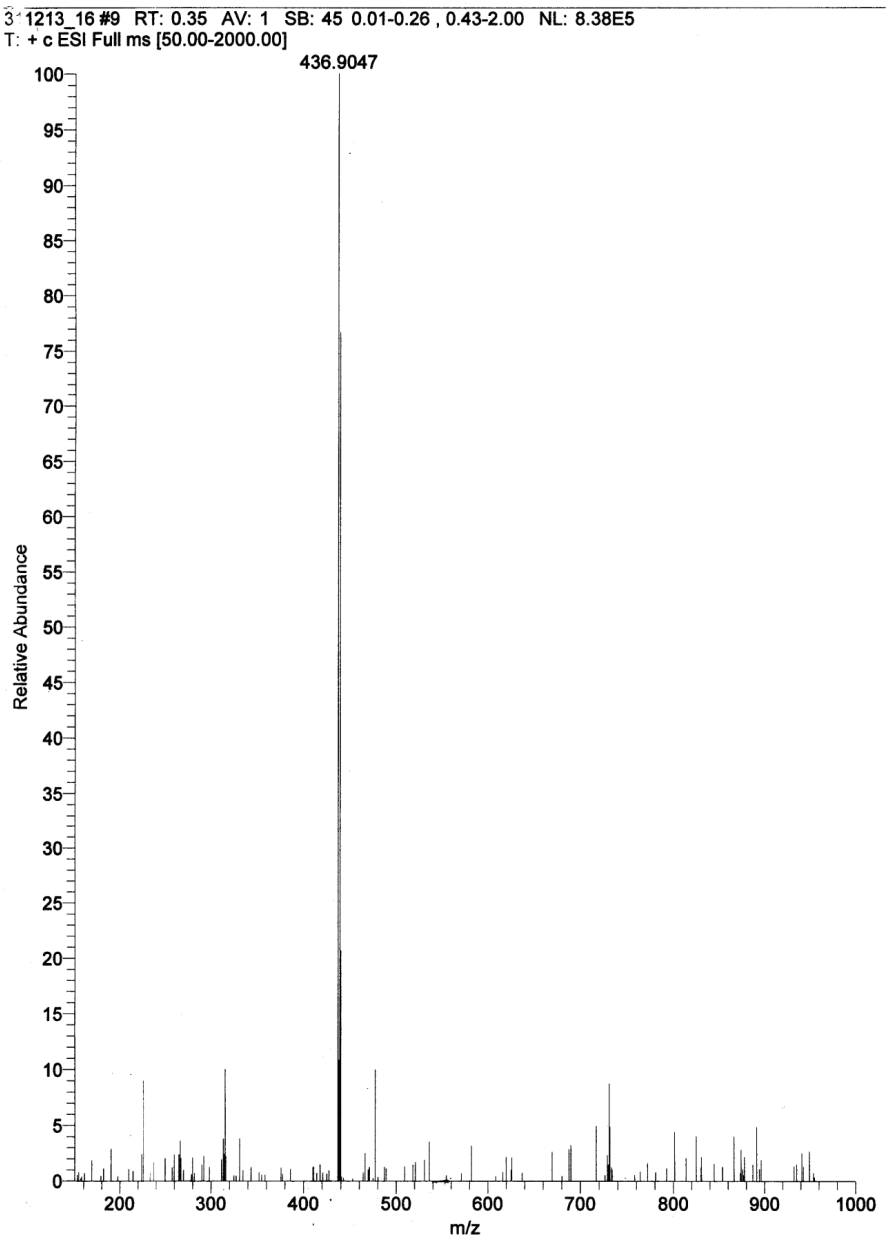

Fig. S-36. HRMS of compound **10c**.

(CC) 2017 SCS

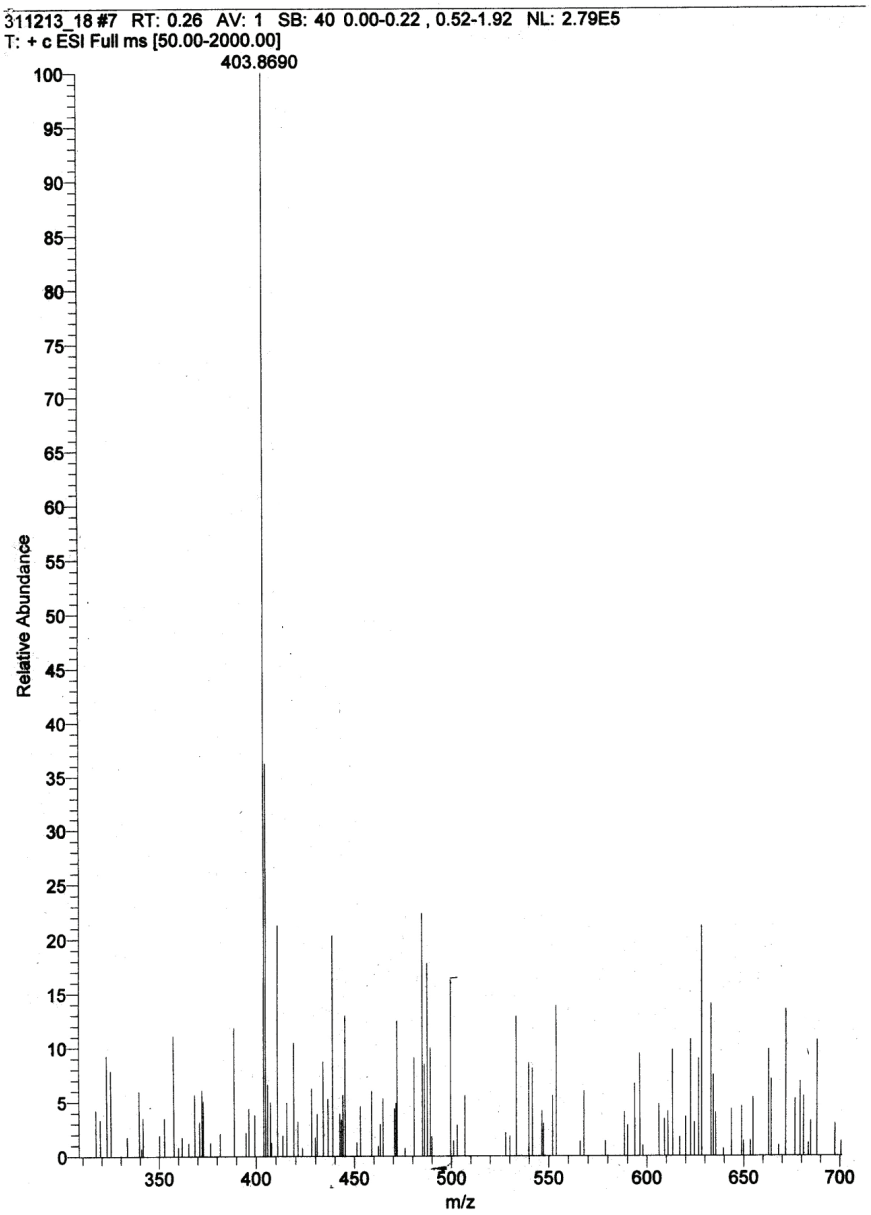

Fig. S-37. HRMS of compound **10d**.

(CC) 2017 SCS

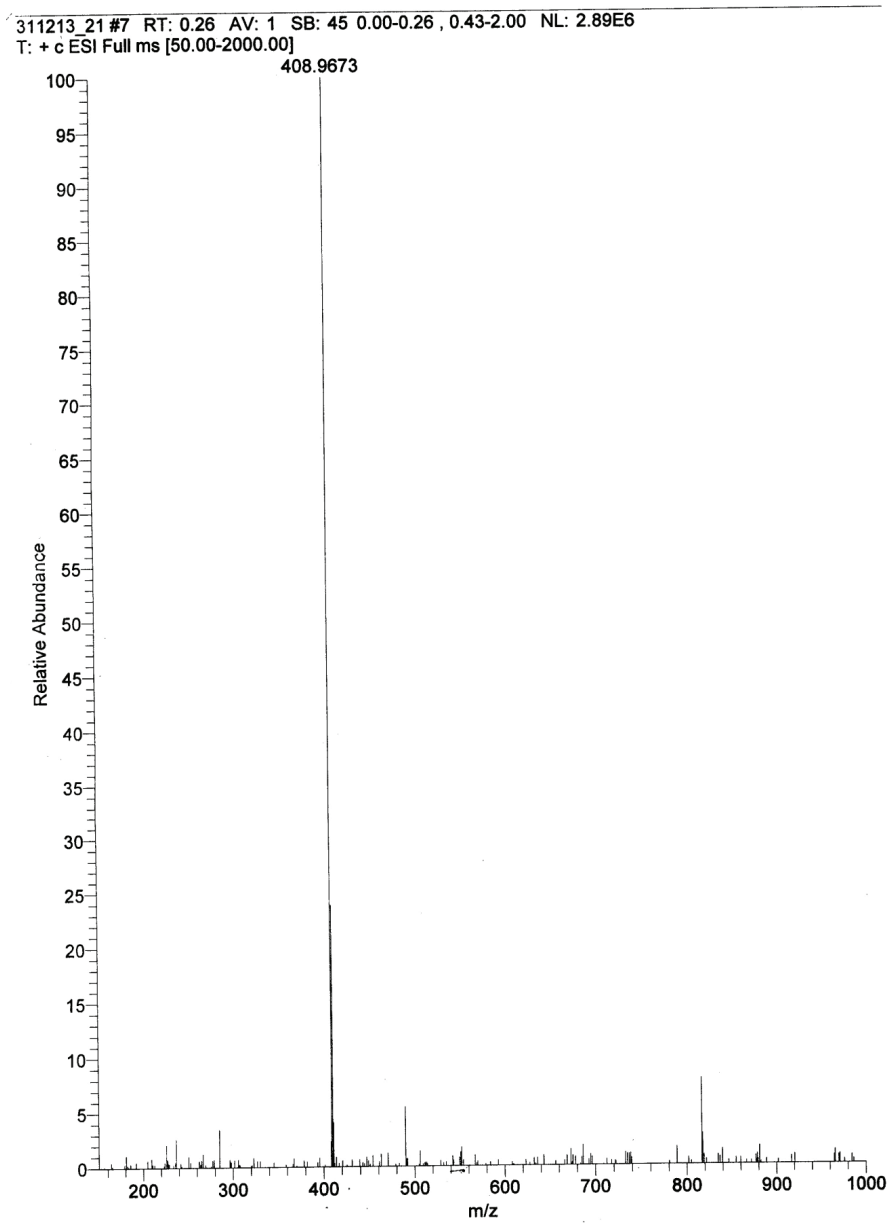

Fig. S-38. HRMS of compound **10e**.

(CC) 2017 SCS

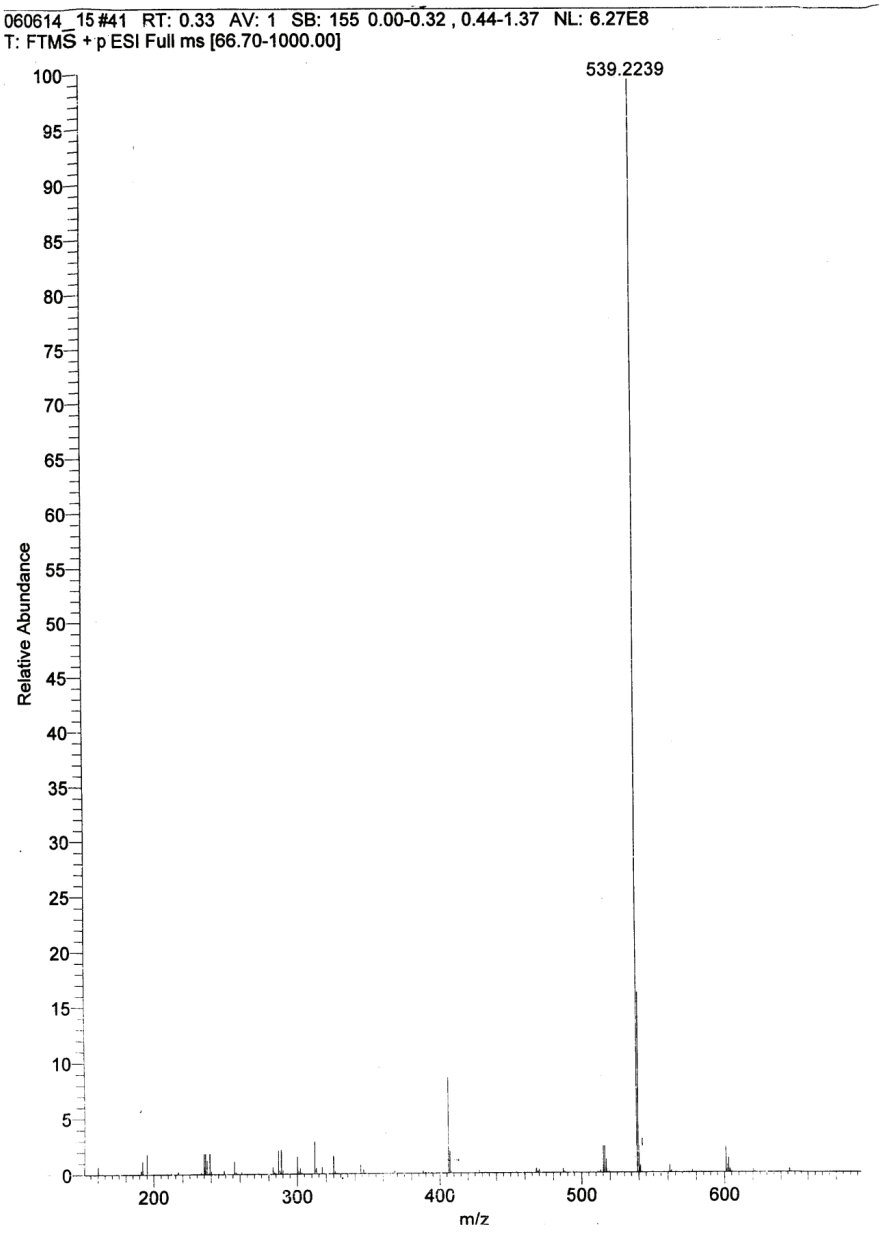

Fig. S-39. HRMS of compound **13a**.

(CC) 2017 SCS

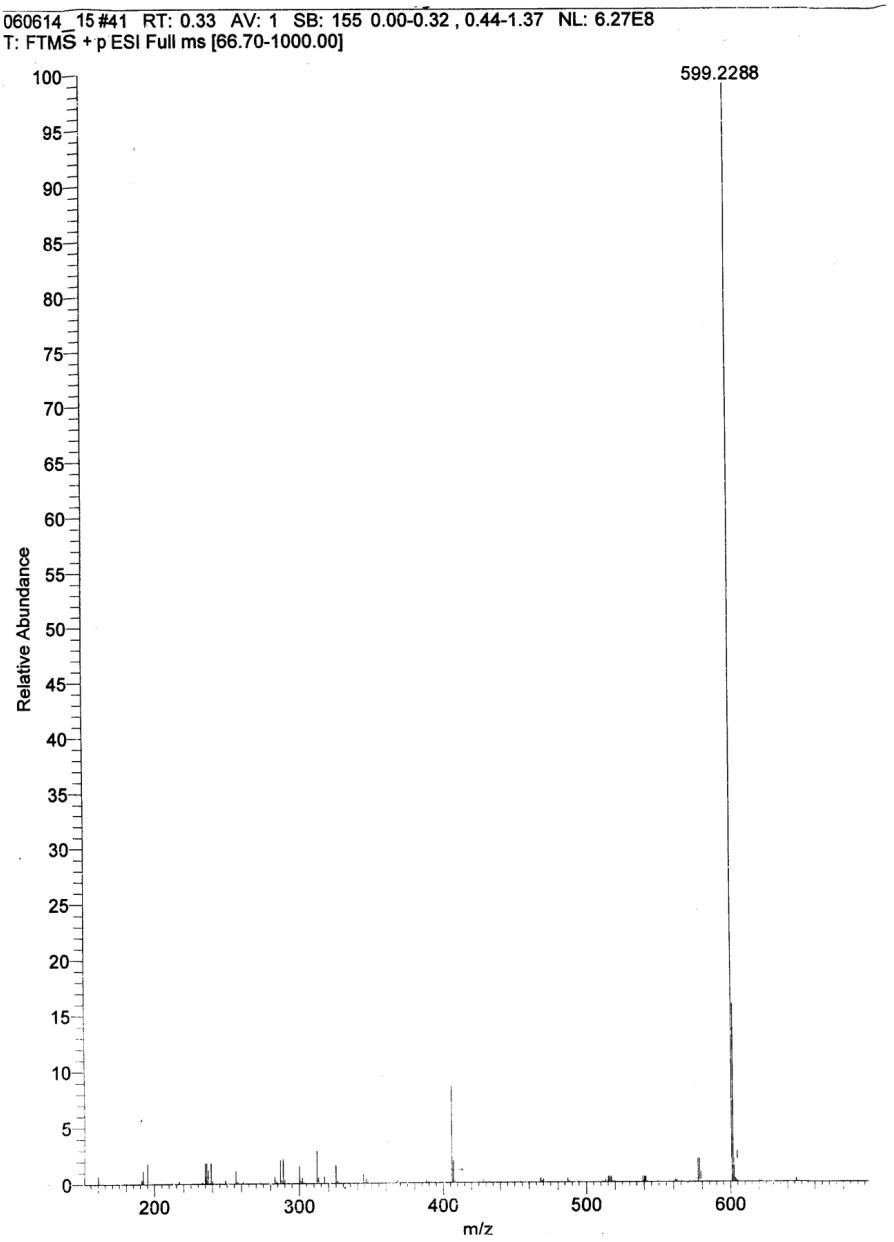

Fig. S-40. HRMS of compound **13b**.

(CC) 2017 SCS

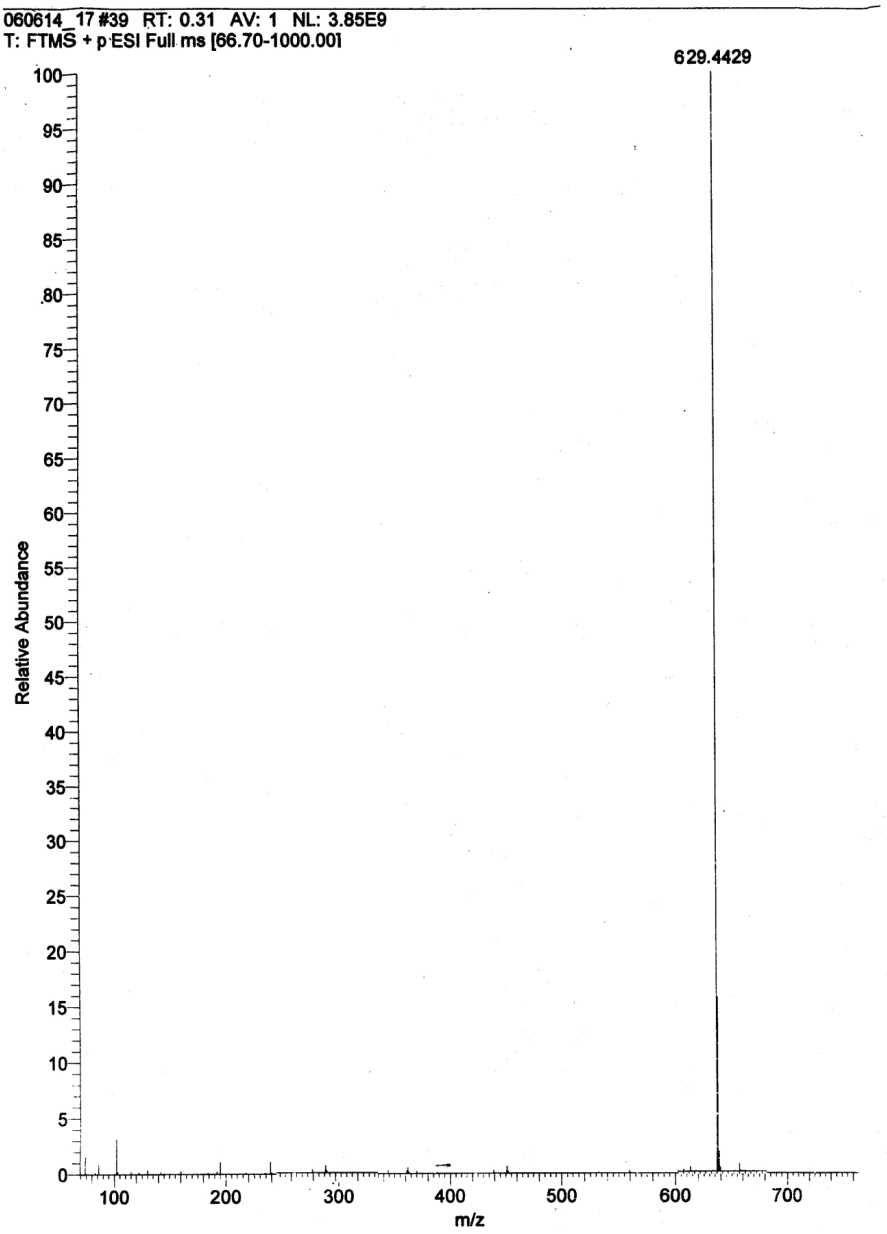

Fig. S-41. HRMS of compound **13d**.

(CC) 2017 SCS

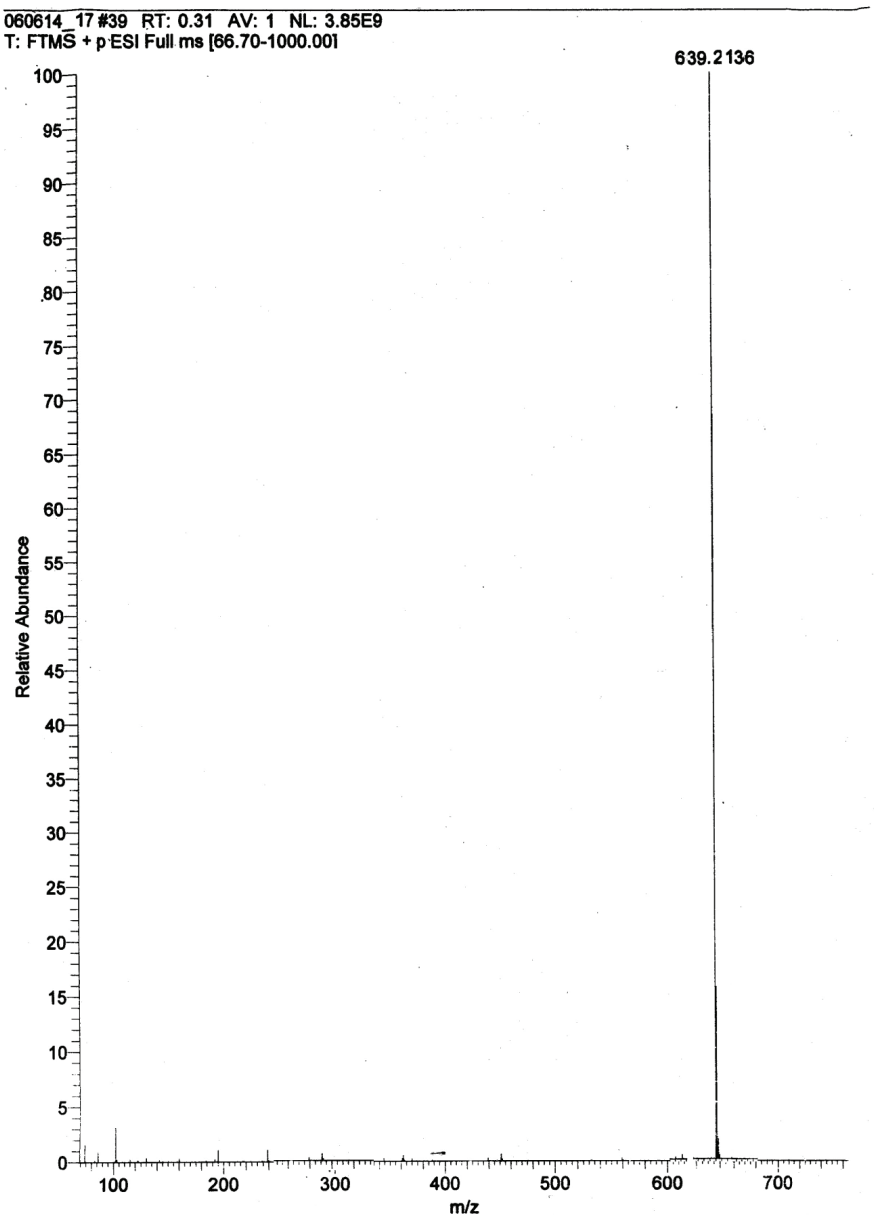

Fig. S-42. HRMS of compound **13e**.

(CC) 2017 SCS