Supporting information

Data for ((4-(trifluoromethoxyl)benzyl)sulfanyl) acetic acid (**3a**): white solid (87%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.20-7.42 (m, 4H, ArH), 3.88 (s, 2H, SCH_2COOH), 3.12 (s, 2H, $ArCH_2S$).

Data for ((4-Fluorobenzyl)sulfanyl) acetic acid (**3b**): faint yellow solid (90%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.02-7.36 (m, 4H, ArH), 3.86 (s, 2H, SCH_2COOH), 3.12 (s, 2H, $ArCH_2S$).

Data for ((4-methylbenzyl)sulfanyl) acetic acid (**3c**): white solid (91%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.17-7.28 (m, 4H, ArH), 3.87 (s, 2H, SCH_2COOH), 3.13 (s, 2H, $ArCH_2S$), 2.38 (s, 3H, CH_3).

Data for ((4-tert-butylbenzyl)sulfanyl) acetic acid (3d): white solid (95%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.29-7.40 (m, 4H, ArH), 3.87 (s, 2H, SCH_2COOH), 3.14 (s, 2H, $ArCH_2S$), 1.35 (s, 9H, $C(CH_3)_3$).

Data for ((4-methoxybenzyl)sulfanyl) acetic acid (**3e**): white solid (88%); ^{1}H NMR (400MHz, $CDCl_3$) δ 6.88-7.30 (m, 4H, ArH), 3.84 (s, 2H, SCH_2COOH), 3.82 (s, 3H, CH_3O), 3.12 (s, 2H, $ArCH_2S$).

Data for ((4-(trifluoromethyl)benzyl)sulfanyl) acetic acid (**3f**): white solid (85%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.48-7.62 (m, 4H, ArH), 3.91 (s, 2H, SCH_2COOH), 3.11 (s, 2H, $ArCH_2S$).

Data for (1-phenyl-ethylsulfanyl) acetic acid (3g): white solid (85%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.28-7.40 (m, 5H, ArH), 4.19-4.24 (m, 1H, ArCHS), 2.93-3.12 (m, 2H, SCH_2COOH), 1.62-1.64 (d, 3H, CH_3).

Data for (benzylsulfanyl) acetic acid (**3h**): white solid (86%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.29-7.38 (m, 5H, ArH), 3.89 (s, 2H, SCH_2COOH), 3.13 (s, 2H, $ArCH_2S$).

Data for ((4-Chlorobenzyl)sulfanyl) acetic acid (3i-3l): white solid (92%); ^{1}H NMR (400MHz, $CDCl_3$) δ 8.84 (s, 1H, COOH), 7.29-7.34 (m, 4H, ArH), 3.85 (s, 2H, SCH_2COOH), 3.11 (s, 2H, $ArCH_2S$).

Data for ((4-(trifluoromethoxyl)benzyl)sulfonyl) acetic acid (**4a**): white solid (90%); ^{1}H NMR (400MHz, DMSO-d_6) δ 7.41-7.54 (m, 4H, ArH), 4.70 (s, 2H, SO_2CH_2COOH), 4.23 (s, 2H, $ArCH_2SO_2$).

Data for ((4-Fluorobenzyl)sulfonyl) acetic acid (**4b**): white solid (82%); ^{1}H NMR (400MHz, DMSO-d_6) δ 7.24-7.46 (m, 4H, ArH), 4.64 (s, 2H, SO_2CH_2COOH), 4.18 (s, 2H, $ArCH_2SO_2$).

Data for ((4-methylbenzyl)sulfonyl) acetic acid (4c): white solid (81%); ^{1}H NMR (400MHz, DMSO-d_6) δ 7.22-7.30 (m, 4H, ArH), 4.58 (s, 2H, SO_2CH_2COOH), 4.13 (s, 2H, $ArCH_2SO_2$), 2.32 (s, 3H, CH_3).

Data for ((4-tert-butylbenzyl)sulfonyl) acetic acid (**4d**): white solid (89%); ^{1}H NMR (400MHz, DMSO-d_6) δ 7.31-7.45 (m, 4H, ArH), 4.58 (s, 2H, SO_2CH_2COOH), 4.17 (s, 2H, $ArCH_2SO_2$), 1.29 (s, 9H, $C(CH_3)_3$).

Data for ((4-methoxylbenzyl)sulfonyl) acetic acid (**4e**): white solid (83%); ^{1}H NMR (400MHz, DMSO-d_6) δ 6.99-7.33 (m, 4H, ArH), 4.55 (s, 2H, SO_2CH_2COOH), 4.12 (s, 2H, $ArCH_2SO_2$), 3.77 (s, 3H, CH_3O).

Data for ((4-(trifluoromethyl)benzyl)sulfonyl) acetic acid (4f): white solid (82%); ^{1}H NMR (400MHz, DMSO-d_6) δ 13.59 (s, 1H, COOH), 7.62-7.81 (m, 4H, ArH), 4.78 (s, 2H, SO_2CH_2COOH), 4.25 (s, 2H, $ArCH_2SO_2$).

Data for (1-phenyl-ethylsulfonyl) acetic acid (**4g**): white solid (87%); ^{1}H NMR (400MHz, $CDCl_3$) δ 7.44-7.55 (m, 5H, ArH), 4.75-4.80 (m, 1H, $ArCHSO_2$), 3.72-3.86 (m, 2H, SO_2CH_2COOH), 1.83-1.85 (d, 3H, CH_3).

Data for (benzylsulfonyl) acetic acid (**4h**): white solid (80%); ^{1}H NMR (400MHz, DMSO-d_6) δ 7.41 (s, 5H, ArH), 4.64 (s, 2H, SO_2CH_2COOH), 4.17 (s, 2H, $ArCH_2SO_2$).
Data for ((4-Chlorobenzyl)sulfonyl) acetic acid (**4i-4l**): white solid (92%); ^{1}H NMR (400MHz, DMSO-d_6) δ 13.55 (s, 1H, COOH), 7.41-7.51 (m, 4H, ArH), 4.66 (s, 2H, SO_2CH_2COOH), 4.20 (s, 2H, $ArCH_2SO_2$).

Data for (4-(trifluoromethoxyl)benzyl-4-carboxystyryl sulfone (**5a**): white solid (47%); 1H NMR (400 MHz, DMSO-d6) δ 13.22 (s, 1H, COOH), 7.36-8.05 (m, 10H, ArH, CH=CH), 4.75 (s, 2H, $ArCH_2SO_2$); HR-MS (ESI$^+$) m/z 387.0436 $[M+H]^+$, found 409.0340 $[M+Na]^+$.
Data for 4-Fluorobenzyl-4-carboxystyryl sulfone (**5b**): white solid (52%); 1H NMR (400 MHz, DMSO-d6) δ 13.18 (s, 1H, COOH), 7.19-7.99 (m, 10H, ArH, CH=CH), 4.60 (s, 2H, $ArCH_2SO_2$); ^{13}C NMR (100MHz, DMSO-d_6) δ 167.15, 163.90, 161.47, 142.62, 136.86, 133.67, 130.30, 129.28, 128.82, 125.46, 115.80, 59.29; HR-MS (ESI$^+$) m/z 321.0519 $[M+H]^+$, found 343.0424 $[M+Na]^+$.
Data for 4-methylbenzyl-4-carboxystyryl sulfone (**5c**): white solid (56%); ^{1}H NMR (400MHz, DMSO-d_6) δ 13.19 (s, 1H, COOH), 7.22-7.30 (m, 10H, ArH, CH=CH), 4.52 (s, 2H, $ArCH_2SO_2$), 2.28 (s, 3H, CH_3); ^{13}C NMR (100MHz, DMSO-d_6) δ 167.15, 142.27, 138.22, 136.93, 133.06, 131.47, 130.30, 129.46, 129.24, 129.10, 125.98, 60.00, 21.22; HR-MS (ESI$^-$) m/z 315.0769 $[M-H]^-$, found 315.0734 $[M-H]^-$.
Data for 4-tert-butylbenzyl-4-carboxystyryl sulfone (**5d**): white solid (45%); mp 179-180°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 13.13 (s, 1H, COOH), 7.29-7.99 (m, 10H, ArH, CH=CH), 4.52 (s, 2H, $ArCH_2SO_2$), 1.25 (s, 9H, $C(CH_3)_3$); ^{13}C NMR (100MHz, DMSO-d_6) δ 167.16, 151.31, 142.32, 136.96, 133.06, 131.35, 130.29, 129.29, 129.25, 125.82, 125.68, 59.91, 34.76, 31.49; HR-MS (ESI$^+$) m/z 359.1239 $[M+H]^+$, found 381.1140 $[M+Na]^+$.
Data for 4-methoxybenzyl-4-carboxystyryl sulfone (**5e**): white solid (55%); mp 155-156°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 6.90-7.99 (m, 10H, ArH, CH=CH), 4.50 (s, 2H, $ArCH_2SO_2$), 3.73 (s, 3H, CH_3O); ^{13}C NMR (100MHz, DMSO-d_6) δ 167.17, 159.85, 142.29, 136.94, 133.04, 132.82, 130.30, 129.23, 129.10, 120.74, 114.35, 59.63, 55.56; HR-MS (ESI$^-$) m/z 331.0718 $[M-H]^-$, found 331.0681 $[M-H]^-$.
Data for 4-(trifluoromethyl)benzyl-4-carboxystyryl sulfone (**5f**): white solid (55%); mp 158-159°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 13.21 (s, 1H, COOH), 7.40-8.00 (m, 10H, ArH, CH=CH), 4.75 (s, 2H, $ArCH_2SO_2$).
Data for 1-phenyl-ethyl-4-carboxystyryl sulfone (**5g**): faint yellow solid (46%); mp 62-63°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 13.16 (s, 1H, COOH), 7.35-7.98 (m, 11H, ArH, CH=CH), 4.55-4.60 (m, 1H, $ArCHSO_2$), 1.67-1.69 (d, 3H, CH_3); ^{13}C NMR (100MHz, DMSO-d_6) δ 167.16, 143.19, 136.93, 134.26, 133.06, 130.26, 130.09, 129.31, 129.04, 128.78, 127.64, 63.55, 14.57; HR-MS (ESI$^+$) m/z 317.0769 $[M+H]^+$, found 339.0678 $[M+Na]^+$.
Data for Benzyl-4-carboxystyryl sulfone (**5h**): white solid (86%); mp 138-139°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 7.35-7.99 (m, 11H, ArH, CH=CH), 4.58 (s, 2H, $ArCH_2SO_2$); ^{13}C NMR (100MHz, DMSO-d_6) δ 167.15, 142.42, 136.90, 133.08, 131.63, 130.30, 129.25, 129.09, 129.02 , 128.86, 60.26; HR-MS (ESI$^+$) m/z 303.0613 $[M+H]^+$, found 325.0527 $[M+Na]^+$.
Data for 4-Chlorobenzyl-styryl sulfone (**5i**): white solid (55%); mp 144-145°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 7.30-7.70 (m, 11H, ArH, CH=CH), 4.59 (s, 2H, $ArCH_2SO_2$); ^{13}C NMR (100MHz, DMSO-d_6) δ 144.01, 133.76, 133.36, 132.82, 131.61, 129.54, 129.21, 128.89, 128.42 , 126.42, 59.51; HR-MS (ESI$^+$) m/z 293.0325 $[M+H]^+$, found 315.0217 $[M+Na]^+$.

Data for 4-Chlorobenzyl-4-methylstyryl sulfone (**5j**): white solid (45%); mp 144-145°C; ^{1}H NMR (400MHz, DMSO-d_6) δ 7.24-7.58 (m, 10H, ArH, CH=CH), 4.57 (s, 2H, $ArCH_2SO_2$), 2.34 (s, 3H, CH_3), HR-MS (ESI$^+$) m/z 307.0481 $[M+H]^+$, found 328.9213 $[M+Na]^+$.

Data for 4-Chlorobenzyl-4-methoxylstyryl sulfone (**5k**): white solid (43%); mp 144-145°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 6.99-7.66 (m, 10H, ArH, CH=CH), 4.54 (s, 2H, $ArCH_2SO_2$), 3.81 (s, 3H, OCH_3); ^{13}C NMR (100MHz, DMSO-d_6) δ 162.09, 143.88, 133.69, 133.33, 131.11, 128.84, 128.59, 125.32, 123.38, 114.99, 59.70, 55.86; HR-MS (ESI$^+$) m/z 323.0430 $[M+H]^+$, found 344.9188 $[M+Na]^+$.

Data for 4-Chlorobenzyl-4-phenylstyryl sulfone (**5l**): white solid (64%); mp 144-145°C ; ^{1}H NMR (400MHz, DMSO-d_6) δ 7.34-7.80 (m, 15H, ArH, CH=CH), 4.60 (s, 2H, $ArCH_2SO_2$); ^{13}C NMR (100MHz, DMSO-d_6) δ 143.51, 143.07, 139.49, 133.75, 133.37, 131.91, 129.89, 129.52, 128.90, 128.60, 128.48, 127.70, 127.26, 126.26, 59.56; HR-MS (ESI$^+$) m/z 369.0638 $[M+H]^+$, found 391.0529 $[M+Na]^+$.

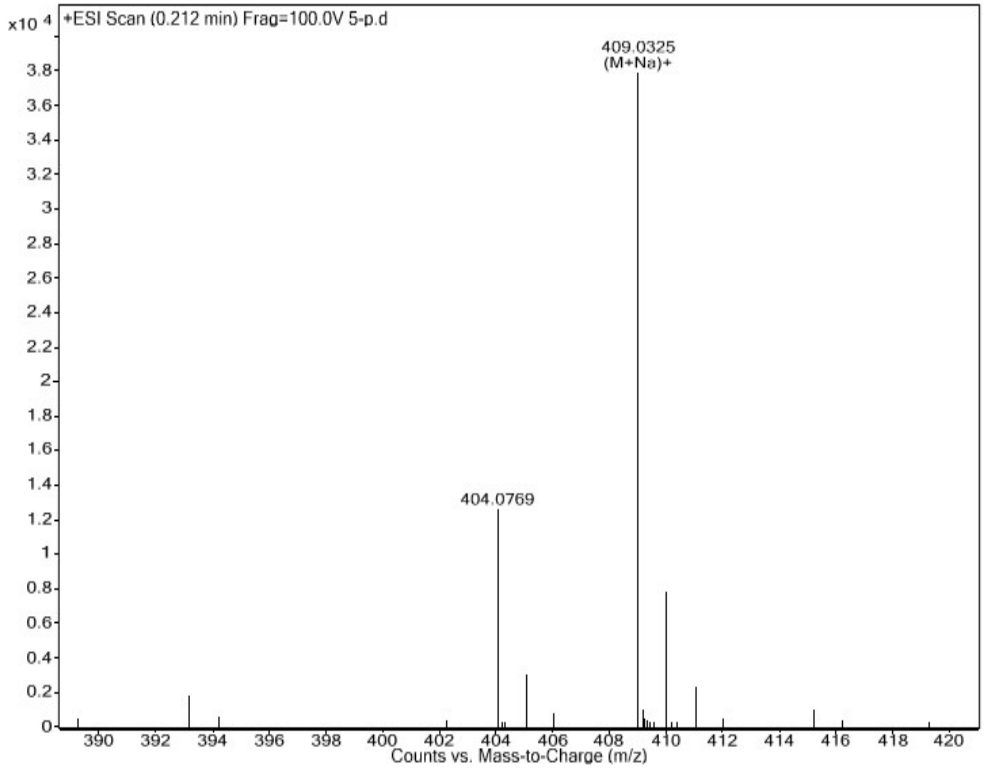
Data for **6a**: orange solid (65%); HR-MS (ESI$^+$) m/z 491.1455 $[M+H]^+$, found 513.1348 $[M+Na]^+$.

Data for **6b**: orange solid (45%); HR-MS (ESI$^+$) m/z 542.1626 $[M+H]^+$, found 542.1759 $[M+H]^+$.

Data for **6c**: orange solid (56%); HR-MS (ESI$^+$) m/z 476.1784 $[M+H]^+$, found 476.1884 $[M+H]^+$.

Data for **6d**: orange solid (87%); HR-MS (ESI$^+$) m/z 513.2471 $[M+H]^+$, found 513.2518 $[M+H]^+$.

Data for **6e**: orange solid (67%); HR-MS (ESI$^+$) m/z 472.2035 $[M+H]^+$, found 472.2118 $[M+H]^+$.



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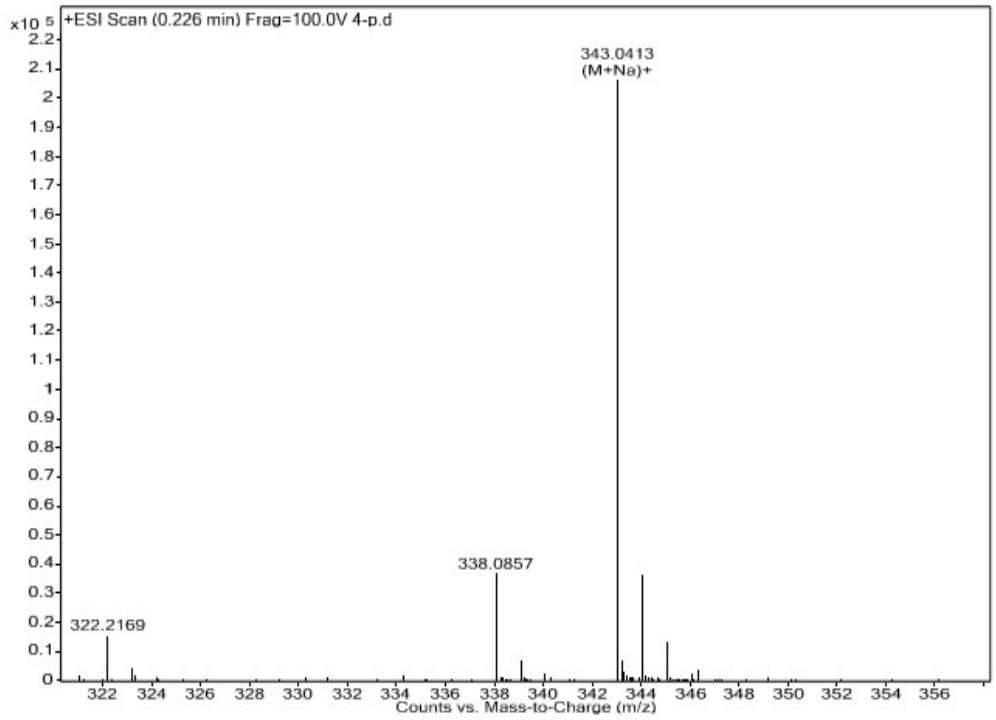

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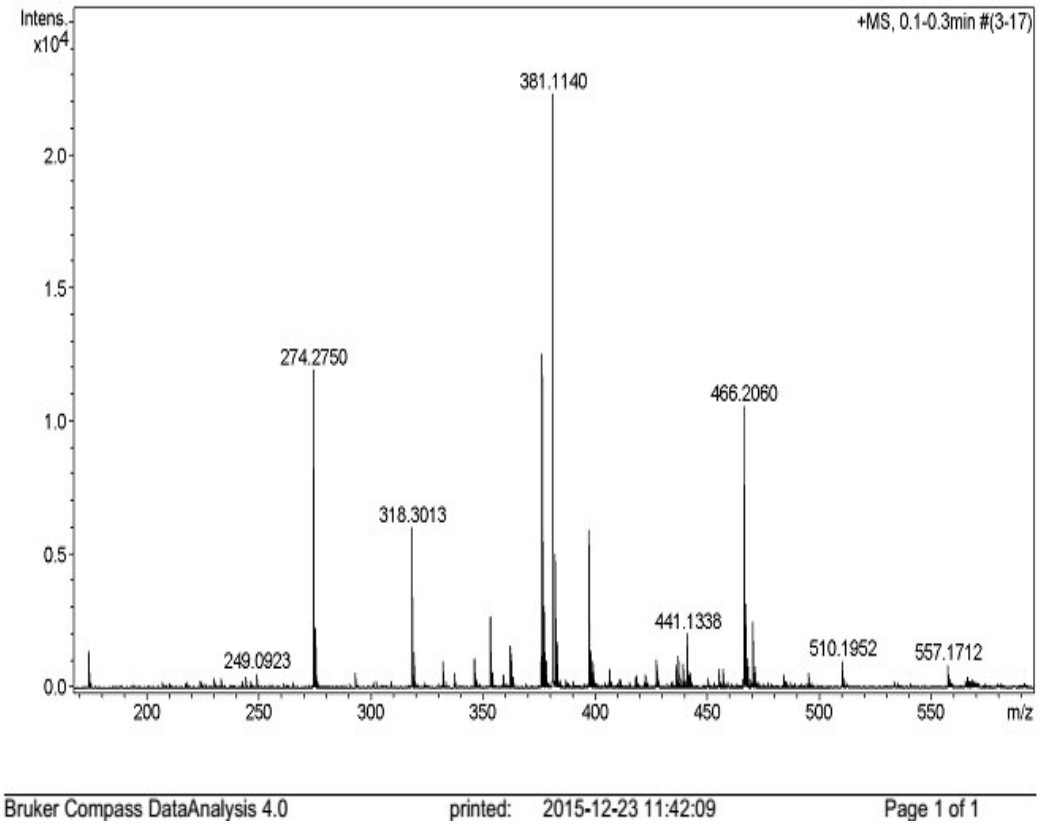

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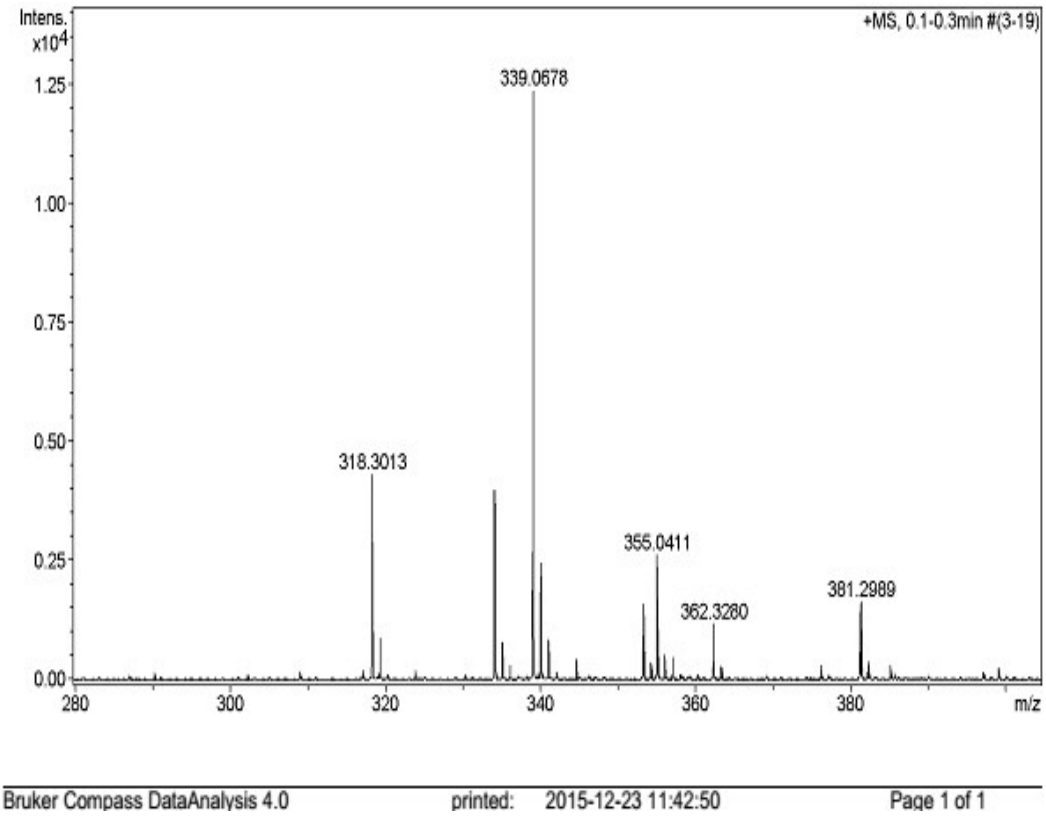

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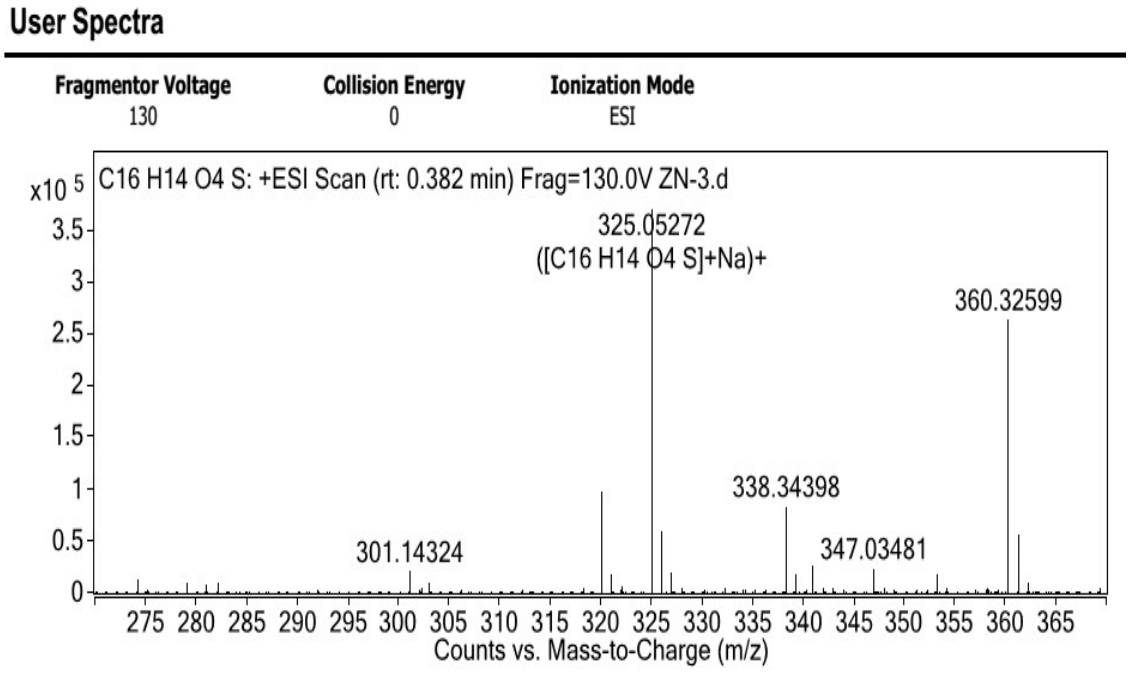

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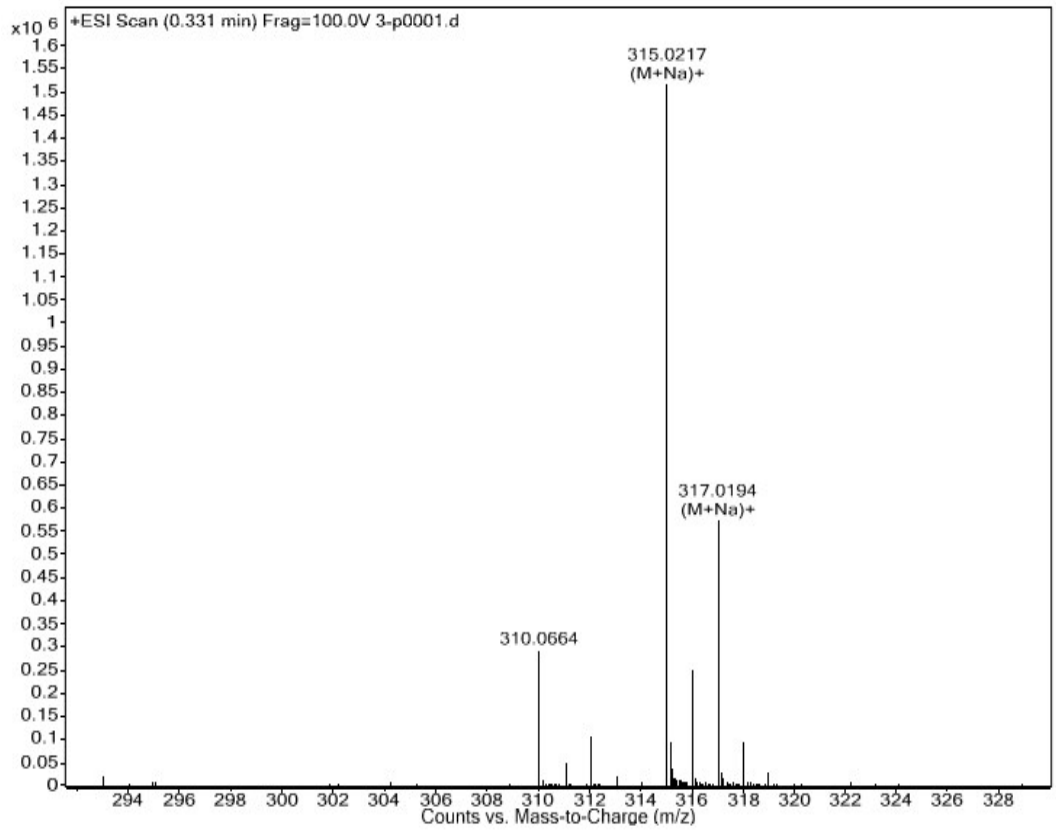

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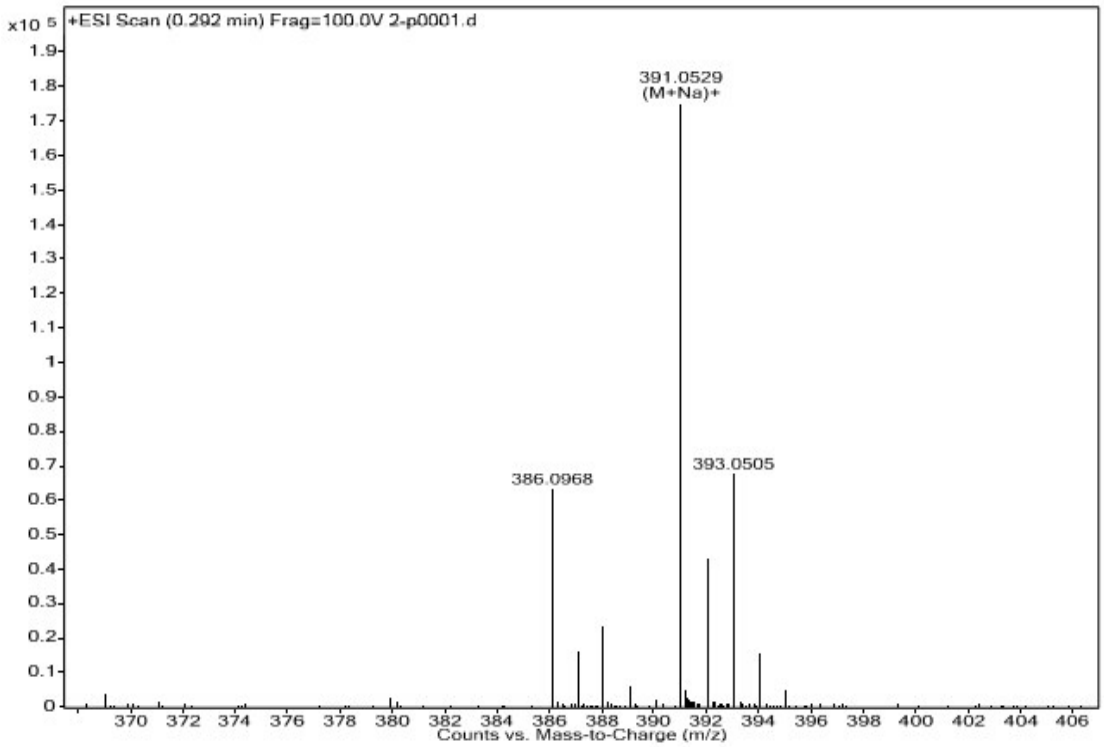

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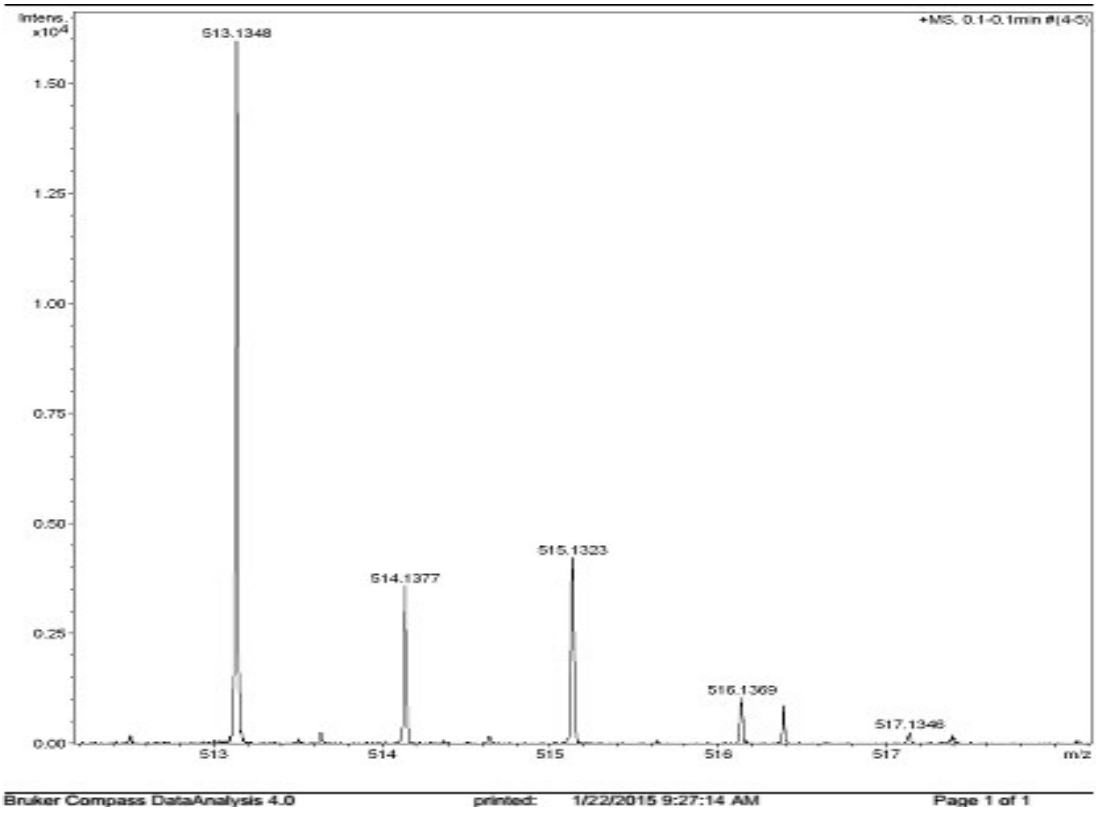

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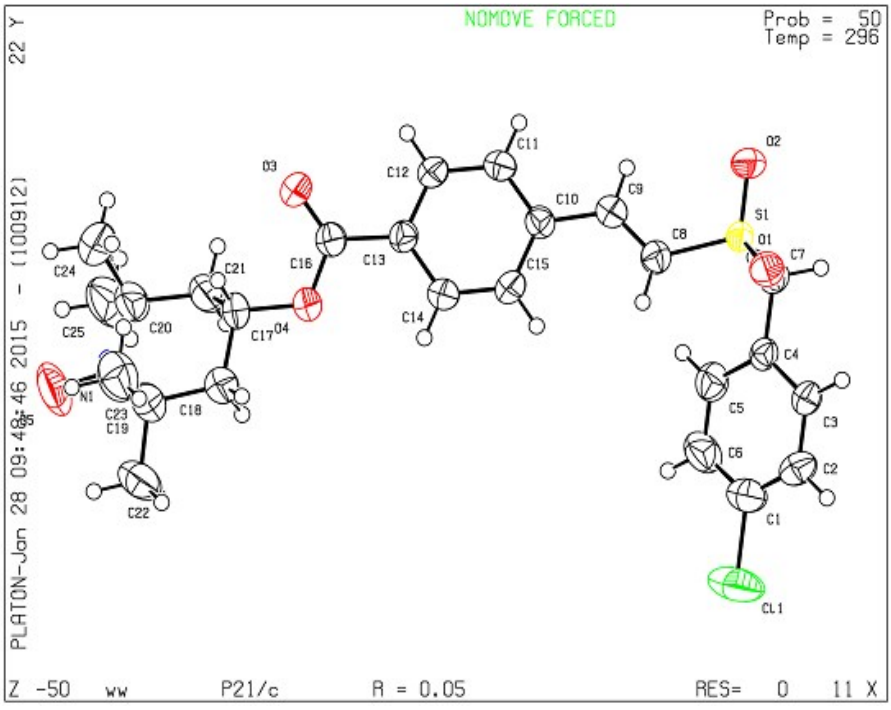

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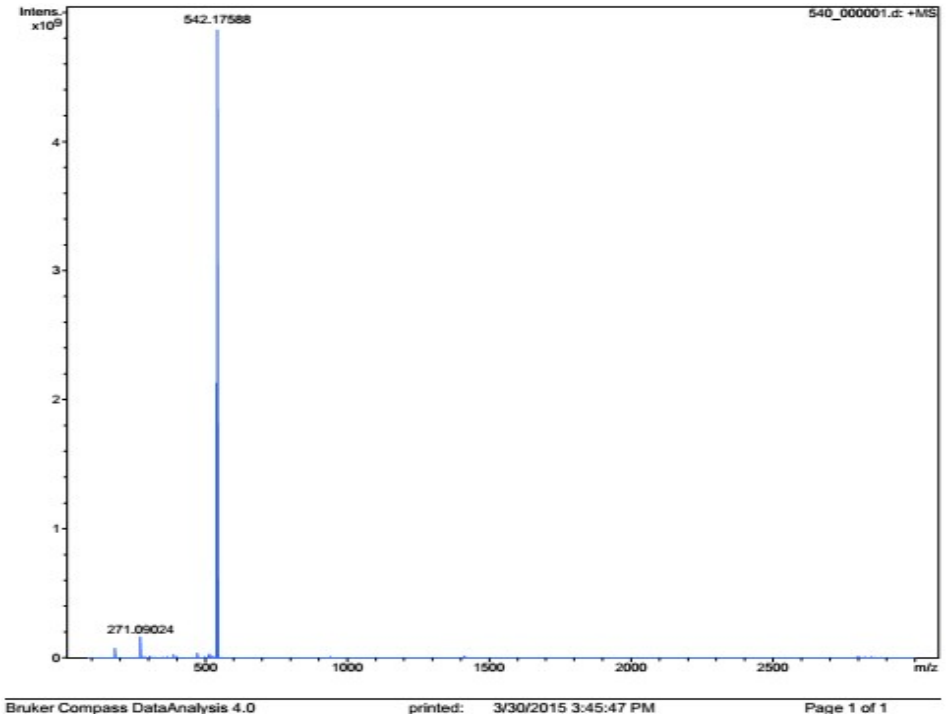

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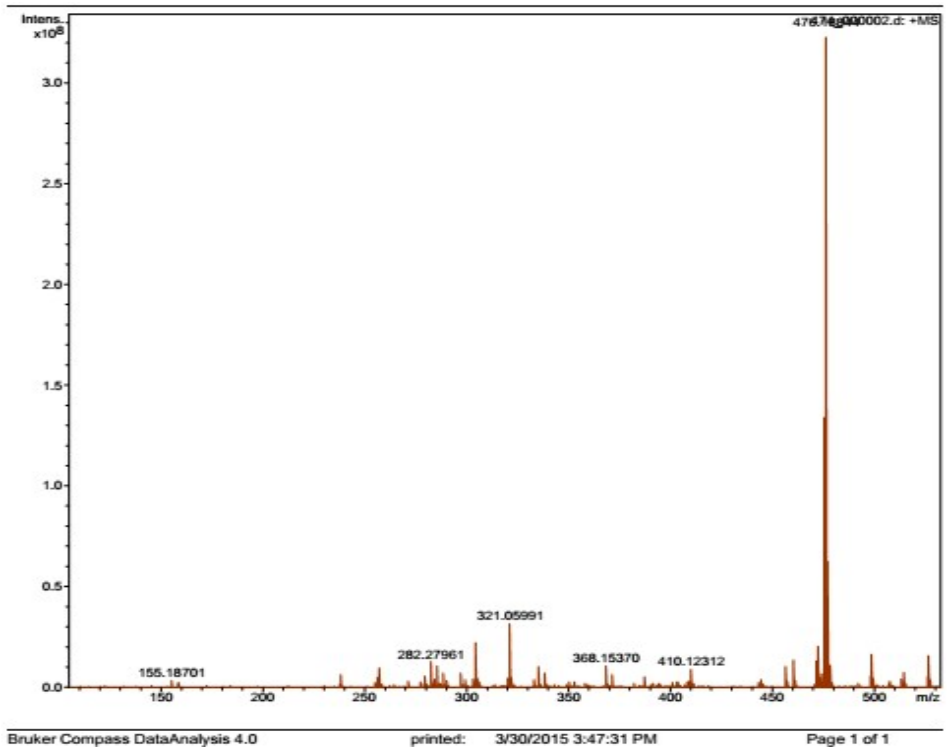

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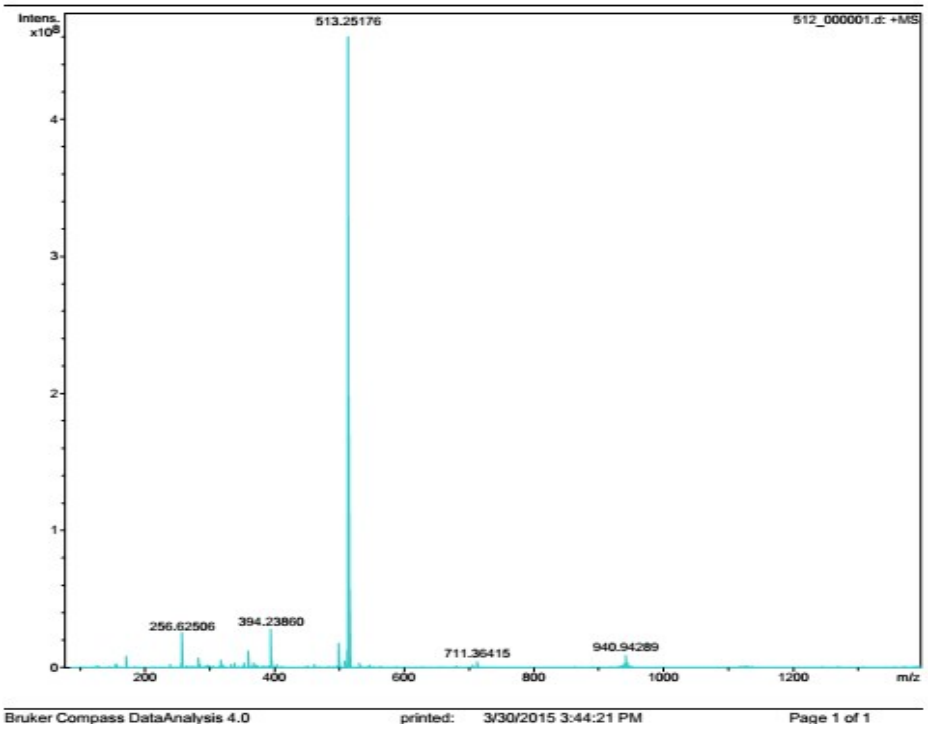

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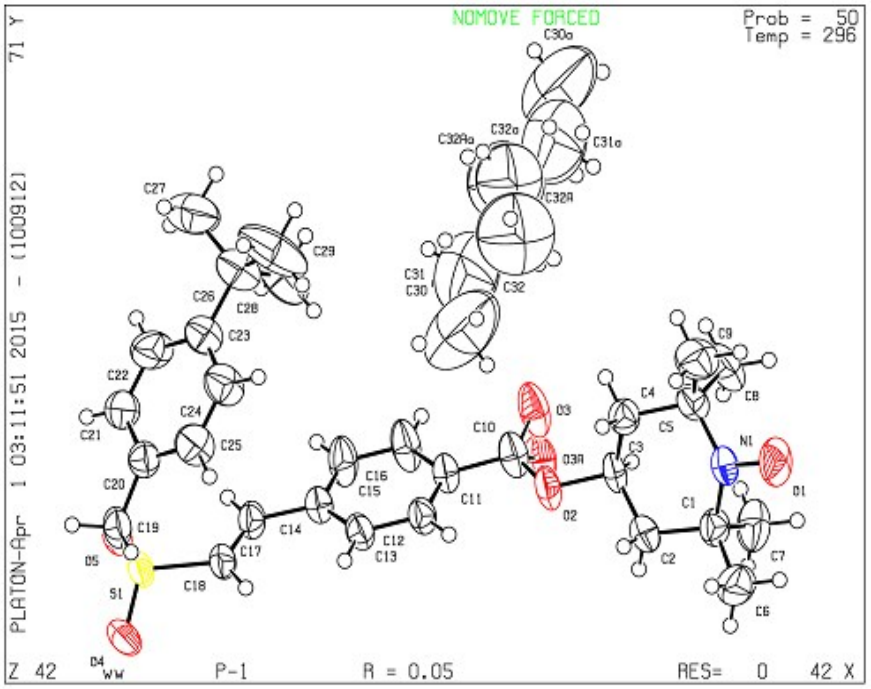

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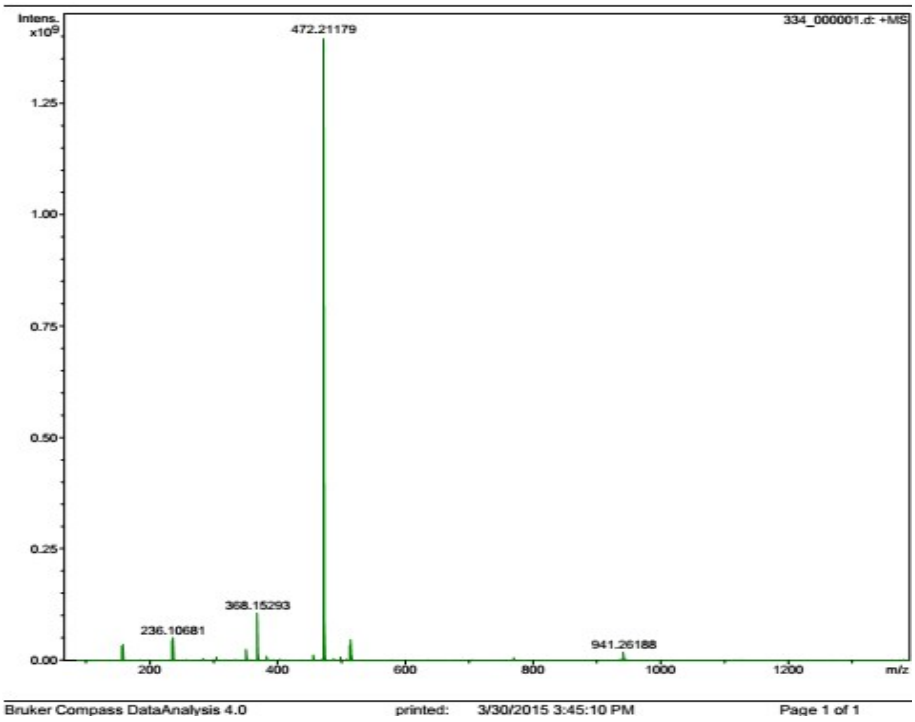
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6e-HRMS