Electronic Supplementary Information

Conformational modulation of peptide secondary structures using β-aminobenzenesulfonic acid

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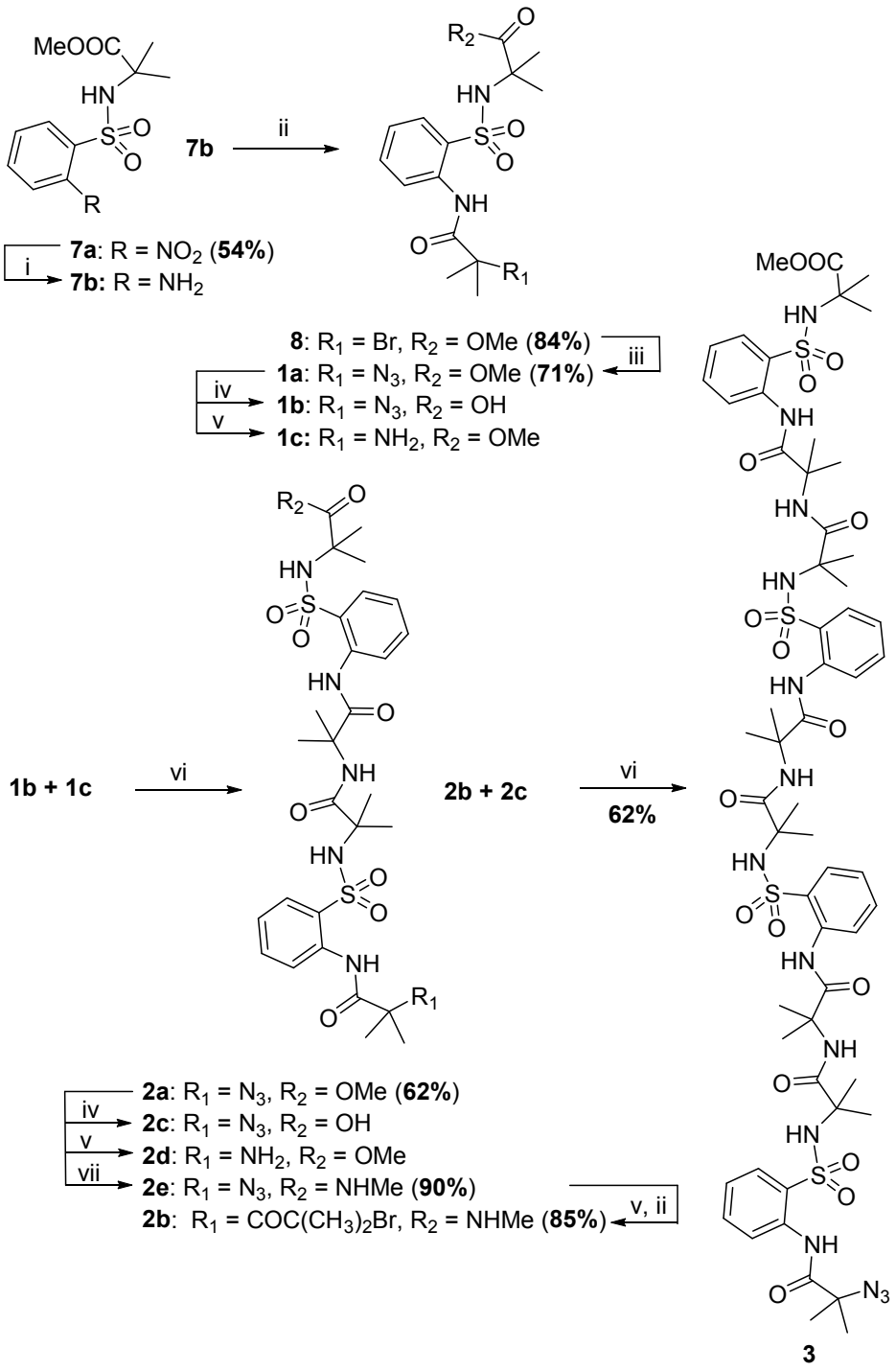
General Methods

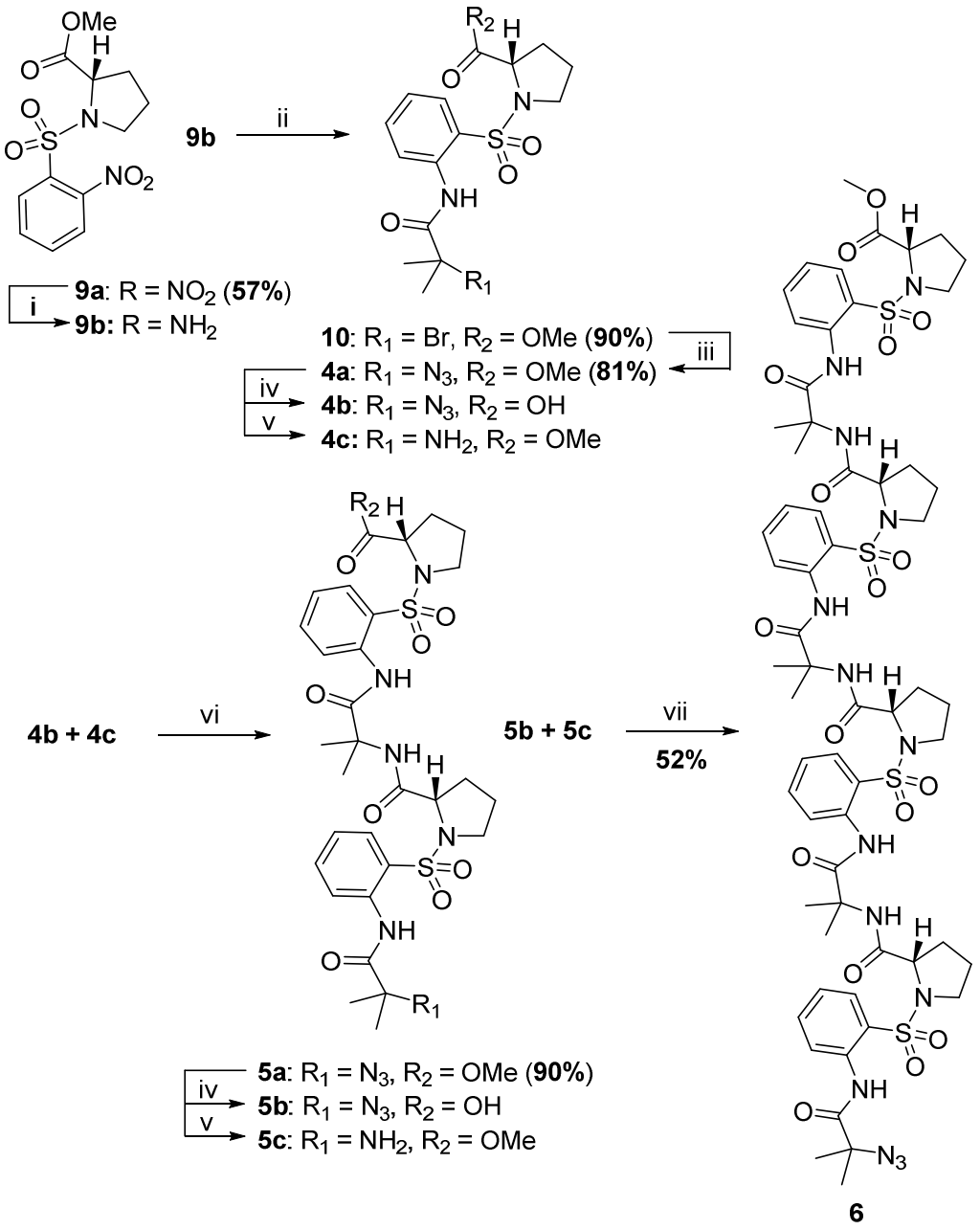
Unless otherwise stated, all the chemicals and reagents were obtained commercially. Dry solvents were prepared by the standard procedures. Analytical Thin Layer Chromatography was done on precoated silica gel plates (Kieselgel $60F_{254}$, Merck). Unless otherwise stated Column Chromatographic purifications were done with 100-200 and 230-400 Mesh Silica gel. NMR spectra were recorded in $CDCl_3$ on 400 MHz and 500 MHz spectrometers. All chemical shifts are reported in δ ppm downfield to TMS and peak multiplicities as singlet (s), doublet (d), quartet (q), broad singlet (bs), and multiplet (m). The titration studies were done in $CDCl_3$ and CD_3CN. Elemental analyses were performed on an Elmentar-Vario-EL (Heraeus Company Ltd., Germany). IR spectra were recorded in $CHCl_3$ using Shimadzu FTIR-8400 spectrophotometer. Melting points were determined on a Buchi Melting Point B-540. All the spectra has been arranged according to scheme 1 and 2.

Scheme 1. Synthesis of (Ant-^{S}Ant-Aib)$_n$ oligomers



Reagents and conditions: (i) H_2, Pd/C, 60 psi, 12 h; (ii) 2-bromo-2-methylpropanoyl bromide, Et_3N, DCM, rt, 12 h; (iii) NaN_3, DMF, 70 °C, 12 h; (iv) LiOH, MeOH-H_2O, 50 °C, 24 h; (v) H_2, Pd/C, 1 atm, 8 h; (vi) HATU, HOBt, DIPEA, CH_3CN, rt, 12 h; (vii) Methanolic methylamine, rt, 3 day.

Scheme 2. Synthesis of (Ant-^{S}Ant-Pro)$_n$ oligomers



Reagents and conditions: (i) H_2, Pd/C, 60 psi, 12 h; (ii) 2-bromo-2-methylpropanoyl bromide, Et_3N, DCM, rt, 12 h; (iii) NaN_3, DMF, 70 °C, 12 h; (iv) LiOH, MeOH-H_2O, 50 °C, 24 h; (v) H_2, Pd/C, 1 atm, 8 h; (vi) EDC.HCl, HOBt, CH_3CN, rt, 12 h; (vii) EDC.HCl, HOBt, dry DCM, rt, 12 h.

Experimental procedures

Crystal data for 2a:

Single crystals of **2a** were grown by slow evaporation of the solution in MeOH, colorless needle like crystal of approximate size 0.4 x 0.22 x 0.16 mm^3, was used for data collection. Multirun data acquisition. Total scans = 8, total frames = 2391, exposure / frame = 10.0 sec / frame, θ range = 1.61 to 25.00°, completeness to θ of 25.00 ° is 99.9%, $C_{29}H_{40}N_8O_9S_2$, *MW* = 708.81, Crystals belong to triclinic, space group P-1, *a* = 11.0060(1), *b* = 12.6495(2), *c* = 13.3854(2) Å, V = 1765.00(4) $Å^3$, *Z* = 2, D_c = 1.334 g/cc, μ (Mo–K_α) = 0.212 mm^{-1}, 24792 reflections measured, 6201 unique [I>2σ(I)], R1 = 0.0427, wR2 = 0.1186. Largest diff. peak and hole 0.321 and -0.281 e.$Å^{-3}$.

Crystal data for 5b:

Single crystals of **5b** were grown by slow evaporation of the solution in DCM, colorless needle like crystal of approximate size 0.4 x 0.2 x 0.09 mm^3, was used for data collection. Multirun data acquisition. Total scans = 3, total frames = 1059, frame = 25.0 sec / frame, θ range = 1.58 to 25.00°, completeness to θ of 25.00 ° is 100.0 %, $C_{30}H_{38}N_8O_9S_2$, *MW* = 718.80, Crystals belong to monoclinic, space group P21, *a* = 12.9152(3), *b* = 7.5313(2), *c* = 17.4463(4) Å, V = 1691.71(7) $Å^3$, *Z* = 2, D_c = 1.411 g/cc, μ (Mo–K_α) = 0.222 mm^{-1}, 13097 reflections measured, 5613 unique [I>2σ(I)], R value *R1* = 0.0486, *wR2* = 0.0919. Largest diff. peak and hole 0.352 and -0.322 e.$Å^{-3}$. Flack parameter = -0.0596. The proline at C-terminal has disorder and the disorder of C28 and C28' have been refined isotropically.

Methyl-2-(2-(2-bromo-2-methylpropanamido) phenylsulfonamido)-2-methyl propanoate 8:

To a solution of **7b** (3.0 g, 11.0 mmol) in dry DCM (25 mL) was added dry Et_3N (1.99 mL, 14.3 mmol) at 0 °C followed by slow addition of 2-bromo-2-methylpropanoyl bromide (1.49 mL, 12.1 mmol). The solution was warm to room temperature and stirred for 12 h. The reaction mixture was washed sequentially with sat. $NaHCO_3$, water and brine. Organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 50:50, R*f*: 0.55) yielded **8** (3.9 g, 84%); IR ($CHCl_3$) ν (cm^{-1}) 3445, 3020, 1739, 1695, 1641, 1588, 1399, 1216, 1021, 770; ^{1}H NMR (500 MHz, $CDCl_3$) δ: 9.83 (s, 1H), 8.27-8.25 (d, *J* = 8 Hz, 1H), 7.92-7.90 (d, *J* = 8 Hz, 1H), 7.60-7.57 (t, *J* = 7 Hz, 1H), 7.26-7.23 (t, *J* = 7 Hz, 1H), 5.73 (s, 1H), 3.58 (s, 3H), 2.08 (s, 6H), 1.41 (s, 6H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 173.7, 170.1, 135.3, 133.9, 130.2, 129.1, 124.4, 123.4, 60.9, 59.2, 53.0, 31.7, 25.6; LC-MS: 443.01 $(M+Na)^+$; Anal. Calcd. for $C_{15}H_{21}BrN_2O_5S$: C, 42.76; H, 5.02; N, 6.65; Found: C, 43.12; H, 4.79; N, 6.23.

Tripeptide 1a:

To a stirred solution of **8** (0.28 g, 0.66 mmol) in dry DMF (5 mL) was added NaN_3 (0.13 g, 2.0 mmol) and resulting reaction mixture was heated to 70 °C for 12 h. The reaction mixture was cooled to room temperature, EtOAc (25 mL) was added to reaction mixture and organic layer was washed with water and brine. The organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 50:50, R*f*: 0.55) yielded **1a** (0.18 g, 71%); mp: 78-80 °C; IR ($CHCl_3$) ν (cm^{-1}) 3436, 3020, 2119, 1731, 1698, 1585, 1328, 1217, 1159, 770; ^1H NMR (400 MHz, $CDCl_3$) δ: 9.87 (s, 1H), 8.31-8.29 (d, *J* = 8 Hz, 1H), 7.91-7.89 (d, *J* = 8 Hz, 1H), 7.58-7.54 (t, *J* = 7 Hz, 1H), 7.24-7.20 (t, *J* = 7 Hz, 1H), 5.76 (s, 1H), 3.61 (s, 3H), 1.65 (s, 6H), 1.40 (s, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.0, 170.9, 134.9, 133.8, 130.4, 129.0, 124.3, 123.2, 64.8, 59.1, 53.0, 25.5, 24.4; LC-MS: 406.06 $(M+Na)^+$; Anal. Calcd. for $C_{15}H_{21}N_5O_5S$: C, 46.99; H, 5.52; N, 18.27; Found: C, 47.31; H, 5.48; N, 17.85.

Tripeptide acid 1b:

To the solution of ester **1a** (0.12 g, 0.3 mmol) in THF (6 mL), $LiOH{\cdot}H_2O$ (0.05 g, 1.2 mmol) was added in water (1 mL) at room temperature. Reaction was heated at 50 °C for 24 h. The solvent was evaporated under vacuum and free acid was liberated by treating with dil. HCl solution followed by extraction with DCM (2 × 10 mL). The residue of **1b** obtained after evaporation of the solvent under vacuum was carried forward for the next reaction.

Tripeptide amine 1c:

To a solution of **1a** (0.13 g, 0.34 mmol) in methanol (6 mL) was added 10% Pd/C (0.015 g). The reaction mixture was stirred at 1 atm under hydrogen atmosphere for 8 h. The catalyst was filtered through celite and filtrate was evaporated to get product **1c**, which was carried forward to the next reaction without further purification.

Hexapeptide 2a:

A solution containing acid **1b** (1.45 g, 3.93 mmol) and amine **1c** (1.54 g, 4.32 mmol) in dry CH_3CN (20 mL) was cooled to 0 °C. To the reaction mixture was added HATU (2.24 g, 5.89 mmol) followed by HOBt (0.3 g, 1.9 mmol) and DIPEA (1.34 mL, 7.85 mmol). The reaction mixture was stirred at 0 °C for 10 minutes then at room temperature for 12 h. After completion of reaction solvent was stripped off to furnish thick liquid which was dissolved in 30 mL DCM and washed sequentially with sat. $NaHCO_3$, water, dil. HCl and brine. The organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 50:50, R*f*: 0.3) yielded **2a** (1.71 g, 62%); mp: 143-145 °C; IR ($CHCl_3$) ν (cm^{-1}) 3368, 3027, 2121, 1739, 1698, 1657, 1580, 1322, 1217, 1020, 770; ^1H NMR (500 MHz, $CDCl_3$) δ: 9.75 (s, 1H), 9.36 (s, 1H), 8.34-8.32 (d, *J* = 8 Hz, 1H), 8.04-8.02 (d, *J* = 8 Hz, 1H), 7.99-7.97 (d, *J* = 8 Hz, 1H), 7.83-7.81

(d, *J* = 8 Hz, 1H), 7.66-7.63 (t, *J* = 8 Hz, 1H), 7.57-7.54 (m, 2H), 7.31-7.28 (t, *J* = 8 Hz, 1H), 7.23-7.20 (t, *J* = 8 Hz, 1H), 6.61 (s, 1H), 5.99 (s, 1H), 3.42 (s, 3H), 1.67 (s, 12H), 1.40 (s, 12H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 176.0, 173.3, 171.8, 171.0, 135.1, 134.9, 134.4, 133.4, 131.1, 130.5, 129.0, 128.7, 124.7, 124.4, 123.8, 64.8, 61.1, 58.7, 58.4, 52.6, 25.7, 25.0, 24.5, 24.4; LC-MS: 731.28 $(M+Na)^+$; Anal. Calcd. for $C_{29}H_{40}N_8O_9S_2$: C, 49.14; H, 5.69; N, 15.81; Found: C, 48.73; H, 6.01; N, 15.03.

Hexapeptide acid 2c:

The product **2c** was obtained from **2a**, following the procedure for **1b** and was carried forward to the next reaction without further purification.

Hexapeptide 2d:

The product **2d** was obtained from **2a**, following the procedure for **1c** and was carried forward to the next reaction without further purification.

Dodecapeptide 3:

A solution containing acid **2c** (0.4 g, 0.57 mmol) and amine **2d** (0.44 g, 0.63 mmol) in dry CH_3CN (10 mL) was cooled to 0 °C. To the reaction mixture was added HATU (0.33 g, 0.86 mmol) followed by HOBt (0.04 g, 0.28 mmol) and DIPEA (0.19 mL, 1.15 mmol). The reaction mixture was stirred at 0 °C for 10 minutes and at room temperature for 12 h. The solvent was stripped off to furnish thick liquid which was dissolved in 30 mL DCM and washed sequentially with sat. $NaHCO_3$, water, dil. HCl and brine. The organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 15:85, R*f*: 0.35) yielded **3** (0.49 g, 62%); mp: 132-135 °C; IR ($CHCl_3$) ν (cm^{-1}) 3368, 3020, 2120, 1734, 1693, 1663, 1583, 1328, 1216, 1127, 770; ^{1}H NMR (500 MHz, $CDCl_3$) δ: 9.67 (s, 1H), 9.20 (s, 1H), 8.93 (s, 1H), 8.89 (s, 1H), 8.28-8.26 (d, *J* = 8 Hz, 1H), 7.97-7.93 (m, 3H), 7.86-7.80 (m, 3H), 7.69-7.67 (d, *J* = 8 Hz, 1H), 7.64-7.55 (m, 3H), 7.52-7.48 (m, 2H), 7.31-7.29 (d, *J* = 8 Hz, 2H), 7.28-7.26 (m, 3H), 7.21-7.18 (t, *J* = 7 Hz, 1H), 6.99 (s, 1H), 6.89 (s, 1H), 6.83 (s, 1H), 5.93 (s, 1H), 3.41 (s, 3H), 1.64 (s, 12H), 1.58 (s, 6H), 1.57 (s, 6H), 1.37-1.35 (m, 24H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 176.2, 175.9, 175.8, 173.8, 172.8, 172.5, 172.2, 170.9, 135.1, 135.0, 134.8, 134.7, 134.6, 134.4, 133.9, 133.4, 133.2, 132.8, 130.6, 129.4, 129.0, 128.3, 127.5, 126.4, 125.9, 125.6, 125.5, 124.9, 124.5, 123.9, 64.8, 60.9, 60.8, 58.6, 59.3, 57.9, 52.4, 25.8, 25.3, 25.1, 25.0, 24.7, 24.4; LC-MS: 1381.69 $(M+Na)^+$; Anal. Calcd. for $C_{57}H_{78}N_{14}O_{17}S_4$: C, 50.35; H, 5.78; N, 14.42; Found: C, 50.59; H, 6.22; N, 14.03.

Hexapeptide 2e:

To a solution of **2a** (0.3 g, 0.4 mmol) in methanol (4 mL) was added saturated solution of methanolic methylamine (8 mL) at 0 °C. Reaction mixture was warm to room temperature and

stirred for 3 day. The reaction mixture was stripped off the solvent and residue was purified with column chromatography (ethyl acetate/pet ether 80:20, R*f*. 0.2) to furnish **2e** (0.27 g, 90%). mp: 104-107 °C; IR ($CHCl_3$) ν (cm^{-1}) 3372, 3019, 2120, 1700, 1667, 1584, 1521, 1438, 1386, 1328, 1150, 758; ^{1}H NMR (500 MHz, $CDCl_3$) δ: 9.70 (s, 1H), 9.08 (s, 1H), 8.31-8.29 (d, *J* = 8.2 Hz, 1H), 7.98-7.97 (d, *J* = 8.2 Hz, 1H), 7.89-7.88 (d, *J* = 8.0 Hz, 1H), 7.84-7.82 (d, *J* = 8.2 Hz, 1H), 7.65-7.62 (t, *J* = 7.7 Hz, 1H), 7.60-7.57 (m, 2H), 7.31-7.28 (m, 2H), 6.65 (s, 1H), 6.37 (bs, 1H), 6.01-5.99 (bs, 1H), 2.58-2.57 (d, *J* = 4.9 Hz, 3H), 1.66 (s, 12H), 1.37 (s, 3H), 1.63 (s, 6H), 1.35 (s, 6H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 176.0, 173.7, 172.5, 171.0, 135.0, 134.5, 133.6, 132.9, 130.6, 129.1, 126.3, 125.4, 124.9, 123.9, 64.9, 60.9, 60.4, 58.2, 26.5, 25.9, 24.9, 24.8, 24.4; LC-MS: 730.25 $(M+Na)^+$; Anal. Calcd. for $C_{29}H_{41}N_9O_8S_2$: C, 49.21; H, 5.84; N, 17.81; Found: C, 48.85; H, 6.17; N, 17.50.

Hexapeptide 2b:

The hexapeptide **2e** was subjected for azide reduction, following the procedure for **1c** to obtained crude amine which was further converted to **2b** following the procedure for **8**, as a white solid (85%). mp: 101-103 °C; IR ($CHCl_3$) ν (cm^{-1}) 3394, 3020, 1701, 1657, 1519, 1476, 1425, 1046, 929, 758; ^{1}H NMR (500 MHz, $CDCl_3$) δ: 9.05 (s, 1H), 8.95 (s, 1H), 7.98-7.97 (d, *J* = 7.9 Hz, 1H), 7.91-7.89 (d, *J* = 7.9 Hz, 1H), 7.84-7.82 (d, *J* = 7.6 Hz, 1H), 7.68-7.66 (d, *J* = 7.6 Hz, 1H), 7.62-7.58 (t, *J* = 7.5 Hz, 1H), 7.57-7.53 (t, *J* = 7.5 Hz, 1H), 7.31-7.28 (m, 3H), 6.98 (s, 1H), 6.81 (s, 1H), 6.80 (S, 1H), 6.56 (bs, 1H), 2.54-2.53 (d, *J* = 4.6 Hz, 3H), 2.03 (s, 6H), 1.67 (s, 3H), 1.63 (s, 3H), 1.35 (s, 12H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 175.9, 174.0, 173.9, 173.1, 171.7, 134.5, 133.8, 133.2, 132.9, 129.3, 129.0, 127.5, 126.2, 125.7, 125.4, 60.7, 60.6, 60.2, 58.6, 57.7, 31.6, 26.4, 26.1, 25.3, 25.0; LC-MS: 854.22 $(M+Na+2)^+$; Anal. Calcd. for $C_{33}H_{48}BrN_7O_9S_2$: C, 47.71; H, 5.82; N, 11.80; Found: C, 47.30; H, 6.23; N, 11.99.

(S)-methyl-1-(2-(2-bromo-2-methylpropanamido) phenylsulfonyl)pyrrolidine-2-carboxylate 10:

To a solution of **9b** (4.0 g, 14.1 mmol) in dry DCM (25 mL) was added dry Et_3N (2.55 mL, 18.3 mmol) at 0 °C followed by slowly addition of 2-bromo-2-methylpropanoyl bromide (1.92 mL, 15.5 mmol). The reaction mixture was warm to room temperature and stirred for 12 h. The reaction mixture was washed sequentially with sat. $NaHCO_3$, water and brine. The organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 50:50, R*f*: 0.5) yielded **10** (5.5 g, 90%); $[\alpha]_{26}^{D}$: -63.08° (c 1.3, $CHCl_3$); IR ($CHCl_3$) ν (cm^{-1}) 3349, 3020, 1740, 1688, 1588, 1338, 1215, 1154, 759; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 10.41 (s, 1H), 8.55-8.53 (d, *J* = 8 Hz, 1H), 7.91-7.89 (dd, *J* = 8.0, 1.6 Hz, 1H) 7.61-7.57 (t, *J* = 7 Hz, 1H), 7.26-7.22 (t, *J* = 7 Hz, 1H), 4.39-4.36 (dd, *J* = 8.0, 2.5 Hz, 1H), 3.64-3.59 (m, 4H), 3.49-3.43 (m, 1H), 2.13-2.09 (m, 1H), 2.06 (s, 6H), 2.04-1.98 (m, 2H), 1.93-1.84 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 171.9, 170.4, 136.5, 134.2, 129.6, 125.8, 124.0, 122.1, 60.4, 59.9, 52.5, 48.4, 31.7,

31.0, 24.5; ESI MS: 455.01 $(M+Na)^+$; Anal. Calcd. for $C_{16}H_{21}BrN_2O_5S$: C, 44.35; H, 4.88; N, 6.46; Found: C, 44.62; H, 5.26; N, 6.08.

Tripeptide 4a:

To a stirred solution of **10** (1.2 g, 3.5 mmol) in dry DMF (10 mL) was added NaN_3 (0.68 g, 10.5 mmol) and reaction mixture was heated to 70 °C for 12 h. The reaction mixture was cooled to room temperature, EtOAc (40 mL) was added to reaction mixture and the organic layer was washed with water and brine. The organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 50:50, R*f*: 0.5) yielded **4a** (0.88 g, 81%); $[\alpha]_{26}^{D}$: -50.53° (c 0.95, $CHCl_3$); IR ($CHCl_3$) ν (cm^{-1}) 3436, 3020, 2120, 1739, 1685, 1585, 1340, 1217, 1140, 770; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 10.39 (s, 1H), 8.52-8.50 (d, *J* = 8 Hz, 1H), 7.89-7.87 (dd, *J* = 8.0, 1.5 Hz, 1H), 7.58-7.54 (t, *J* = 7 Hz, 1H), 7.24-7.20 (t, *J* = 7 Hz, 1H), 4.39-4.36 (dd, *J* = 8.0, 2.8 Hz, 1H), 3.60-3.54 (m, 4H), 3.46-3.40 (m, 1H), 2.15-2.07 (m, 1H), 2.05-1.95 (m, 1H), 1.93-1.84 (m, 1H), 1.62 (s, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 171.9, 171.1, 136.1, 134.1, 129.7, 126.2, 124.0, 122.2, 64.6, 60.2, 52.4, 48.3, 31.0, 24.5; ESI MS: 418.07 $(M+Na)^+$; Anal. Calcd. for $C_{16}H_{21}N_5O_5S$: C, 48.60; H, 5.35; N, 17.71; Found: C, 48.29; H, 5.11; N, 17.09.

Tripeptide acid 4b:

To the solution of **4a** (0.4 g, 0.1 mmol) in methanol (10 mL), $LiOH{\cdot}H_2O$ (0.17 g, 0.4 mmol) was added in water (2 mL) at 0 °C. After the complete consumption of ester (4 h), the solvent was evaporated under vacuum, and free acid was liberated by treating with dil. HCl solution followed by extraction with DCM (2 × 15 mL). The residue of **4b** obtained after evaporation of the solvent under vacuum was carried forward for the next reaction.

Tripeptide amine 4c:

The product **4c** was obtained from **4a**, following the procedure for **1c** and was carried forward to the next reaction without further purification.

Hexapeptide 5a:

A solution containing acid **4b** (2.0 g, 5.2 mmol) and amine **4c** (2.13 g, 5.77 mmol) in dry CH_3CN (30 mL) was cooled to 0 °C. To the reaction mixture was added EDC.HCl (1.56 g, 7.87 mmol) followed by HOBt (0.36 g, 2.6 mmol). Reaction mixture was stirred at 0 °C for 10 minutes and at room temperature for 12 h. The solvent was stripped off to furnish thick liquid which was dissolved in 30 mL DCM and washed sequentially with sat. $NaHCO_3$, water, dil. HCl and brine. The organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 40:60, R*f*: 0.4) yielded **5a** (3.48 g, 90%); mp: 73-75 °C; $[\alpha]_{26}^{D}$: -103.85° (c 1.56, $CHCl_3$); IR ($CHCl_3$) ν (cm^{-1}) 3260, 3413, 2918, 2118, 1742, 1698, 1585, 1336, 1155, 1020, 769;

^{1}H NMR (400 MHz, $CDCl_3$) δ: 10.61 (s, 1H), 10.09 (s, 1H), 8.65-8.61 (t, *J* = 8 Hz, 2H), 7.92-7.90 (d, *J* = 8 Hz, 1H), 7.82-7.80 (d, *J* = 8 Hz, 1H), 7.64-7.60 (t, *J* = 8 Hz, 1H), 7.58-7.54 (t, *J* = 8 Hz, 1H), 7.29-7.26 (m, 2H), 7.20-7.16 (t, *J* = 7 Hz, 1H), 4.34-4.32 (dd, *J* = 8.0, 3.0 Hz, 1H), 4.14-4.11 (dd, *J* = 8.0, 3.0 Hz, 1H), 3.72-3.67 (m, 4H), 3.56-3.51 (m, 1H), 3.38-3.29 (m, 2H), 2.28-2.23 (m, 1H), 2.11-1.79 (m, 7H), 1.68 (s, 3H), 1.63 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 172.8, 172.0, 171.2, 170.6, 137.1, 136.5, 134.8, 134.4, 130.1, 129.4, 124.7, 123.9, 123.5, 122.4, 122.1, 64.7, 62.5, 60.3, 58.0, 52.5, 49.9, 48.4, 30.9, 29.9, 25.8, 24.6, 24.5, 23.7; ESI MS: 755.20 $(M+Na)^+$; Anal. Calcd. for $C_{31}H_{40}N_8O_9S_2$: C, 50.81; H, 5.50; N, 15.29; Found: C, 50.47; H, 5.20; N, 15.71.

Hexapeptide acid 5b:

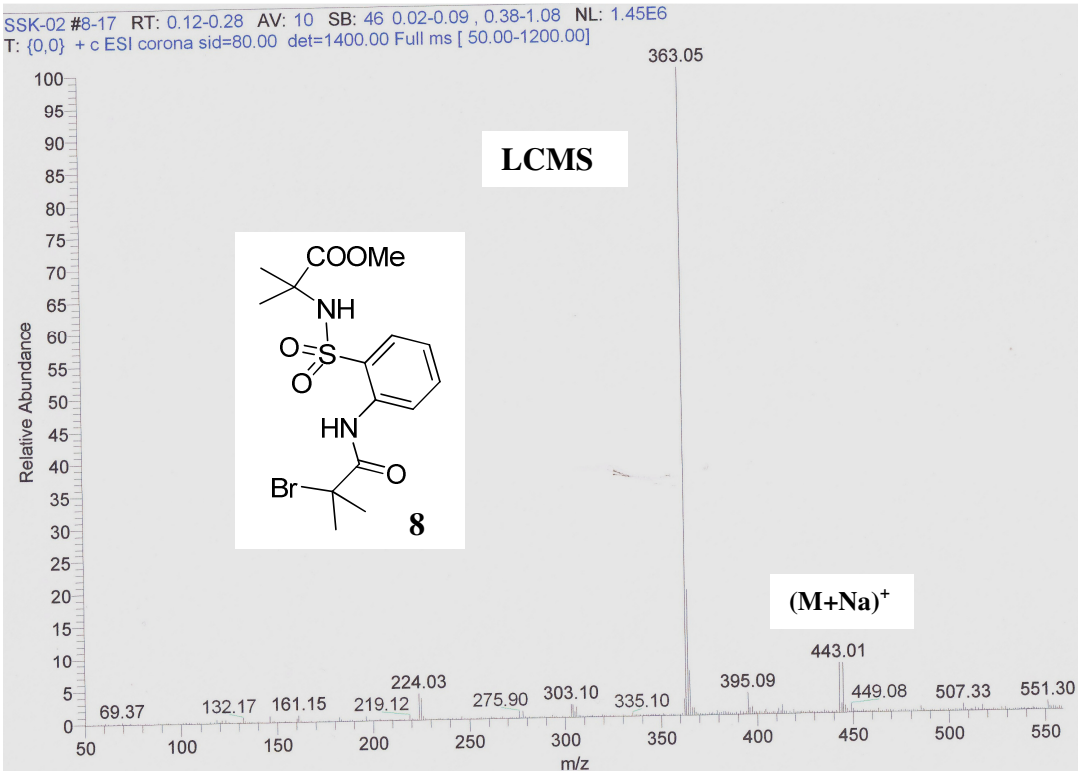
The product **5b** was obtained from **5a**, following the procedure for **4b** and was carried forward to the next reaction without further purification.

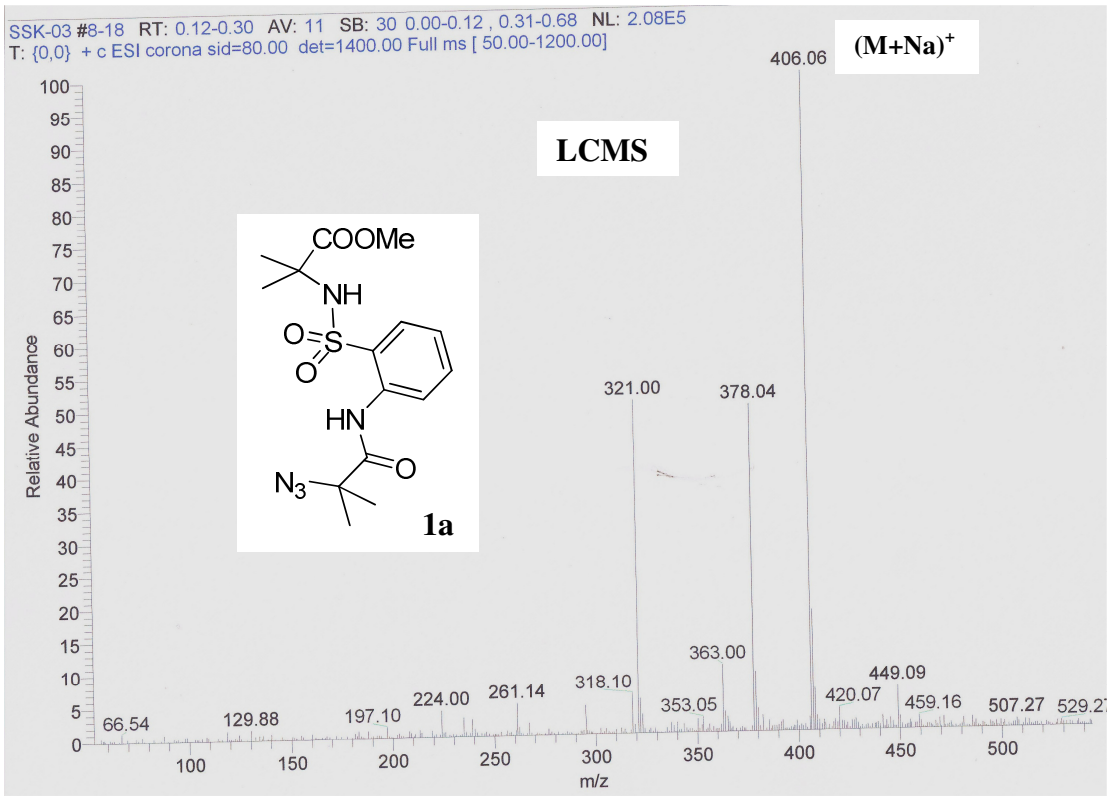
Hexapeptide amine 5c:

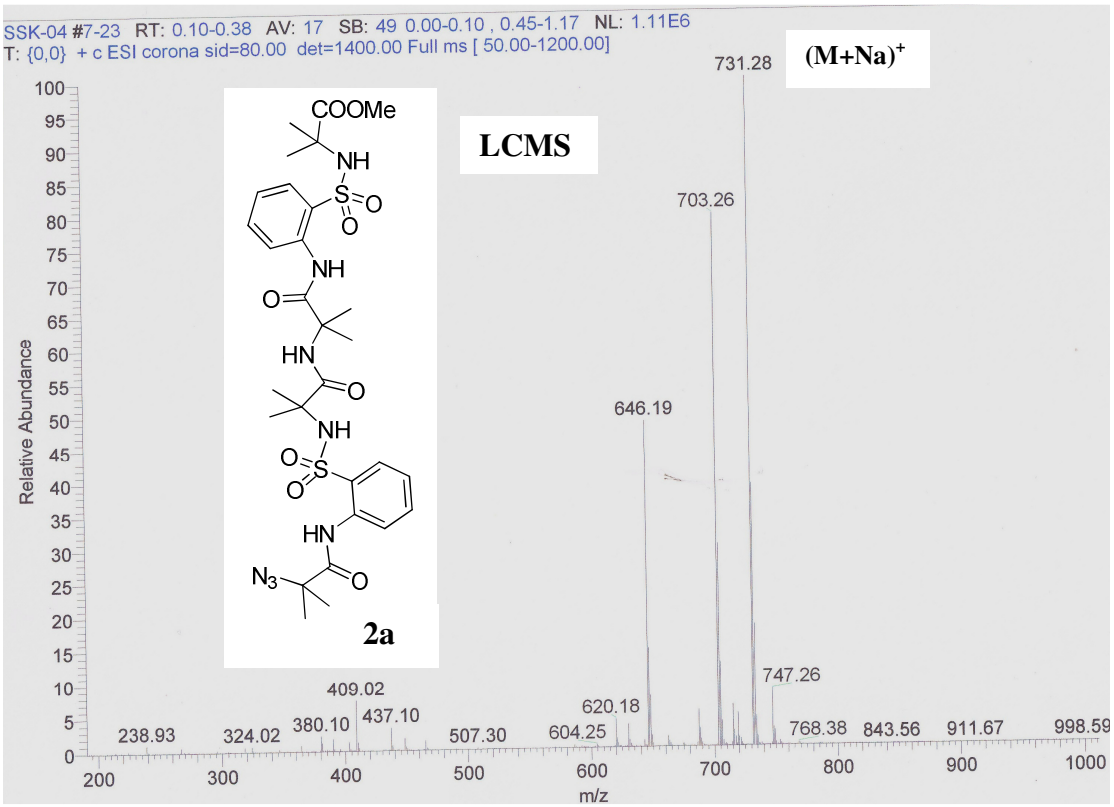
The product **5c** was obtained from **5a**, following the procedure for **1c** and was carried forward to the next reaction without further purification.

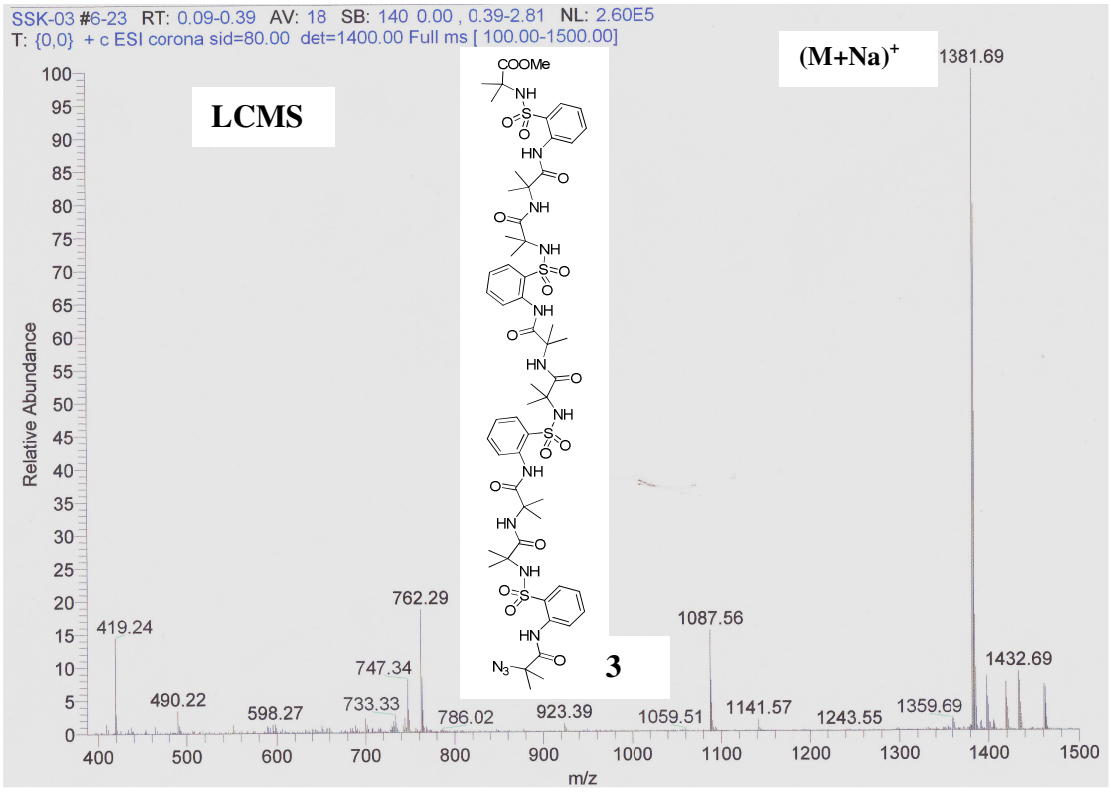
Dodecapeptide 6:

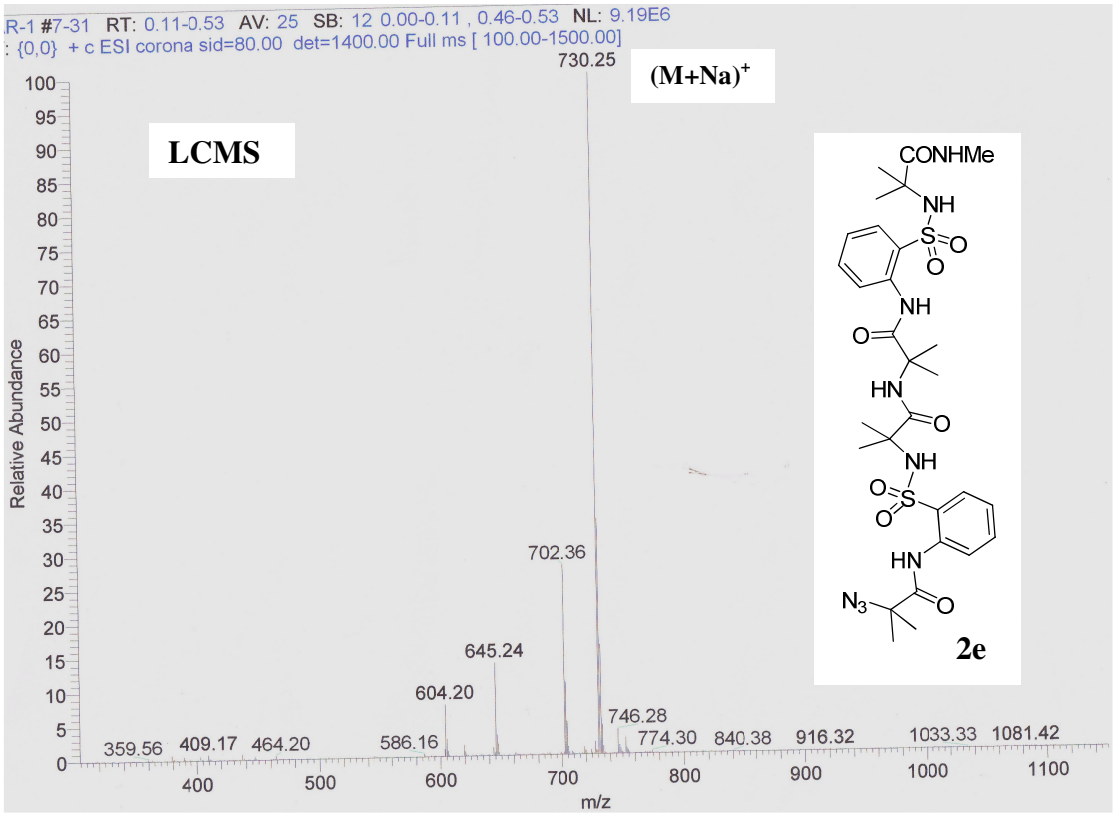
A solution containing acid **5b** (0.127 g, 0.18 mmol) and amine **5c** (0.125 g, 0.178 mmol) in dry DCM (10 mL) was cooled to 0 °C. To the reaction mixture was added EDC.HCl (0.53 g, 0.26 mmol) followed by HOBt (0.12 g, 0.09 mmol). The reaction mixture was stirred at 0 °C for 10 minutes and at room temperature for 12 h. The reaction mixture was washed sequentially with sat. $NaHCO_3$, water, dil. HCl and brine. The organic layer was dried over anhydrous Na_2SO_4 and evaporated under reduced pressure to get the crude product which on purification by column chromatography (eluent: pet ether/ethyl acetate: 10:90, R*f*: 0.3) yielded **6** (0.13 g, 52%); mp: 145-147 °C; $[\alpha]_{26}^{D}$: -133.30° (c 1.05, $CHCl_3$); IR ($CHCl_3$) ν (cm^{-1}) 3421, 3019, 2115, 1698, 1657, 1583, 1340, 1215, 1147, 1045, 757; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 10.62 (s, 1H), 10.21 (s, 2H), 10.07 (s, 1H), 8.72-8.70 (d, *J* = 8 Hz, 1H), 8.69-8.66 (d, *J* = 8 Hz, 1H), 8.62-8.60 (d, *J* = 8 Hz, 2H), 7.89-7.80 (m, 4H), 7.68-7.54 (m, 4H), 7.46 (s, 1H), 7.35 (s, 2H), 7.26-7.16 (m, 4H), 4.33-4.30 (dd, *J* = 8.0, 3.0 Hz, 1H), 4.13-4.06 (m, 3H), 3.75-3.71 (m, 1H), 3.68-3.63 (m, 5H), 3.56-3.51 (m, 1H), 3.38-3.26 (m, 4H), 2.25-2.12 (m, 4H), 2.07-1.97 (m, 5H), 1.88-1.71 (m, 7H), 1.65-1.54 (m, 24 H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 170.9, 171.7, 172.6, 172.0, 172.0, 171.2, 171.1, 170.8, 170.7, 137.4, 137.1, 136.9, 136.5, 135.0, 134.9, 134.8, 134.4, 130.1, 129.7, 129.6, 129.3, 124.7, 124.3, 124.0, 123.7, 123.5, 122.9, 122.9, 122.7, 122.5, 122.4, 122.3, 122.2, 64.6, 62.5, 62.4, 61.9, 60.4, 58.0, 57.8, 57.6, 52.5, 50.2, 50.1, 49.9, 48.4, 30.9, 30.5, 30.2, 30.0, 26.0, 25.2, 24.9, 24.8, 24.6, 24.5, 24.4, 24.3, 23.6; ESI MS: 1429.54 $(M+Na)^+$; Anal. Calcd. for $C_{61}H_{78}N_{14}O_{17}S_4$: C, 52.05; H, 5.59; N, 13.93; Found: C, 52.49; H, 5.88; N, 13.60.

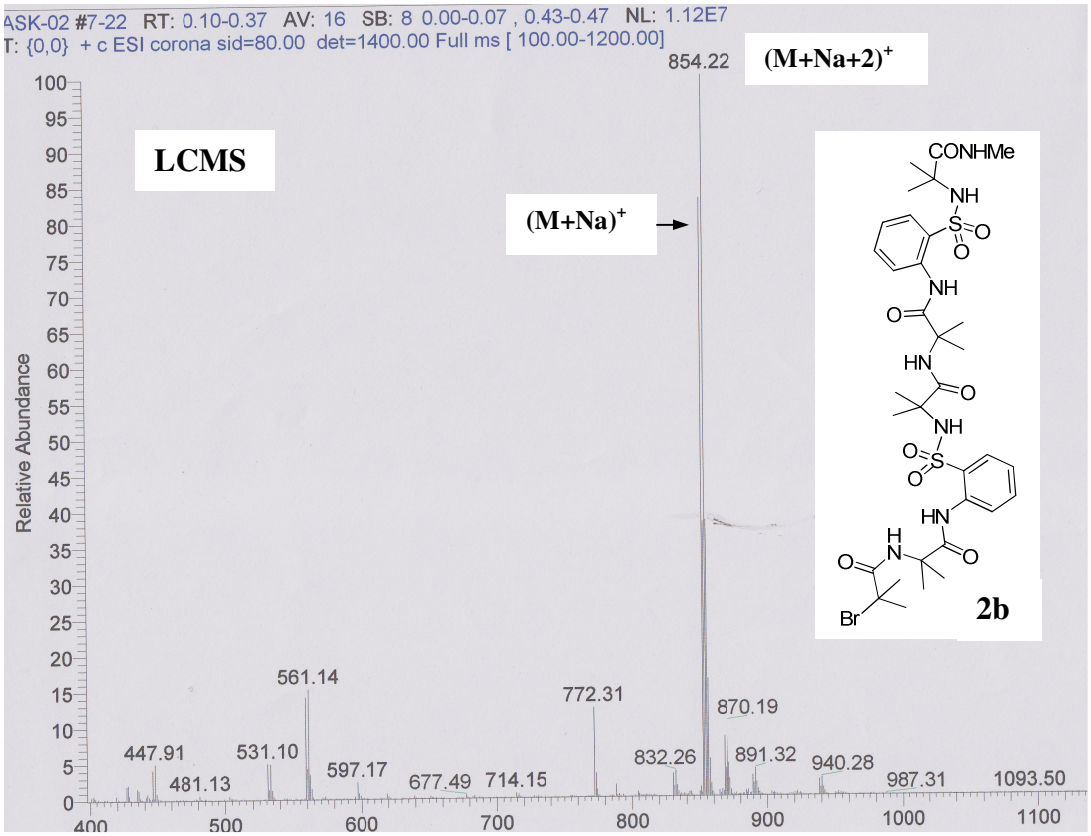

SSK-02 #8-17 RT: 0.12-0.28 AV: 10 SB: 46 0.02-0.09 , 0.38-1.08 NL: 1.45E6
T: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [50.00-1200.00]
LCMS
COOMe
NH
O=S=O
HN
Br
O
8
(M+Na)+
363.05
443.01
Relative Abundance
m/z

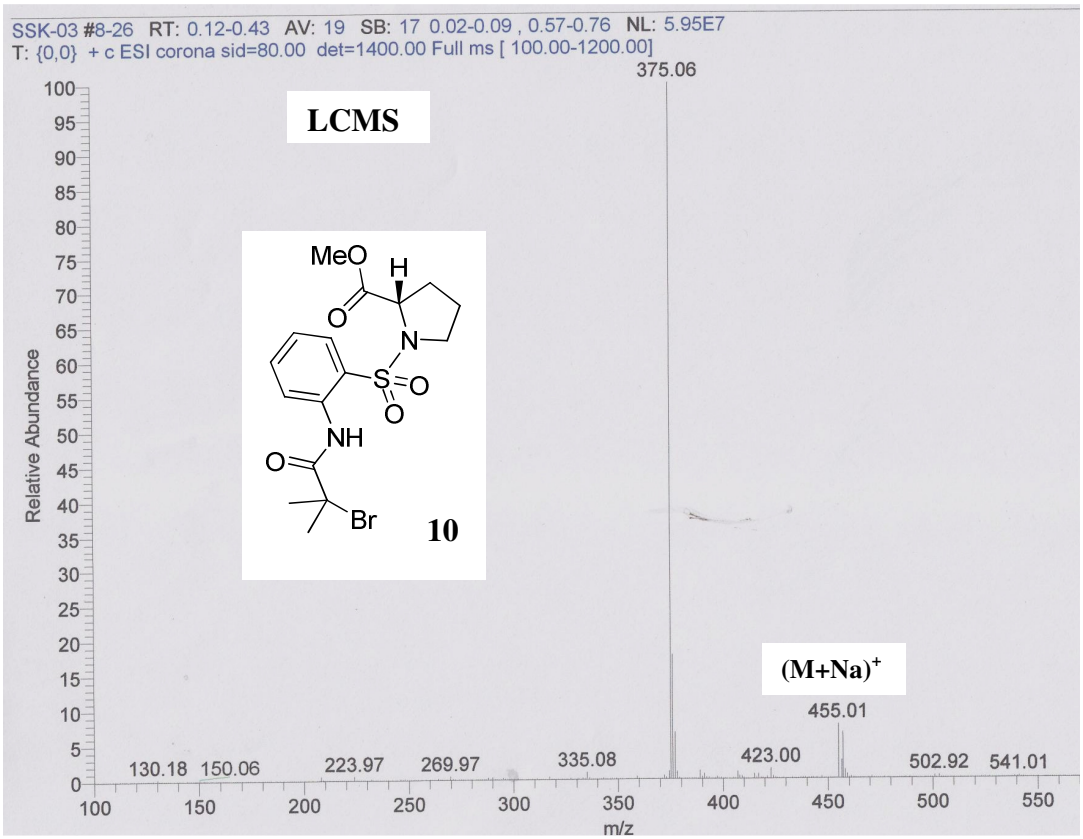

SSK-03 #8-18 RT: 0.12-0.30 AV: 11 SB: 30 0.00-0.12 , 0.31-0.68 NL: 2.08E5
T: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [50.00-1200.00]
LCMS
COOMe
NH
O=S=O
HN
N3
O
1a
(M+Na)+
406.06
321.00
378.04
363.00
Relative Abundance
m/z

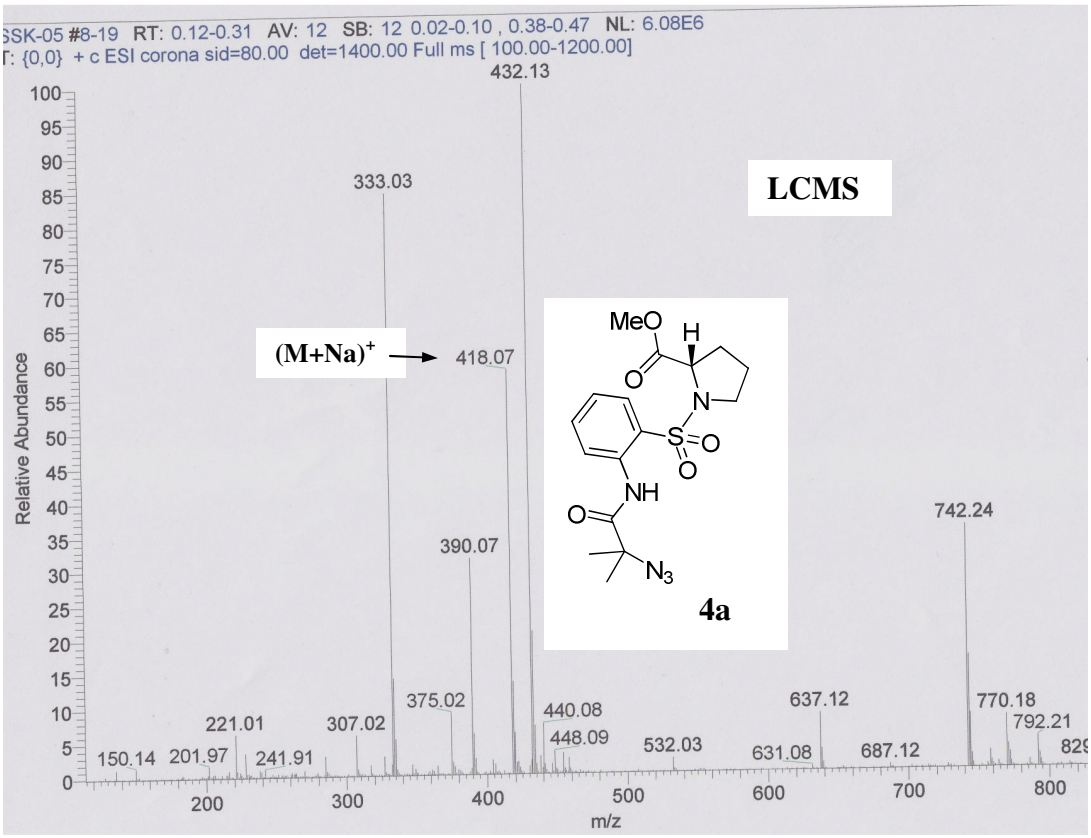

SSK-04 #7-23 RT: 0.10-0.38 AV: 17 SB: 49 0.00-0.10 , 0.45-1.17 NL: 1.11E6
T: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [50.00-1200.00]
LCMS
(M+Na)+
2a
Relative Abundance
m/z
731.28
703.26
646.19
747.26
620.18
409.02
437.10
380.10
324.02
238.93
507.30
604.25
768.38
843.56
911.67
998.59

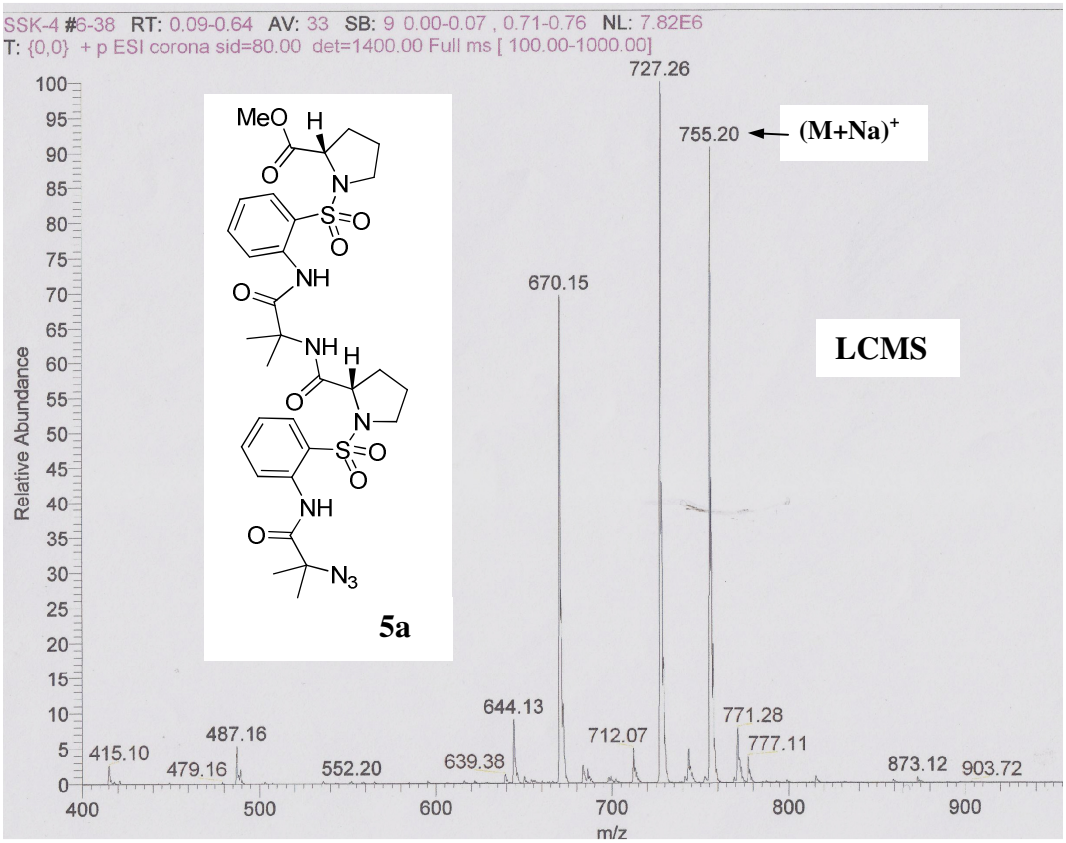

SSK-03 #6-23 RT: 0.09-0.39 AV: 18 SB: 140 0.00 , 0.39-2.81 NL: 2.60E5
T: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [100.00-1500.00]
LCMS
(M+Na)+
3
Relative Abundance
m/z
1381.69
762.29
1087.56
419.24
747.34
1432.69
490.22
598.27
733.33
786.02
923.39
1059.51
1141.57
1243.55
1359.69

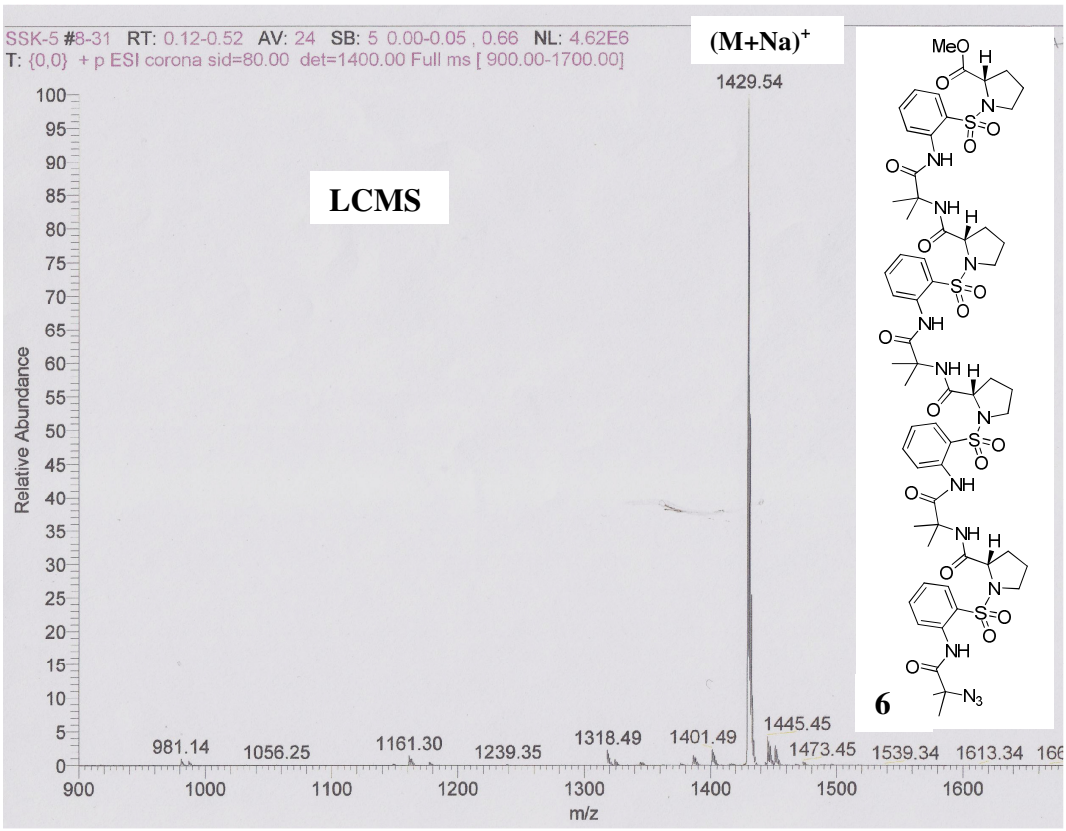

R-1 #7-31 RT: 0.11-0.53 AV: 25 SB: 12 0.00-0.11 , 0.46-0.53 NL: 9.19E6
: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [100.00-1500.00]
LCMS
(M+Na)+
730.25
702.36
645.24
604.20
746.28
359.56
409.17
464.20
586.16
774.30
840.38
916.32
1033.33
1081.42
Relative Abundance
m/z
CONHMe
NH
S
O
NH
O
HN
O
NH
O
S
O
HN
N3
O
2e

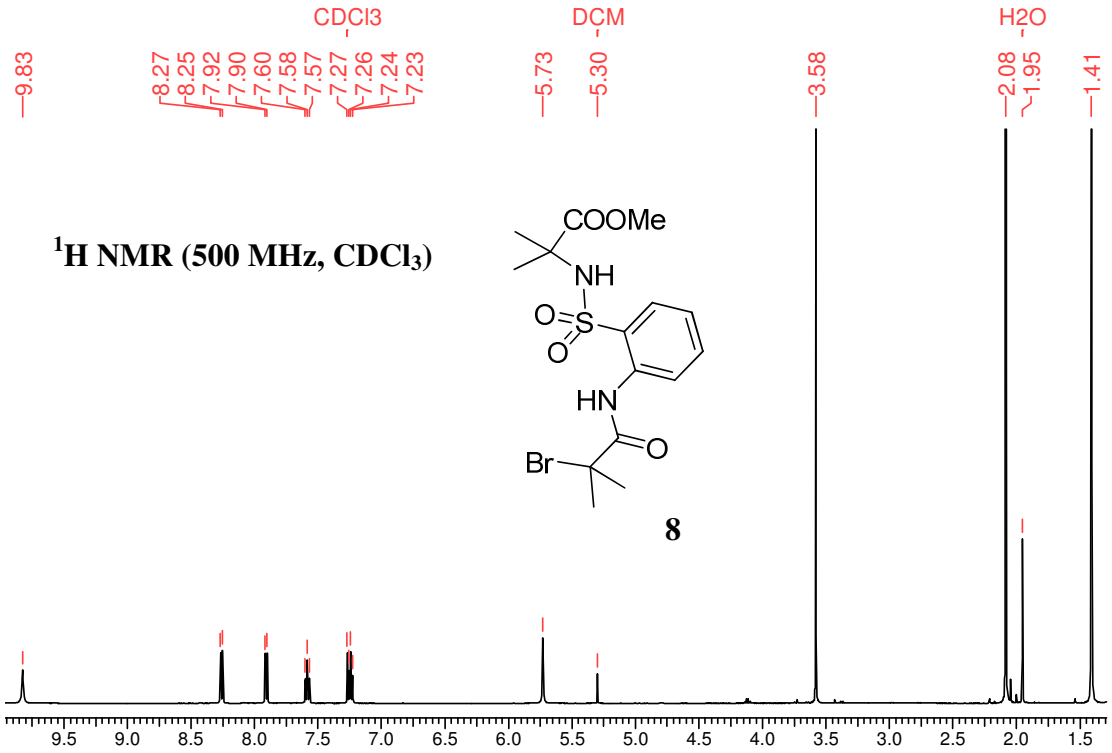

ASK-02 #7-22 RT: 0.10-0.37 AV: 16 SB: 8 0.00-0.07 , 0.43-0.47 NL: 1.12E7
T: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [100.00-1200.00]
LCMS
854.22
(M+Na+2)+
(M+Na)+
561.14
772.31
870.19
447.91
531.10
481.13
597.17
677.49
714.15
832.26
891.32
940.28
987.31
1093.50
Relative Abundance
CONHMe
NH
S
O
NH
O
HN
O
NH
O
S
O
HN
H
N
O
O
Br
2b


SSK-03 #8-26 RT: 0.12-0.43 AV: 19 SB: 17 0.02-0.09 , 0.57-0.76 NL: 5.95E7
T: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [100.00-1200.00]
LCMS
MeO
H
O
N
S
O
O
NH
O
Br
10
(M+Na)+
375.06
455.01
130.18
150.06
223.97
269.97
335.08
423.00
502.92
541.01
Relative Abundance
m/z


SSK-05 #8-19 RT: 0.12-0.31 AV: 12 SB: 12 0.02-0.10 , 0.38-0.47 NL: 6.08E6
T: {0,0} + c ESI corona sid=80.00 det=1400.00 Full ms [100.00-1200.00]
LCMS
(M+Na)+
MeO
H
O
N
S
O
O
NH
O
N3
4a
432.13
333.03
418.07
390.07
742.24
375.02
440.08
448.09
637.12
770.18
792.21
221.01
307.02
150.14
201.97
241.91
532.03
631.08
687.12
Relative Abundance
m/z

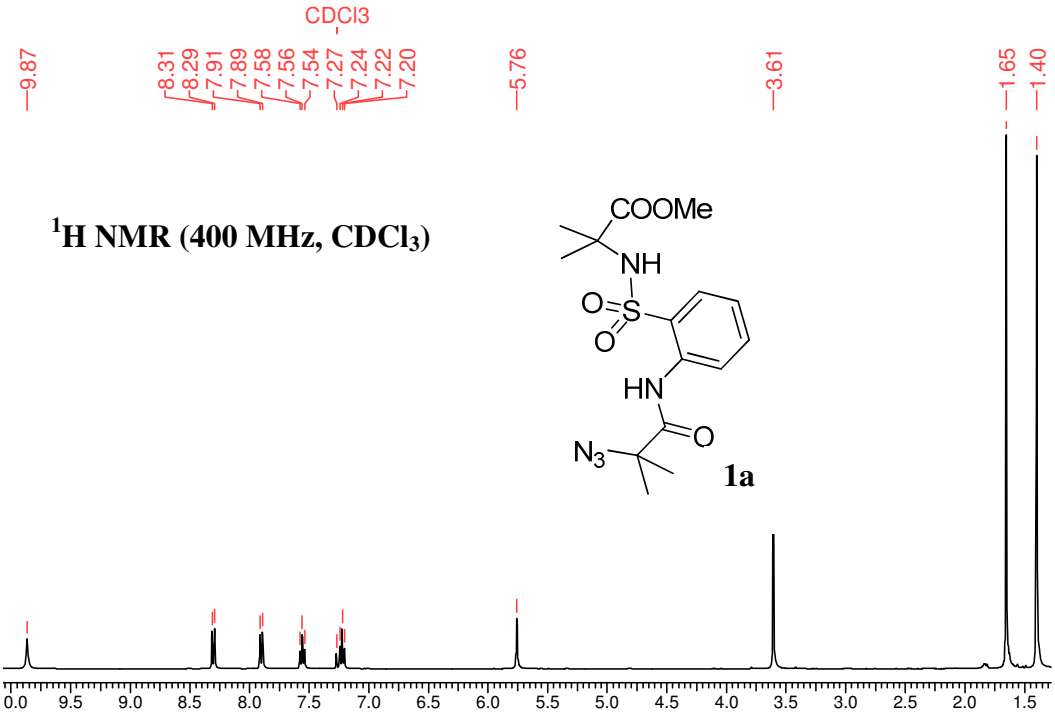

SSK-4 #6-38 RT: 0.09-0.64 AV: 33 SB: 9 0.00-0.07 , 0.71-0.76 NL: 7.82E6
T: {0,0} + p ESI corona sid=80.00 det=1400.00 Full ms [100.00-1000.00]
727.26
755.20
(M+Na)+
670.15
LCMS
644.13
771.28
712.07
777.11
487.16
415.10
479.16
552.20
639.38
873.12
903.72
Relative Abundance
m/z
5a


SSK-5 #8-31 RT: 0.12-0.52 AV: 24 SB: 5 0.00-0.05 , 0.66 NL: 4.62E6
T: {0,0} + p ESI corona sid=80.00 det=1400.00 Full ms [900.00-1700.00]
(M+Na)+
1429.54
LCMS
981.14
1056.25
1161.30
1239.35
1318.49
1401.49
1445.45
1473.45
1539.34
1613.34
Relative Abundance
m/z
6



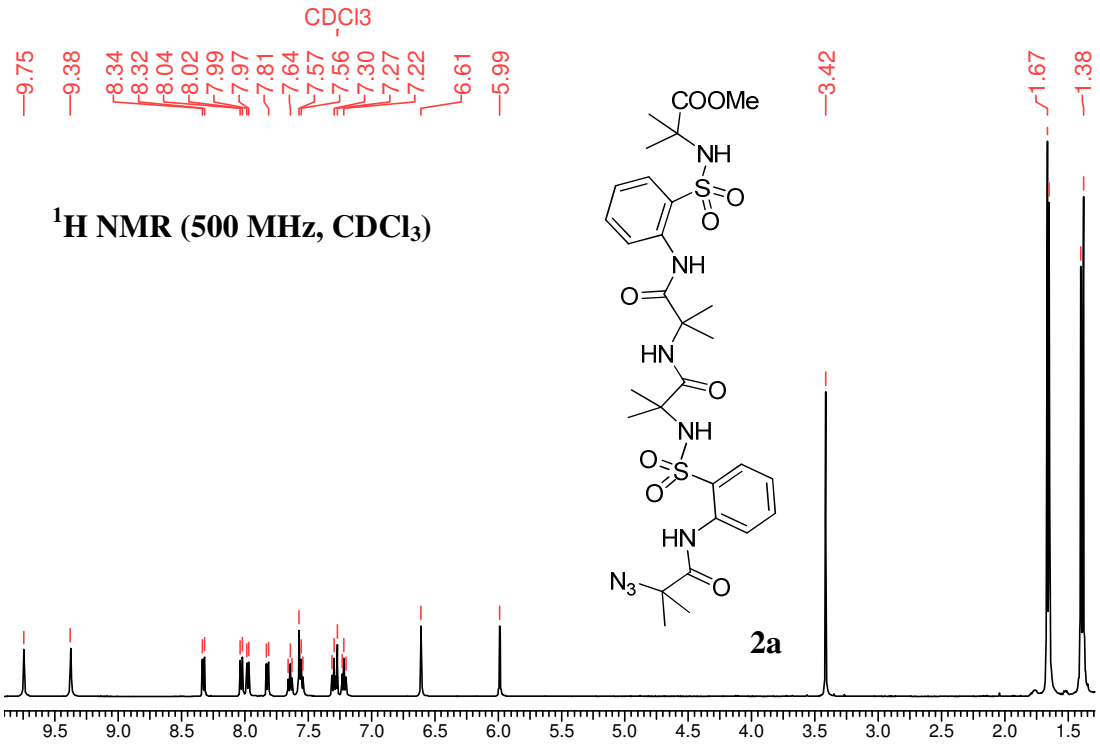
^{1}H NMR (500 MHz, $CDCl_3$)

8

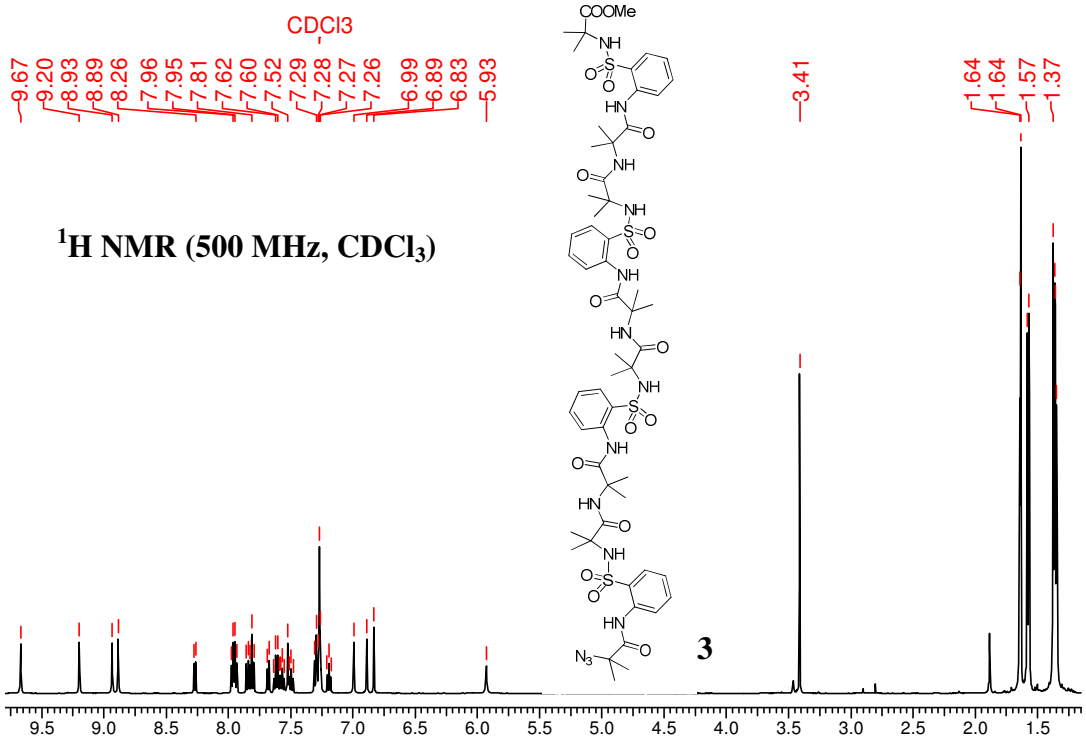


^{1}H NMR (400 MHz, $CDCl_3$)

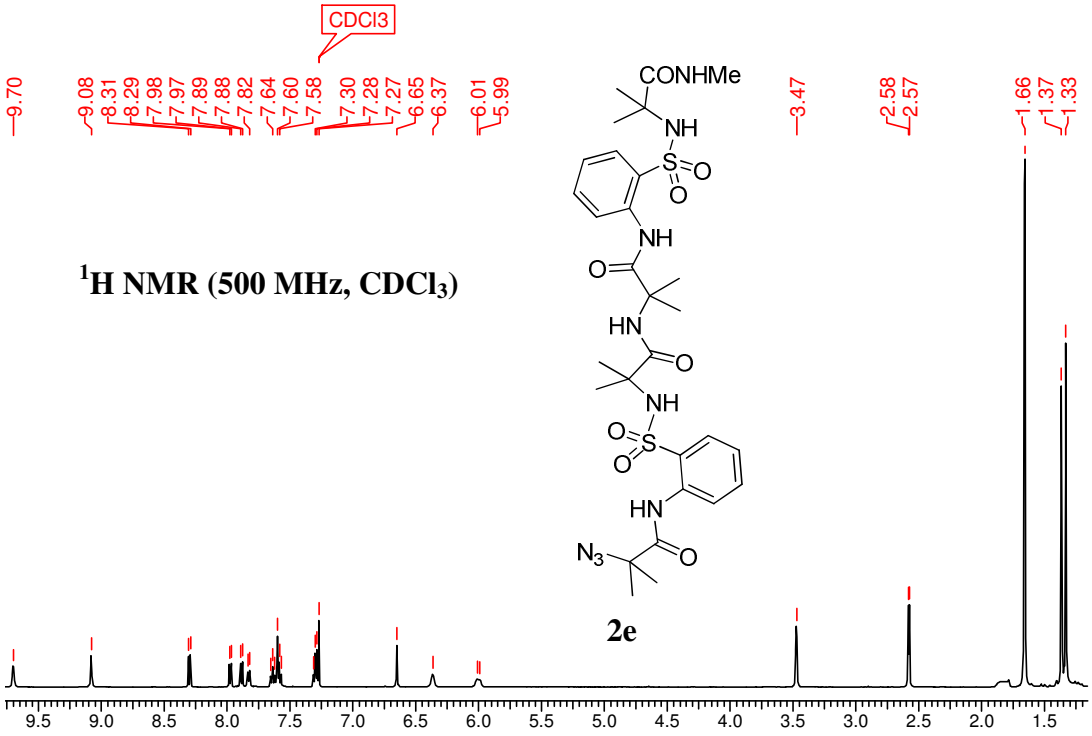
1a



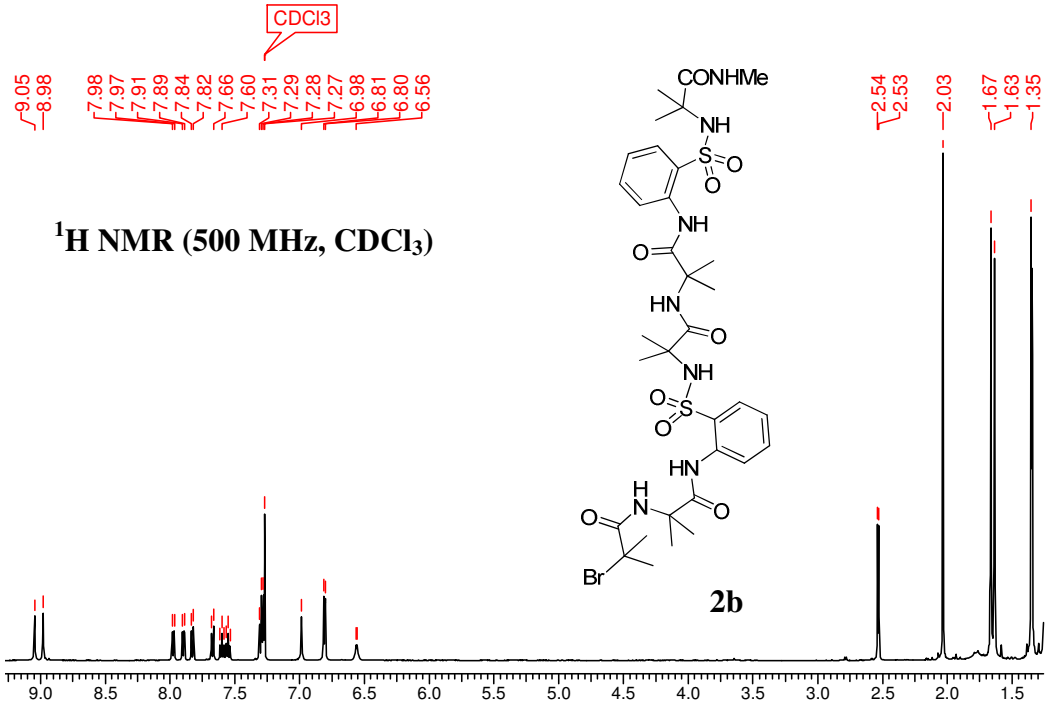
^{1}H NMR (500 MHz, $CDCl_3$)



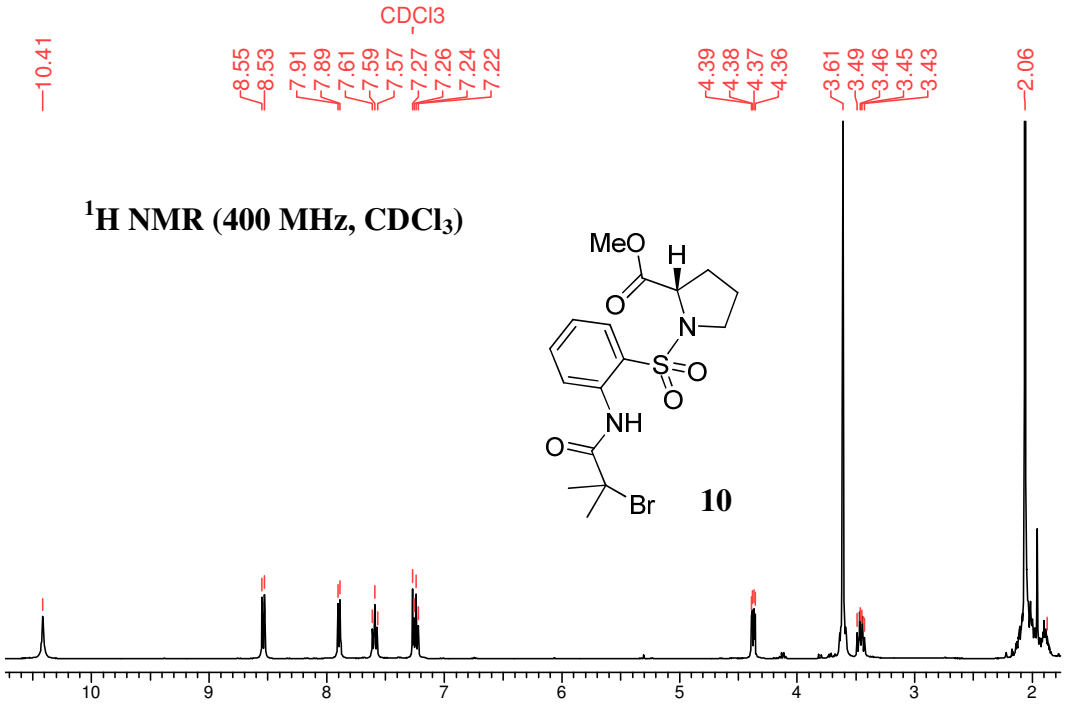
^{1}H NMR (500 MHz, $CDCl_3$)



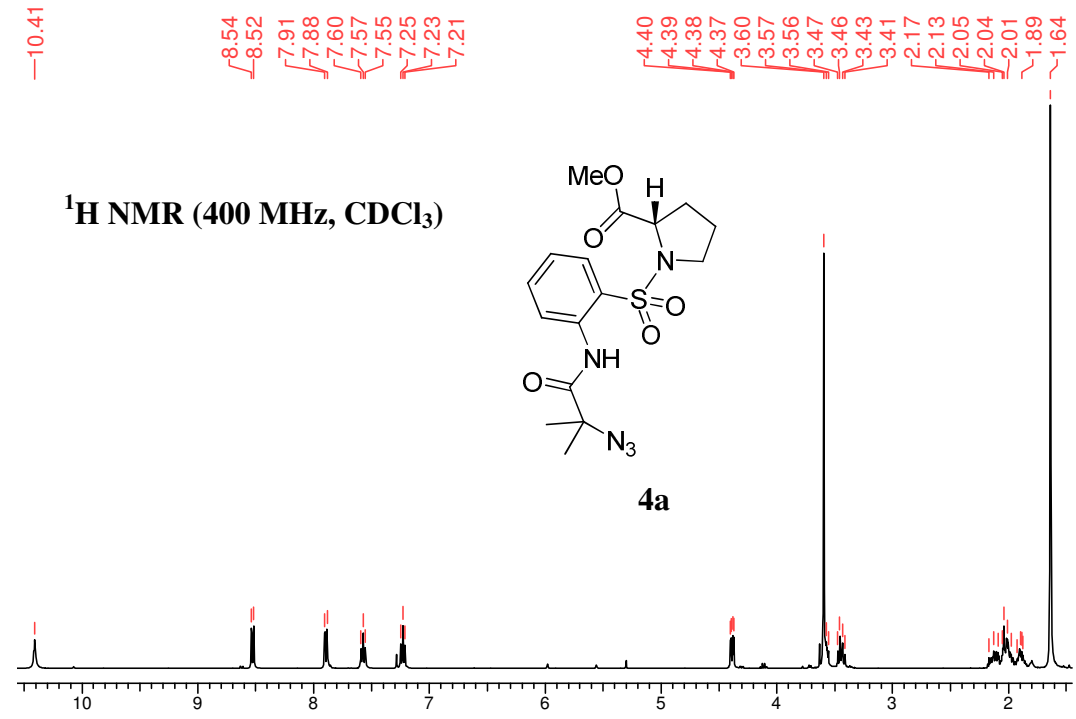
^{1}H NMR (500 MHz, $CDCl_3$)



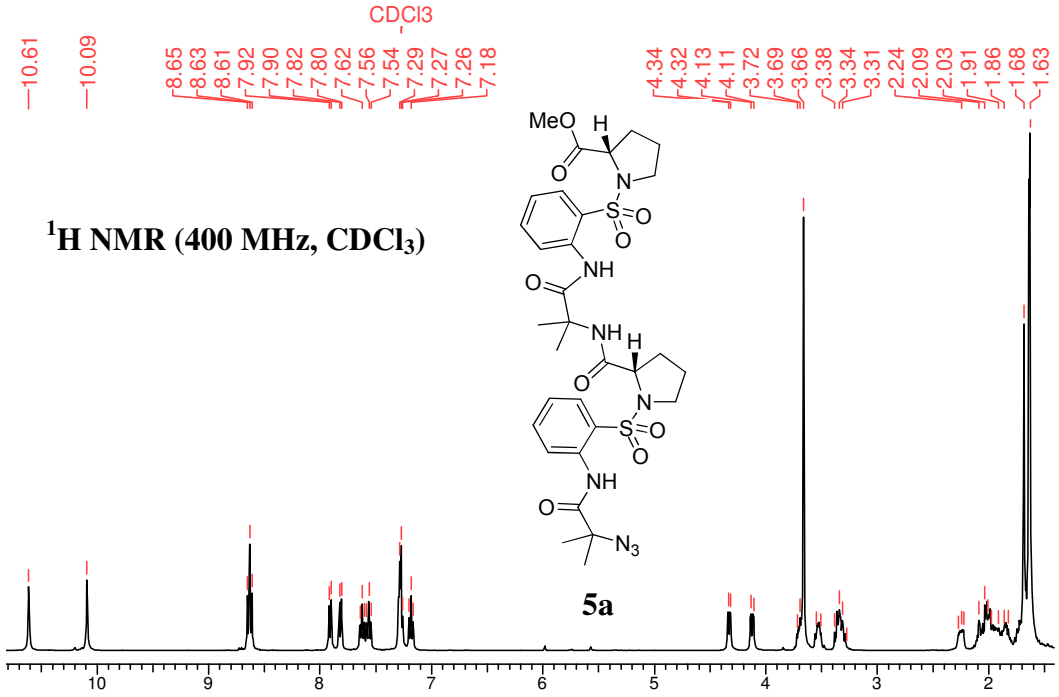
^{1}H NMR (500 MHz, $CDCl_3$)

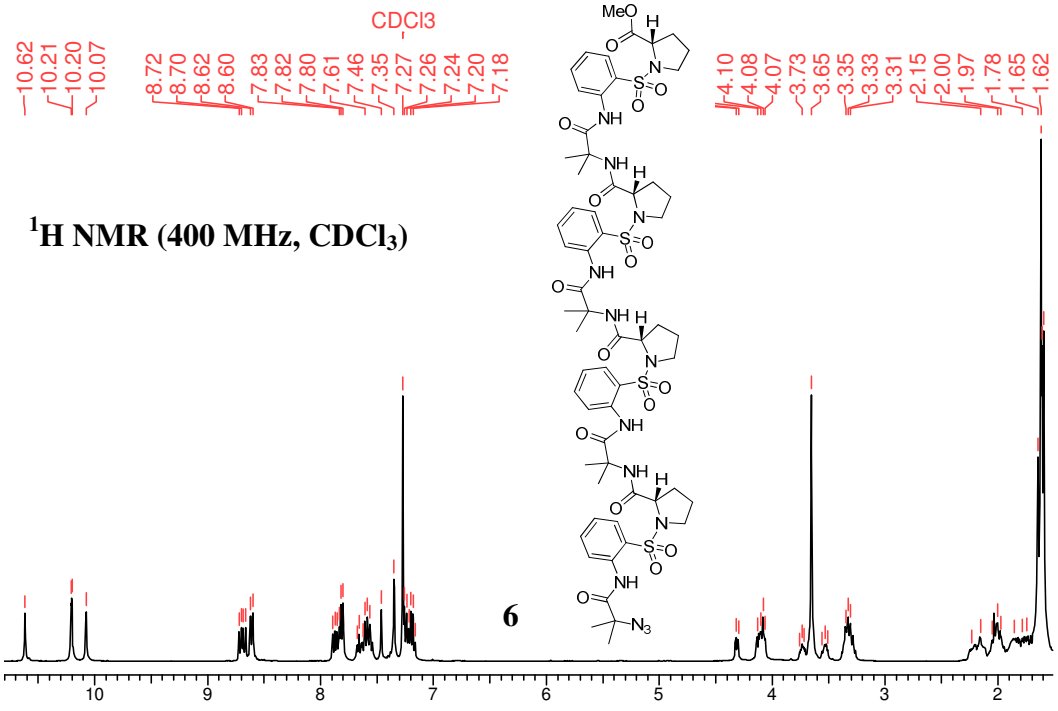


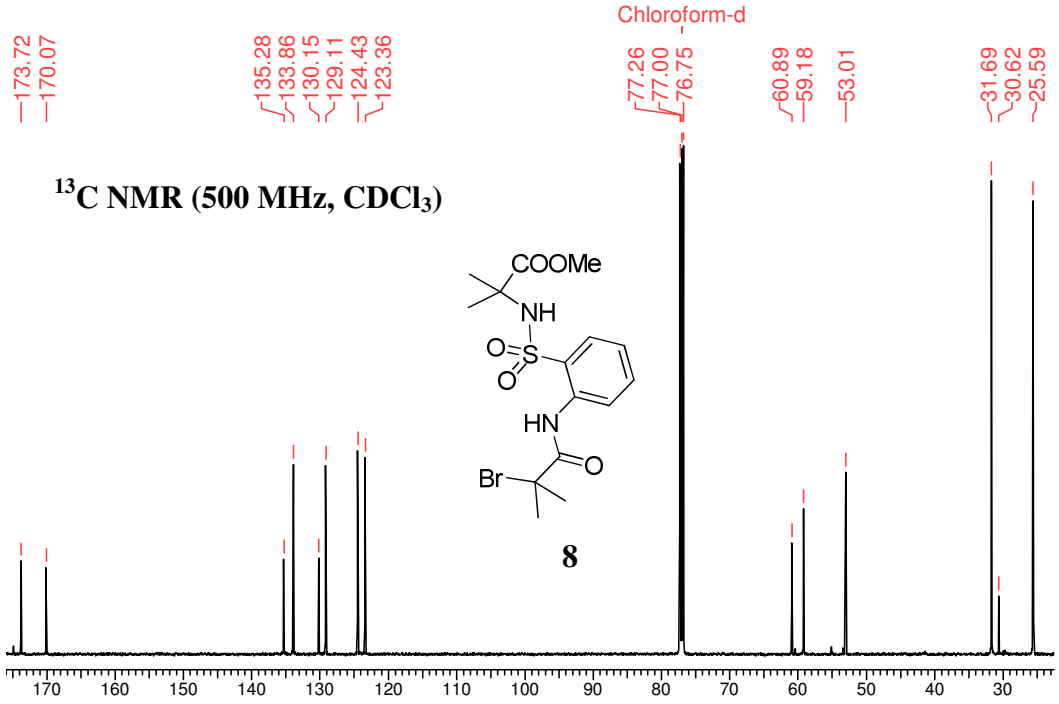
^{1}H NMR (400 MHz, $CDCl_3$)



^{1}H NMR (400 MHz, $CDCl_3$)

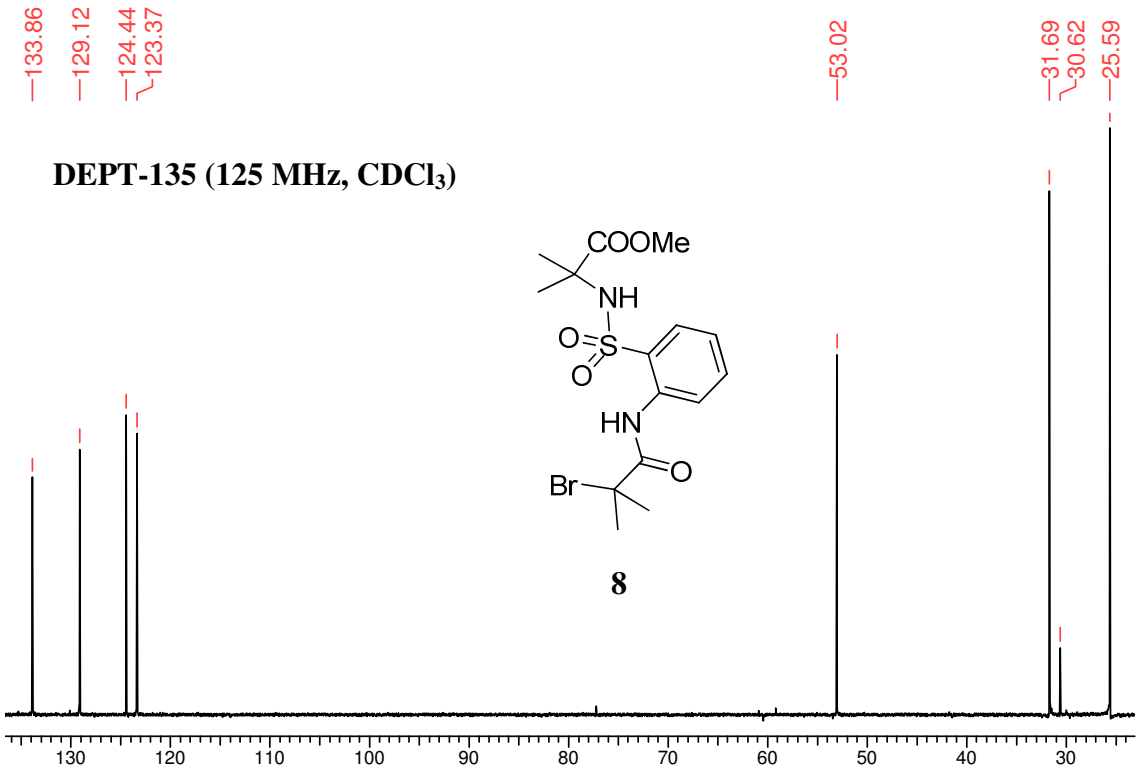

CDCl3
10.61
10.09
8.65
8.63
8.61
7.92
7.90
7.82
7.80
7.62
7.56
7.54
7.29
7.27
7.26
7.18
4.34
4.32
4.13
4.11
3.72
3.69
3.66
3.38
3.34
3.31
2.24
2.09
2.03
1.91
1.86
1.68
1.63
MeO
H
O
N
S
O
O
NH
O
NH
H
O
N
S
O
O
NH
O
N3
1H NMR (400 MHz, CDCl3)
5a
10
9
8
7
6
5
4
3
2


CDCl3
10.62
10.21
10.20
10.07
8.72
8.70
8.62
8.60
7.83
7.82
7.80
7.61
7.46
7.35
7.27
7.26
7.24
7.20
7.18
4.10
4.08
4.07
3.73
3.65
3.35
3.33
3.31
2.15
2.00
1.97
1.78
1.65
1.62
MeO
H
O
N
S
O
O
NH
O
NH
H
O
N
S
O
O
NH
O
NH
H
O
N
S
O
O
NH
O
NH
H
O
N
S
O
O
NH
O
N3
1H NMR (400 MHz, CDCl3)
6
10
9
8
7
6
5
4
3
2



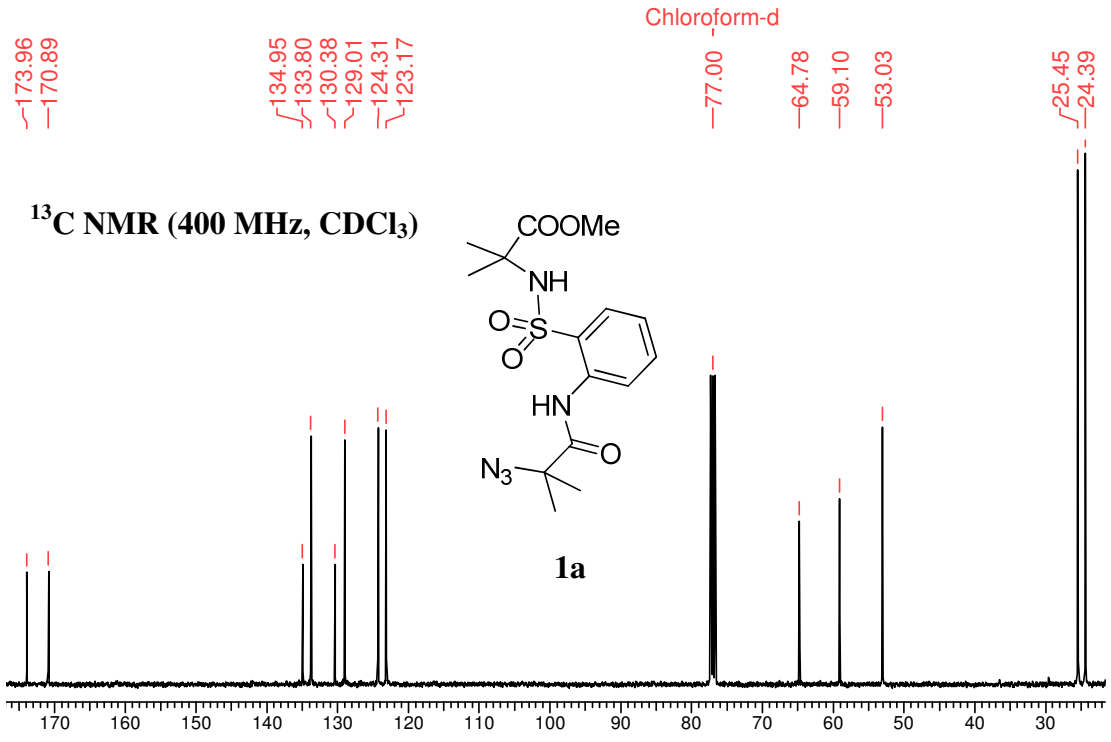
^{13}C NMR (500 MHz, $CDCl_3$)

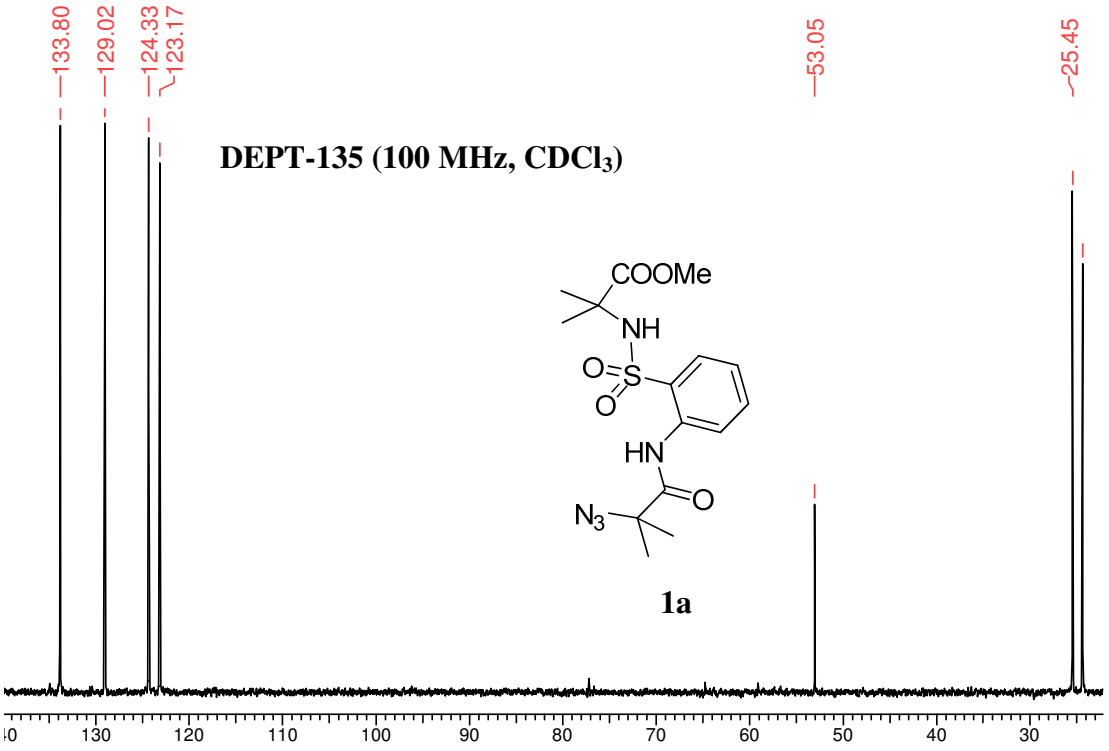
8

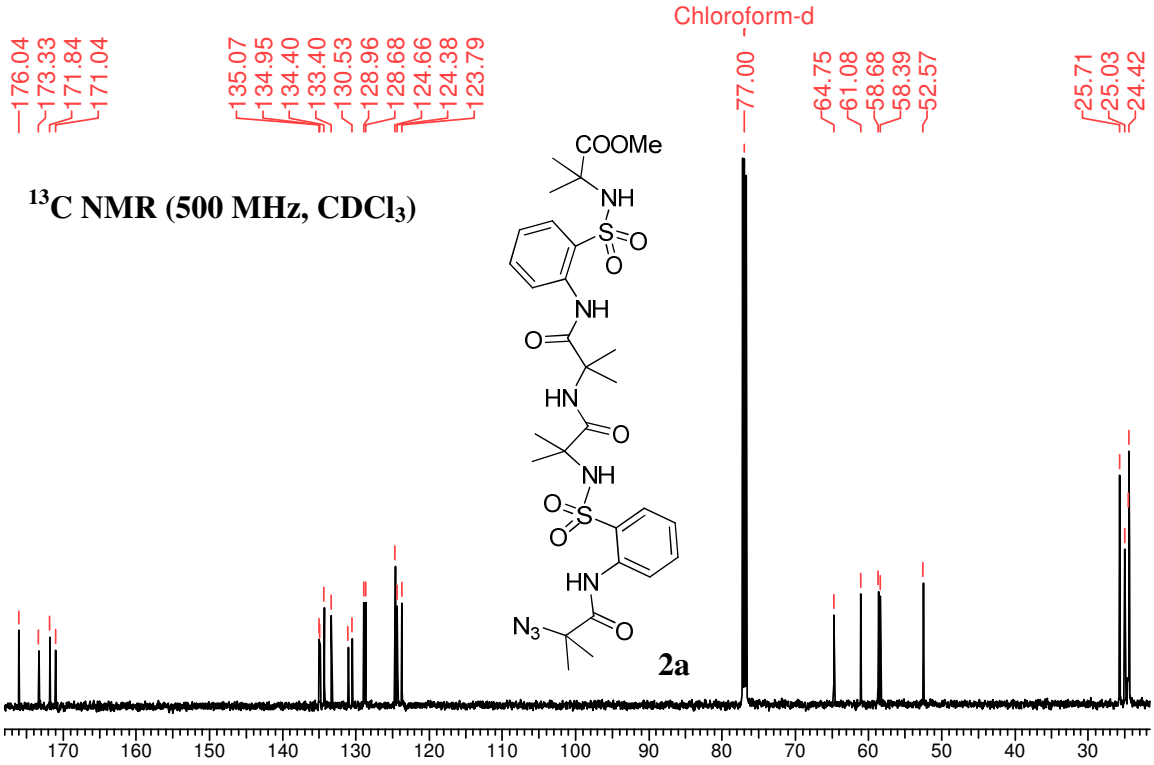


DEPT-135 (125 MHz, $CDCl_3$)

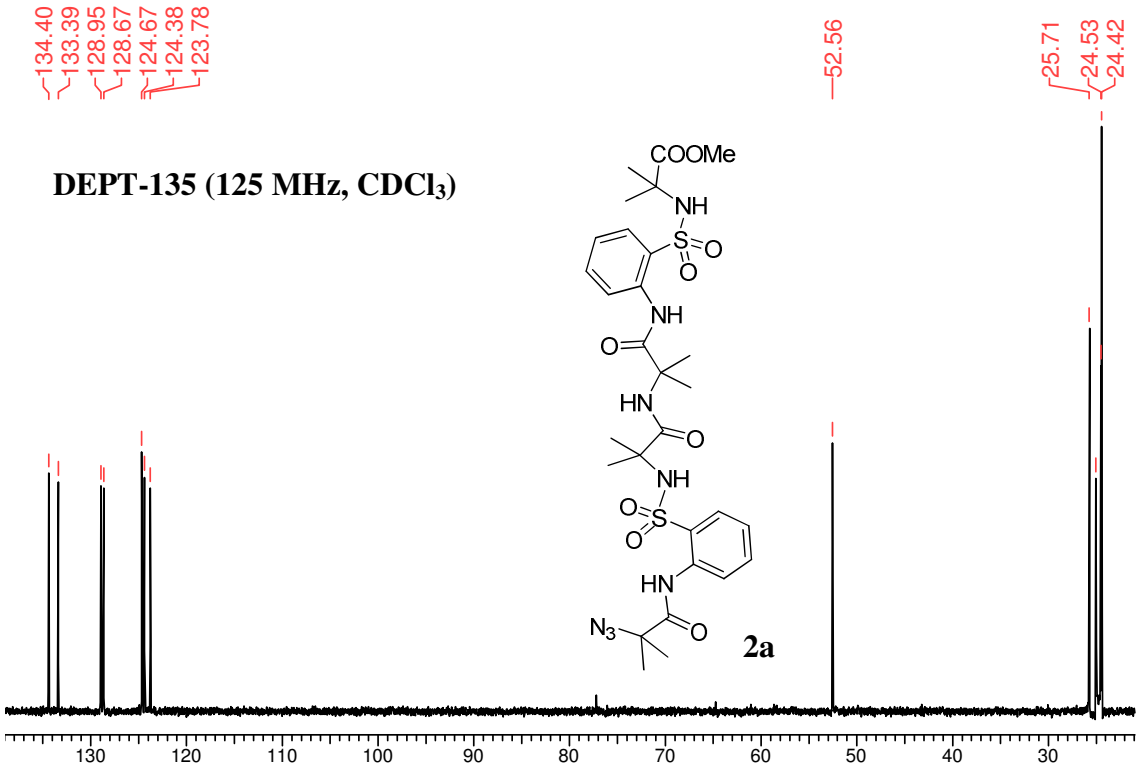
8



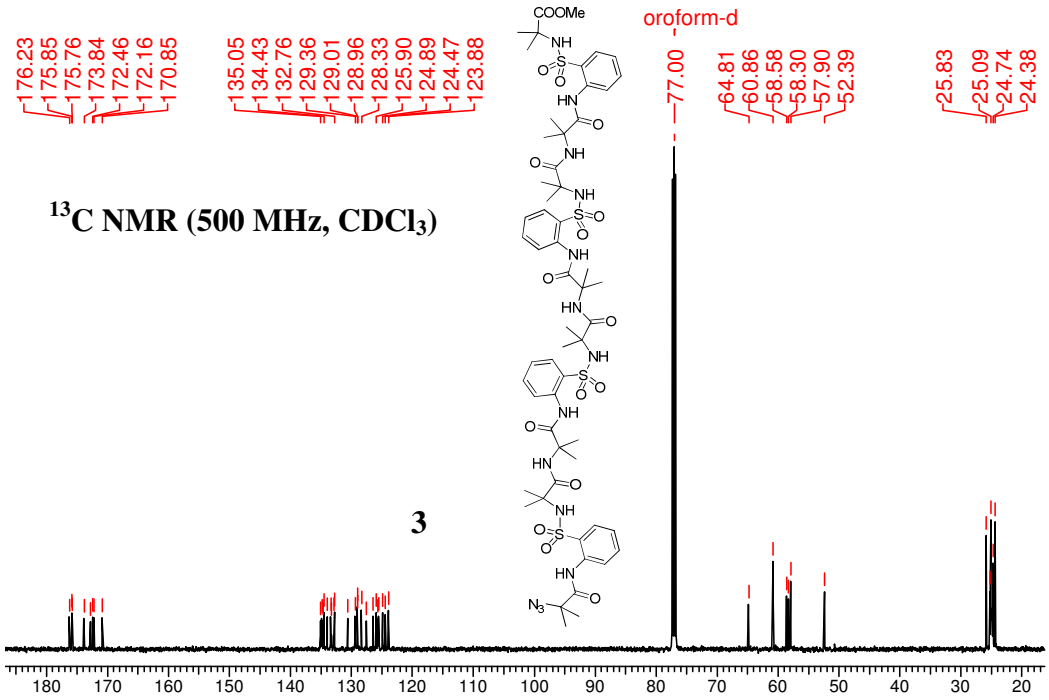


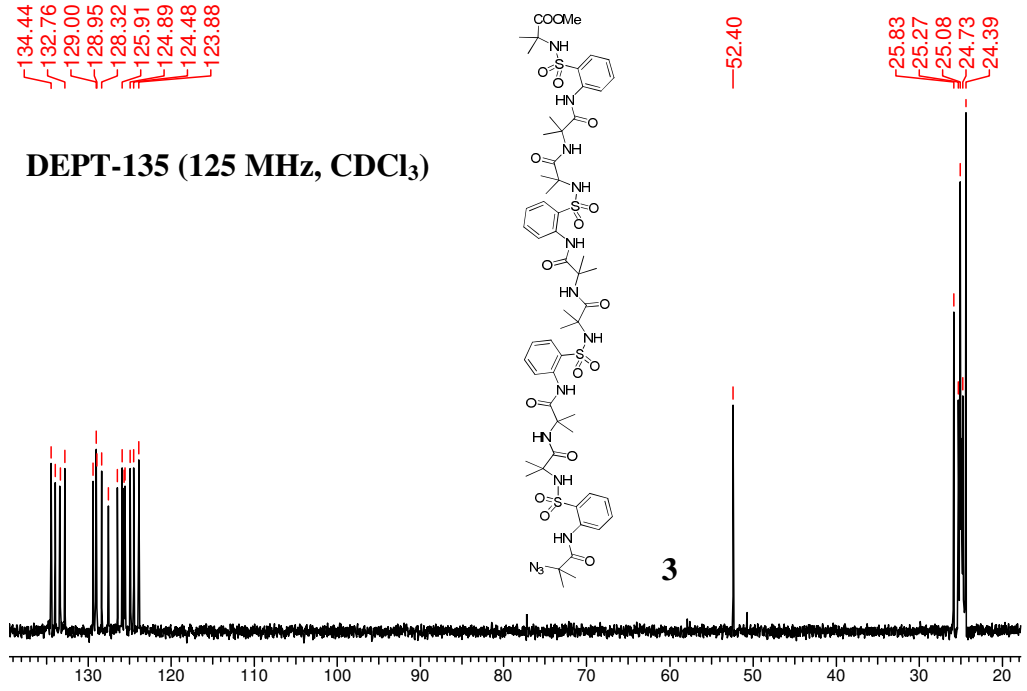


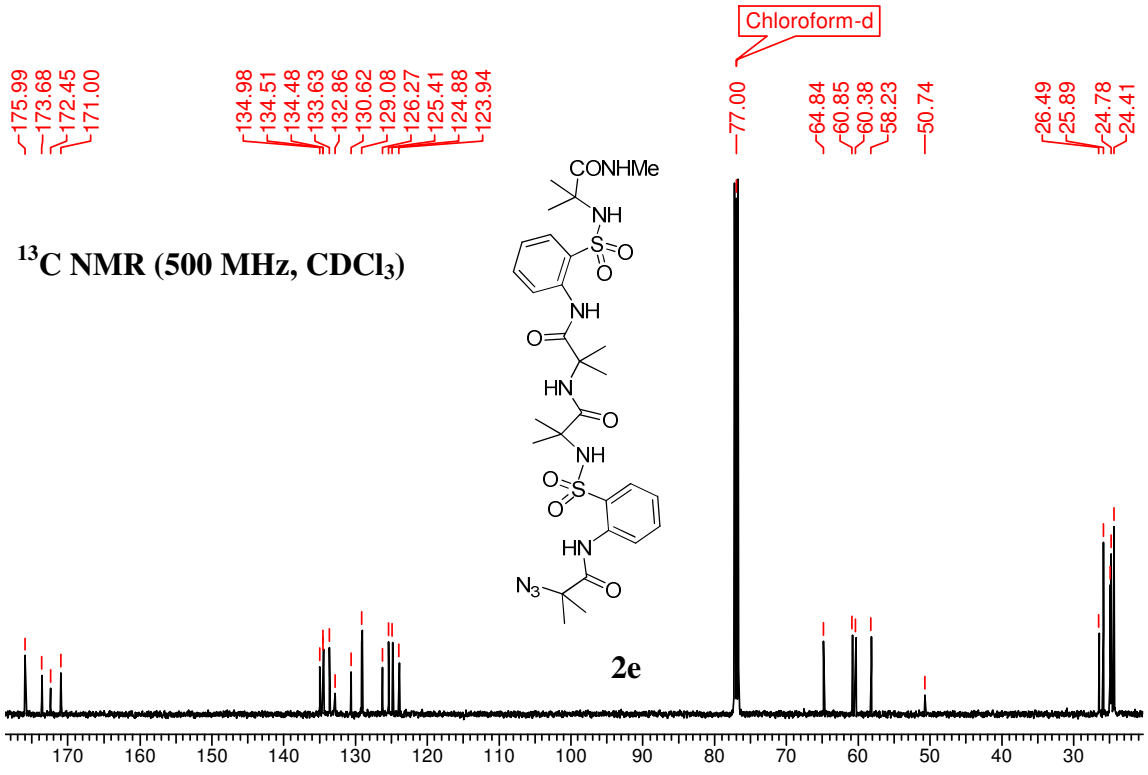
^{13}C NMR (500 MHz, $CDCl_3$)

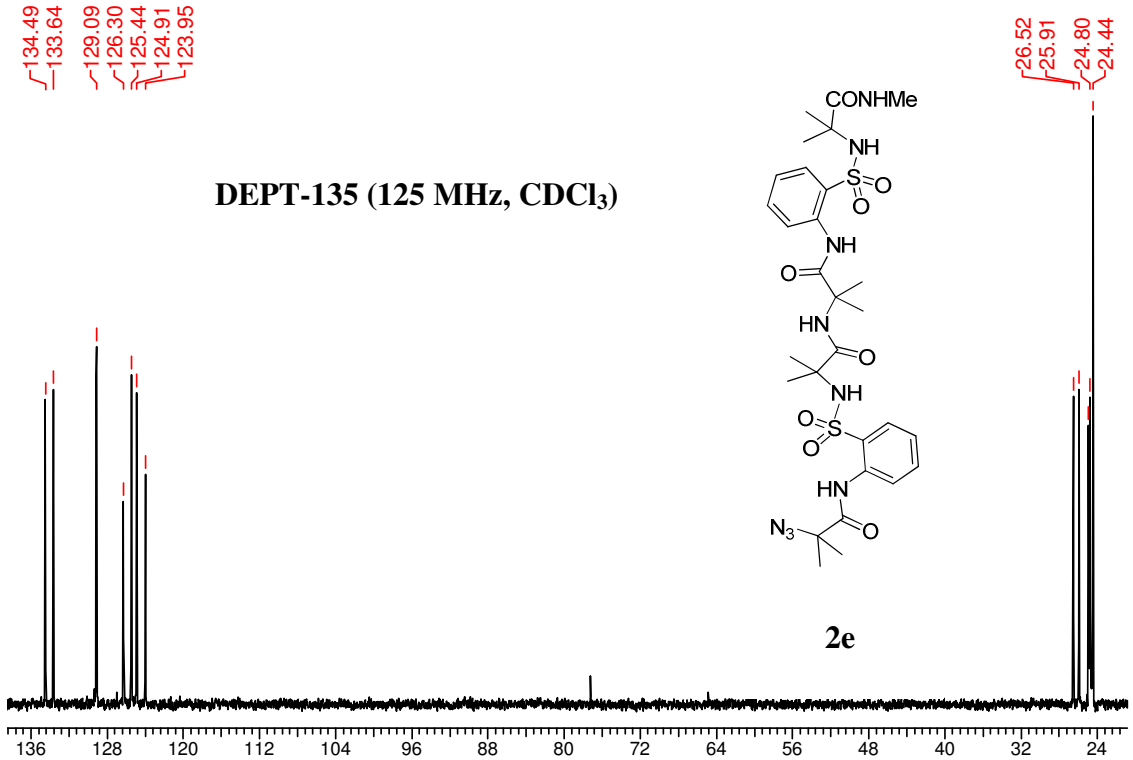


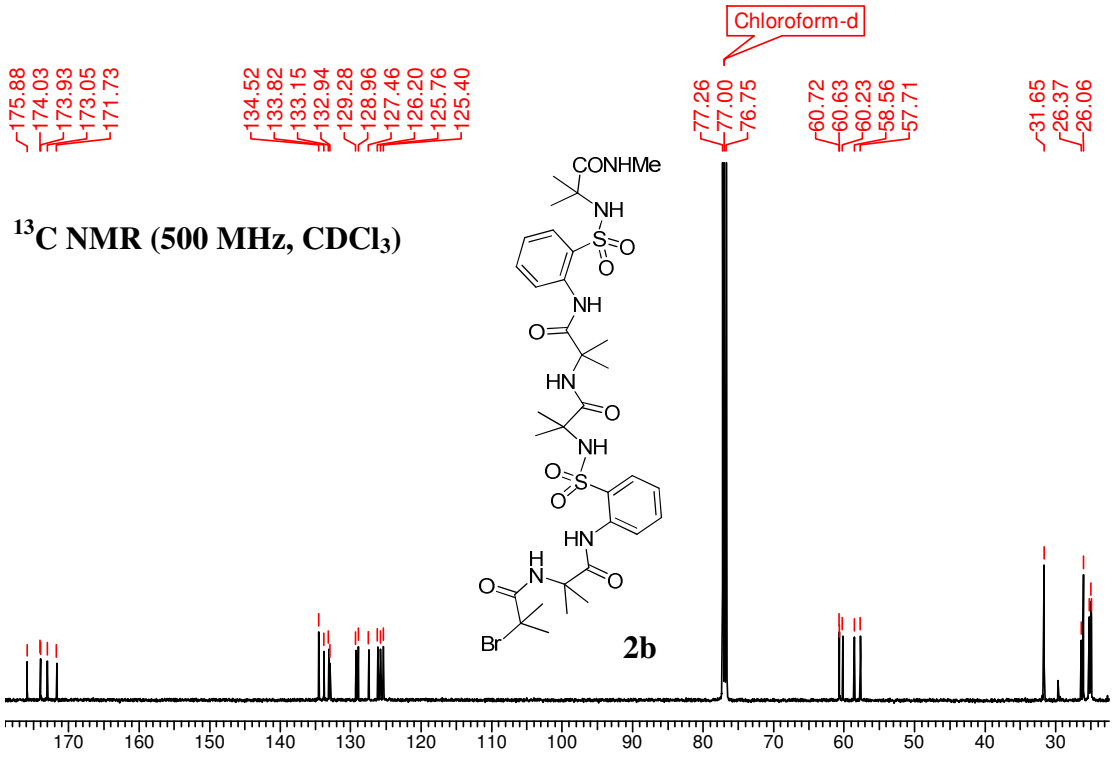
DEPT-135 (125 MHz, $CDCl_3$)


176.23
175.85
175.76
173.84
172.46
172.16
170.85
135.05
134.43
132.76
129.36
129.01
128.96
128.33
125.90
124.89
124.47
123.88
oroform-d
77.00
64.81
60.86
58.58
58.30
57.90
52.39
25.83
25.09
24.74
24.38
13C NMR (500 MHz, CDCl3)
3
COOMe
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20


134.44
132.76
129.00
128.95
128.32
125.91
124.89
124.48
123.88
52.40
25.83
25.27
25.08
24.73
24.39
DEPT-135 (125 MHz, CDCl3)
3
COOMe
130
120
110
100
90
80
70
60
50
40
30
20

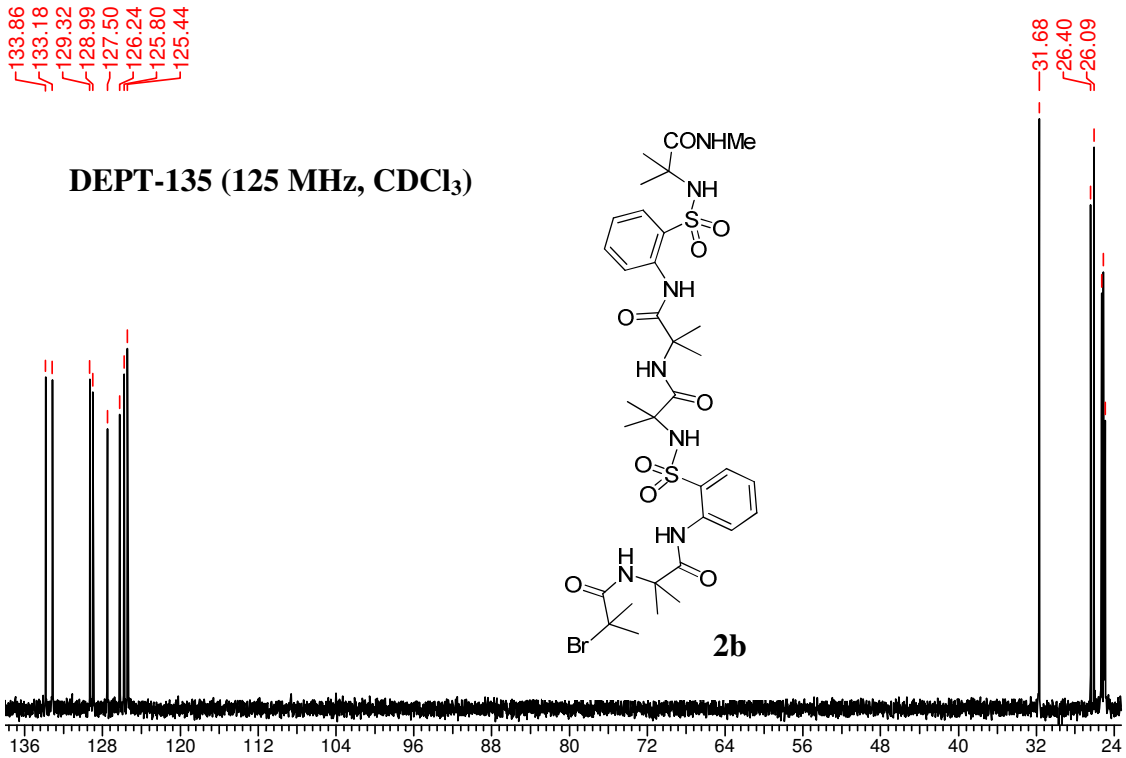

Chloroform-d
175.99
173.68
172.45
171.00
134.98
134.51
134.48
133.63
132.86
130.62
129.08
126.27
125.41
124.88
123.94
77.00
64.84
60.85
60.38
58.23
50.74
26.49
25.89
24.78
24.41
13C NMR (500 MHz, CDCl3)
CONHMe
NH
S
O
O
NH
O
HN
O
NH
O
S
O
HN
N3
O
2e
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30


134.49
133.64
129.09
126.30
125.44
124.91
123.95
26.52
25.91
24.80
24.44
DEPT-135 (125 MHz, CDCl3)
CONHMe
NH
S
O
O
NH
O
HN
O
NH
O
S
O
HN
N3
O
2e
136
128
120
112
104
96
88
80
72
64
56
48
40
32
24



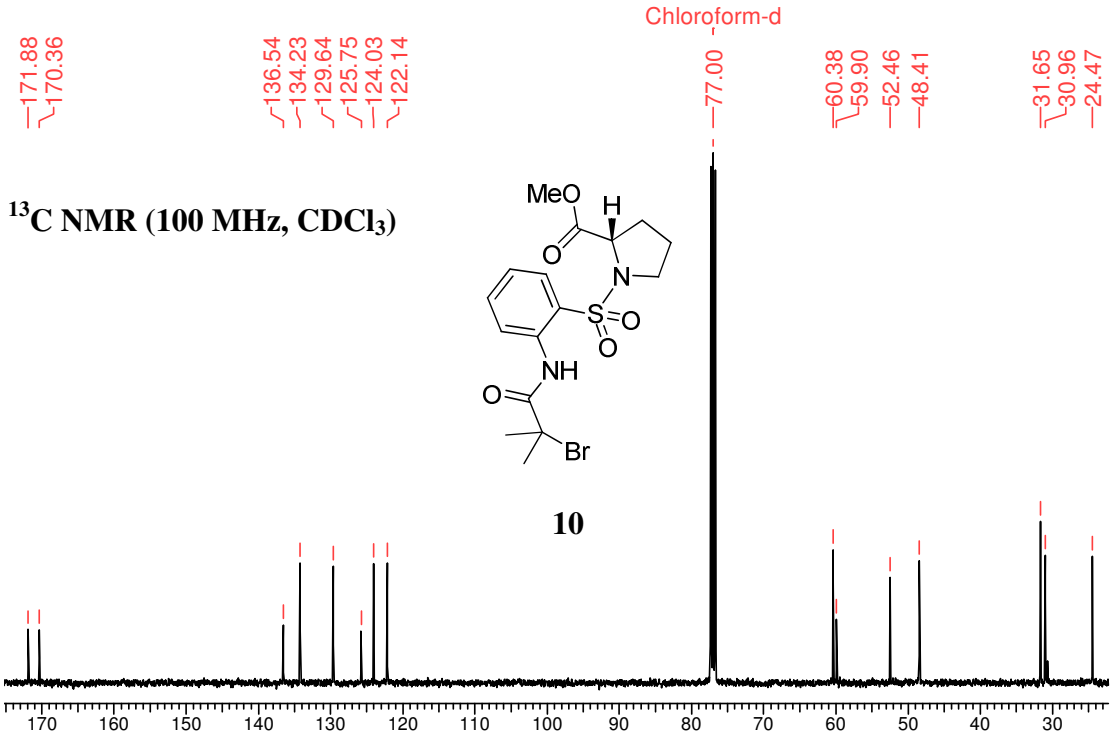
^{13}C NMR (500 MHz, $CDCl_3$)

2b



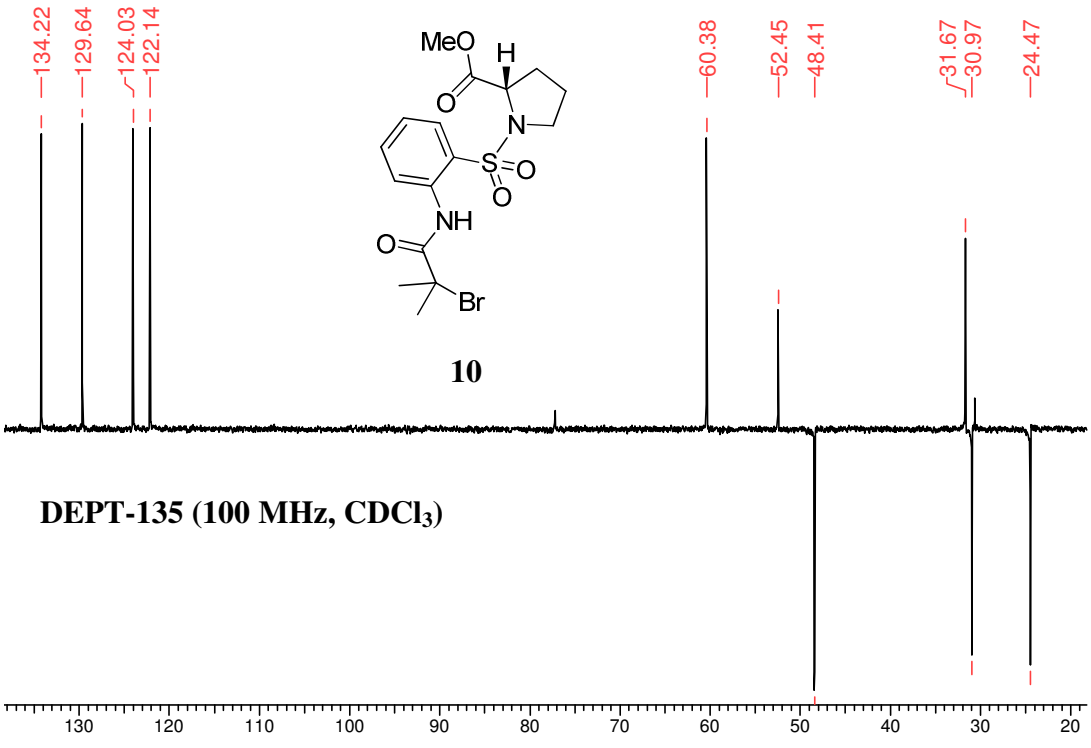
DEPT-135 (125 MHz, $CDCl_3$)

2b



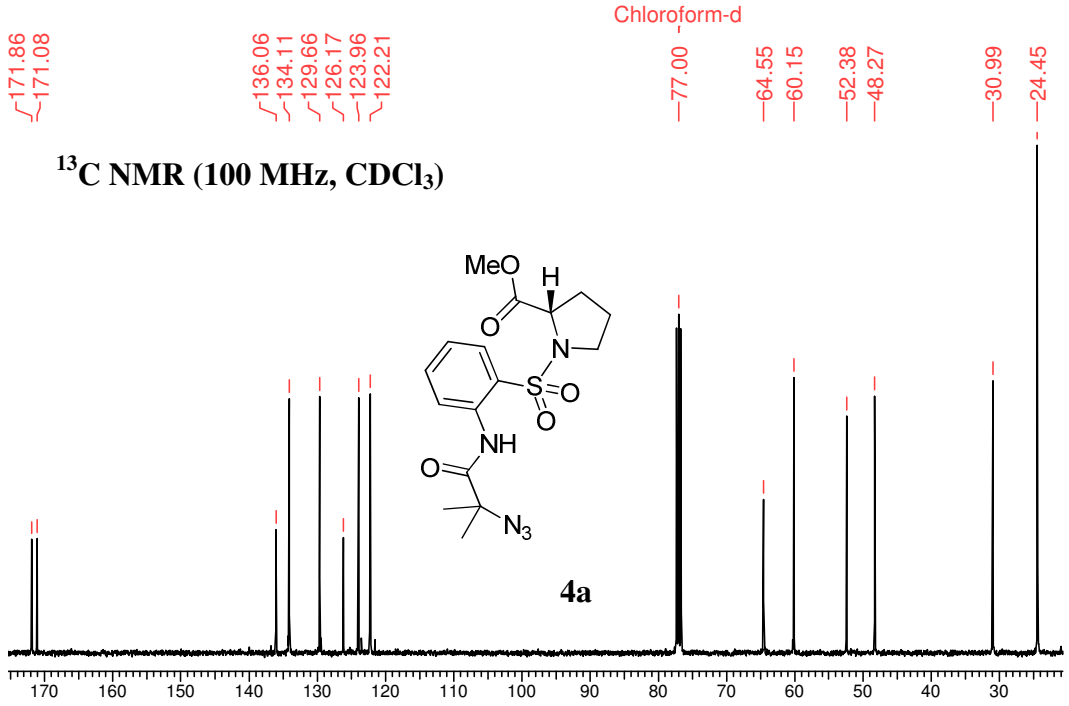
^{13}C NMR (100 MHz, $CDCl_3$)

10

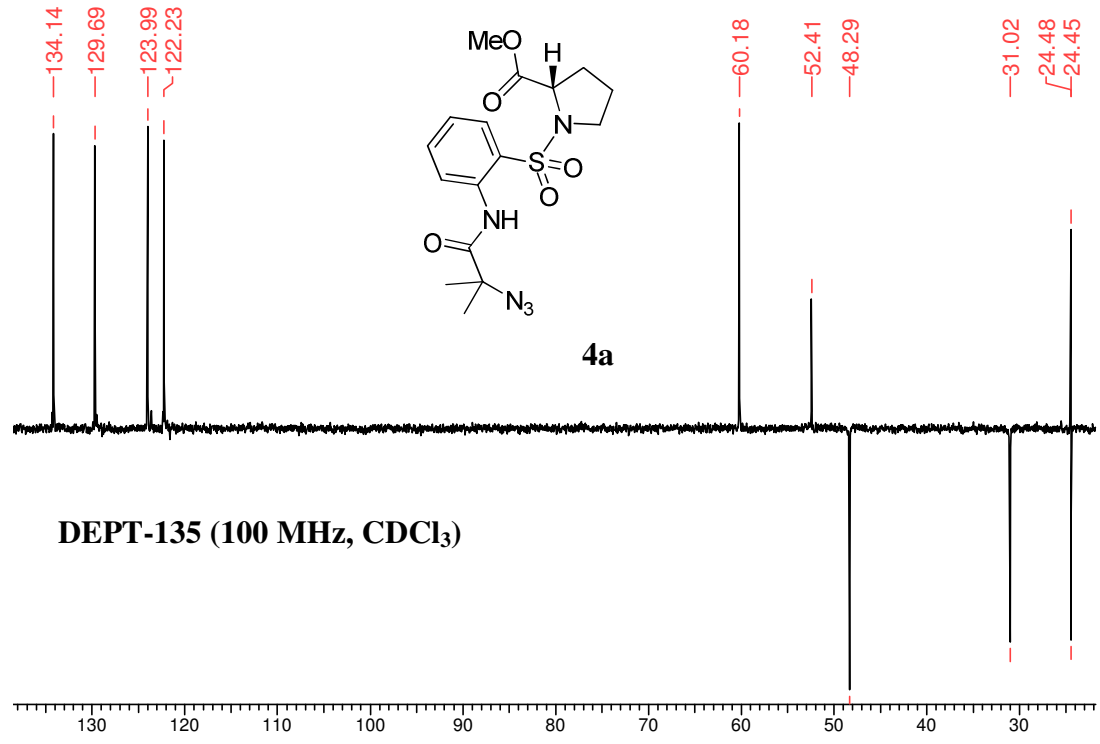


10

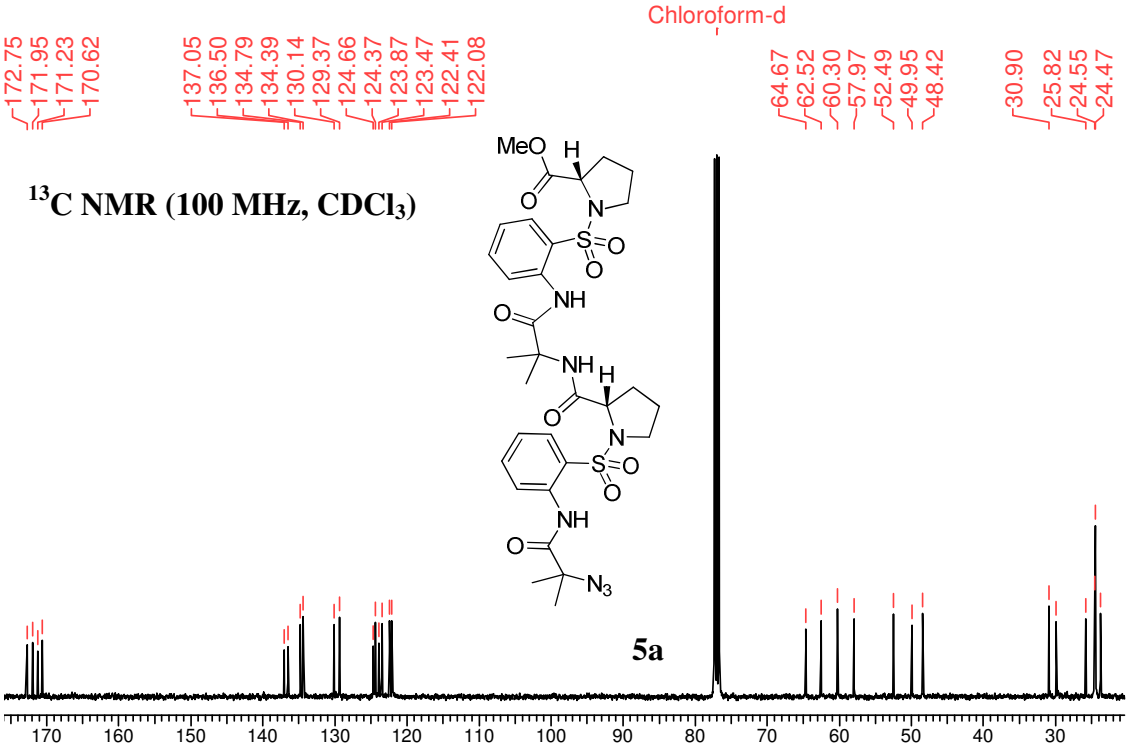
DEPT-135 (100 MHz, $CDCl_3$)



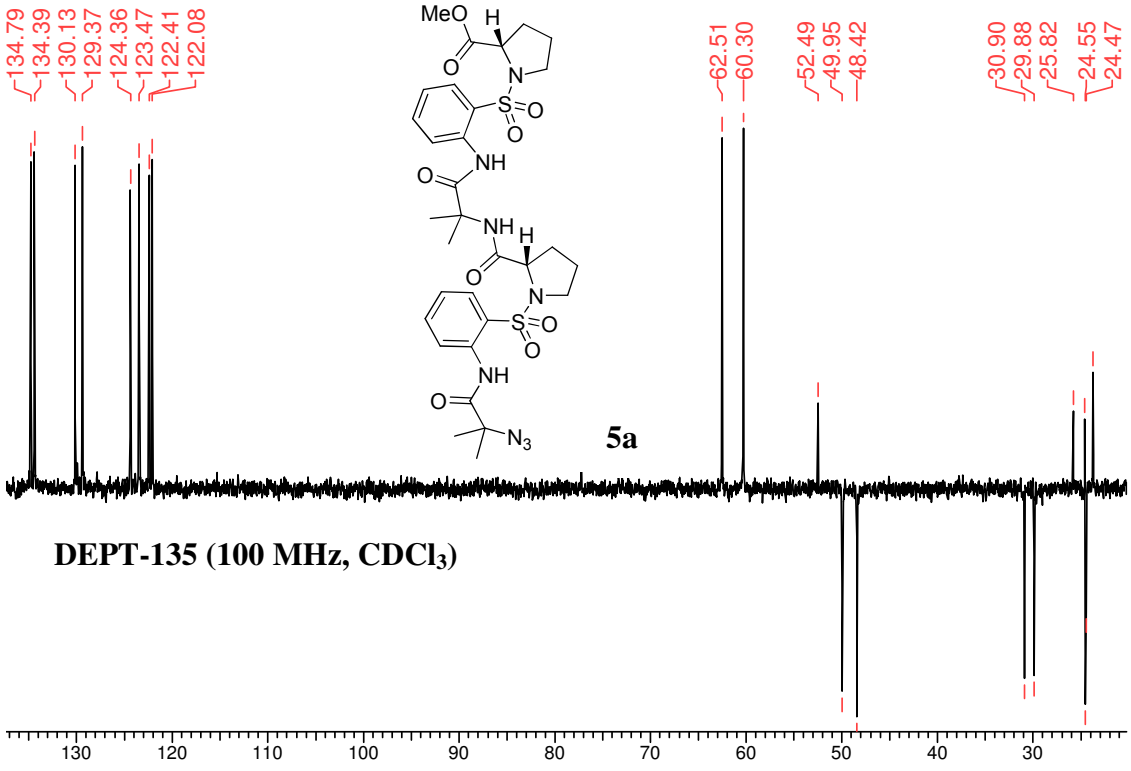
^{13}C NMR (100 MHz, $CDCl_3$)



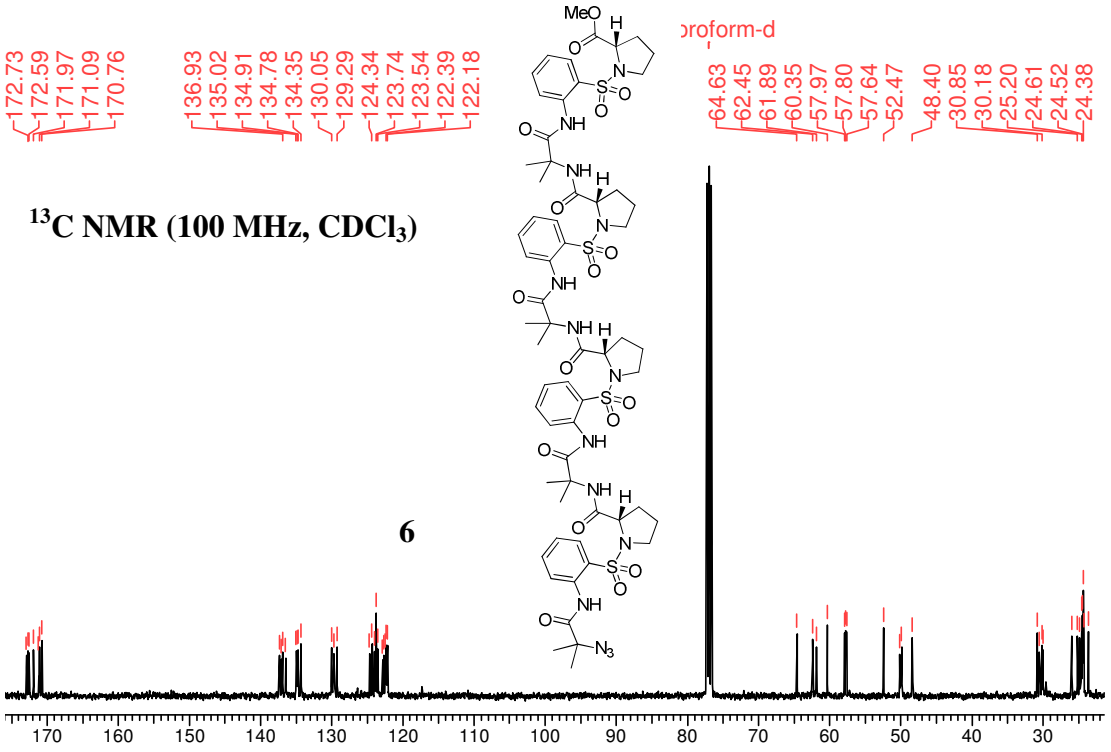
DEPT-135 (100 MHz, $CDCl_3$)



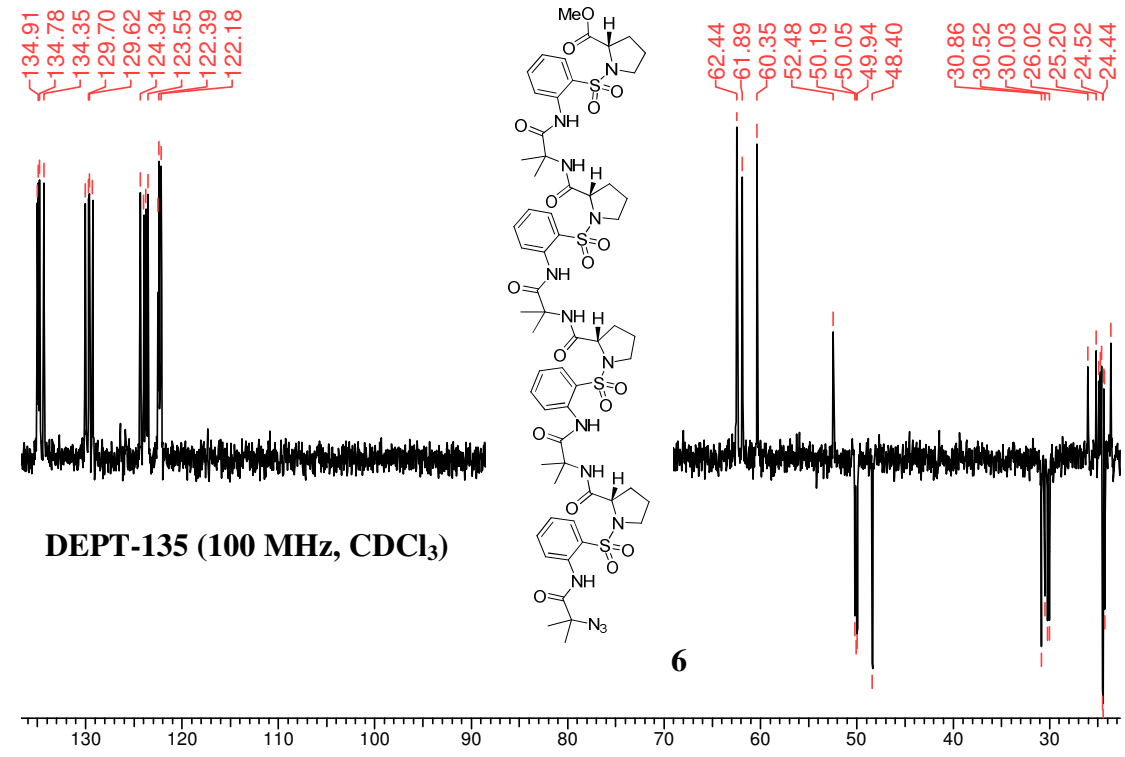
^{13}C NMR (100 MHz, $CDCl_3$)



DEPT-135 (100 MHz, $CDCl_3$)



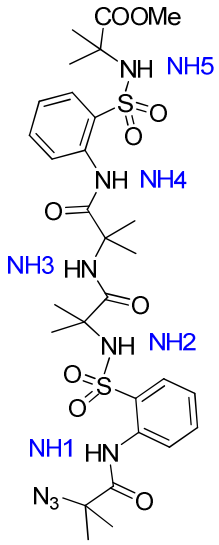
^{13}C NMR (100 MHz, $CDCl_3$)



DEPT-135 (100 MHz, $CDCl_3$)

Table S1. Titration Study of 2a in $CDCl_3$ (10 mM) with DMSO-d_6 (volume of DMSO- d_6 added at each addition = 5 μL)

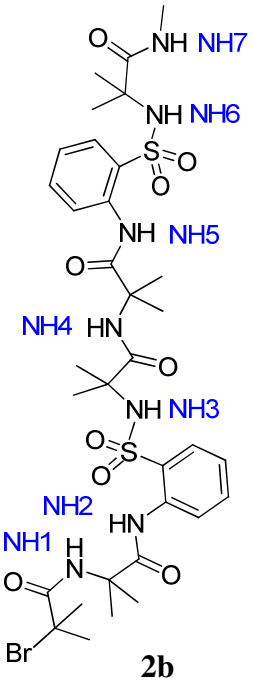
Volume of DMSO-d_6 (in μL)	Chemical Shift δ (ppm)				
	NH1	NH2	NH3	NH4	NH5
0	9.74	5.99	7.59	9.39	6.62
5	9.81	6.30	7.60	9.34	6.65
10	9.85	6.48	7.60	9.31	6.66
15	9.87	6.62	7.60	9.27	6.68
20	9.90	6.80	7.60	9.24	6.69
25	9.91	6.88	7.60	9.22	6.70
30	9.91	6.99	7.59	9.18	6.70
35	9.92	7.07	7.59	9.16	6.71
40	9.92	7.13	7.58	9.13	6.71
45	9.91	7.20	7.57	9.10	6.71
50	9.90	7.25	7.56	9.07	6.71



2a

Table S2. Titration Study of 2b in $CDCl_3$ (10 mM) with DMSO-d_6 (volume of DMSO- d_6 added at each addition = 5 μL)

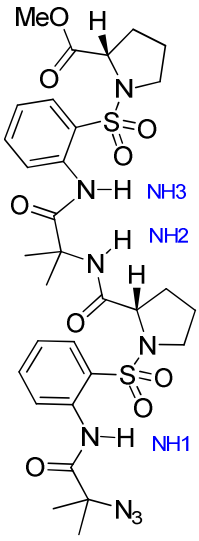
Volume of DMSO-d_6 (in μL)	Chemical Shift δ (ppm)						
	NH1	NH2	NH3	NH4	NH5	NH6	NH7
0	6.69	8.99	6.82	7.32	9.06	6.81	6.57
5	7.10	8.97	6.86	7.30	9.03	6.81	6.56
10	7.20	8.95	6.89	7.28	9.01	6.80	6.56
15	7.28	8.94	6.9	7.26	8.99	6.79	6.55
20	7.34	8.92	6.92	7.25	8.97	6.79	6.54
25	7.39	8.91	6.92	7.23	8.95	6.78	6.54
30	7.44	8.89	6.93	7.22	8.94	6.77	6.53
35	7.46	8.88	6.93	7.21	8.92	6.76	6.52
40	7.49	8.87	6.93	7.20	8.91	6.75	6.52
45	7.52	8.85	6.93	7.19	8.89	6.74	6.51
50	7.54	8.84	6.92	7.18	8.88	6.73	6.50



2b

Table S3. Titration Study of 5a in $CDCl_3$ (10 mM) with DMSO-d_6 (volume of DMSO-d6 added at each addition = 5 μL)

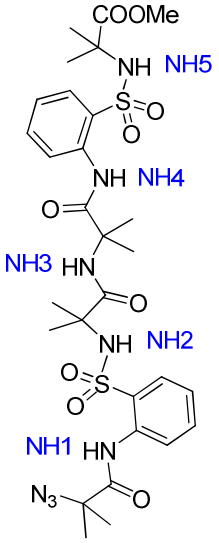
Volume of DMSO-d_6 added (in μL)	Chemical Shift δ (ppm)		
	NH1	NH2	NH3
0	10.62	7.30	10.10
5	10.60	7.29	10.07
10	10.57	7.28	10.05
15	10.54	7.27	10.02
20	10.52	7.27	10.00
25	10.49	7.26	9.97
30	10.47	7.25	9.94
35	10.44	7.25	9.92
40	10.42	7.25	9.90
45	10.39	7.25	9.87
50	10.37	7.25	9.85



5a

Table S4. Temperature variation study of 2a (10 mM, 400 MHz, $CDCl_3$)

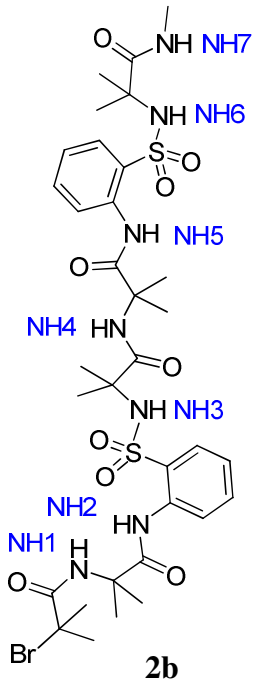
Temperature (in K)	Chemical Shift δ (ppm)				
	NH1	NH2	NH3	NH4	NH5
268	9.72	6.07	7.64	9.40	6.65
273	9.73	6.06	7.63	9.40	6.64
278	9.73	6.04	7.62	9.40	6.64
283	9.73	6.03	7.61	9.39	6.63
288	9.74	6.01	7.60	9.39	6.63
293	9.74	5.99	7.59	9.39	6.62
298	9.74	5.99	7.59	9.38	6.62
303	9.75	5.98	7.57	9.38	6.61
308	9.75	5.96	7.56	9.38	6.60
313	9.75	5.95	7.54	9.38	6.59
318	9.76	5.94	7.53	9.38	6.58
323	9.76	5.93	7.52	9.37	6.57



2a

Table S5 Temperature variation study of 2b (10 mM, 400 MHz, $CDCl_3$)

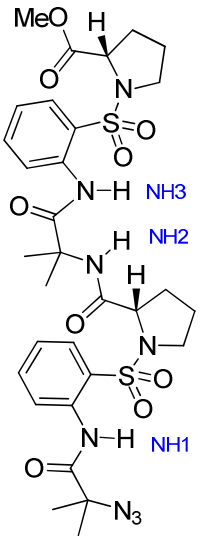
Temperature (in K)	Chemical Shift δ (ppm)						
	NH1	NH2	NH3	NH4	NH5	NH6	NH7
268	6.99	8.99	6.88	7.34	9.05	6.88	6.66
273	6.98	8.99	6.87	7.34	9.05	6.87	6.64
278	6.98	8.99	6.86	7.33	9.05	6.86	6.62
283	6.97	8.99	6.84	7.33	9.05	6.84	6.60
288	6.97	8.99	6.83	7.32	9.05	6.83	6.58
293	6.97	8.99	6.82	7.32	9.06	6.81	6.57
298	6.96	8.99	6.81	7.32	9.06	6.80	6.55
303	6.96	8.99	6.80	7.32	9.06	6.79	6.54
308	6.95	8.99	6.79	7.31	9.06	6.78	6.52
313	6.95	9.00	6.77	7.31	9.06	6.76	6.51
318	6.94	9.00	6.76	7.31	9.06	6.75	6.49
323	6.94	9.00	6.75	7.31	9.06	6.74	6.48



2b

Table S6. Temperature variation study of 5a (10 mM, 400 MHz, $CDCl_3$)

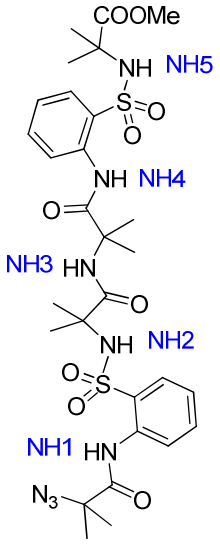
Temperature (in K)	Chemical Shift δ (ppm)		
	NH1	NH2	NH3
268	10.66	7.34	10.14
273	10.65	7.33	10.13
278	10.65	7.32	10.12
283	10.64	7.32	10.12
288	10.63	7.31	10.11
293	10.63	7.31	10.10
298	10.62	7.30	10.10
303	10.61	7.29	10.09
308	10.60	7.28	10.08
313	10.60	7.27	10.07
318	10.59	7.26	10.07
323	10.58	7.25	10.06



5a

Table S7. Dilution study of 2a (400 MHz, $CDCl_3$)

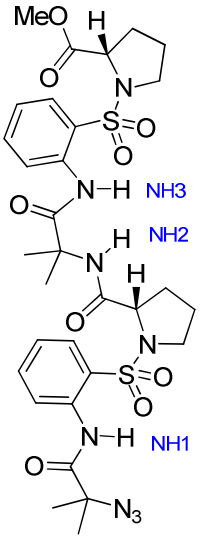
Concentration (in mM)	Chemical Shift δ (ppm)				
	NH1	NH2	NH3	NH4	NH5
2	9.74	5.98	7.58	9.39	6.62
4	9.74	5.98	7.58	9.39	6.62
6	9.74	5.98	7.58	9.39	6.62
8	9.74	5.98	7.58	9.39	6.62
10	9.74	5.98	7.58	9.39	6.62
20	9.74	5.98	7.58	9.39	6.62
40	9.74	5.98	7.58	9.38	6.61
60	9.74	5.99	7.58	9.38	6.61
80	9.74	5.99	7.57	9.38	6.61
100	9.74	5.99	7.57	9.37	6.61



2a

Table S8. Dilution study of 5a (400 MHz, $CDCl_3$)

Concentration (in mM)	Chemical Shift δ (ppm)		
	NH1	NH2	NH3
2	10.63	7.30	10.10
4	10.63	7.30	10.10
6	10.62	7.30	10.10
8	10.62	7.30	10.10
10	10.62	7.30	10.10
20	10.62	7.30	10.10
40	10.60	7.29	10.08
60	10.60	7.29	10.08
80	10.59	7.28	10.06
100	10.58	7.28	10.05



5a

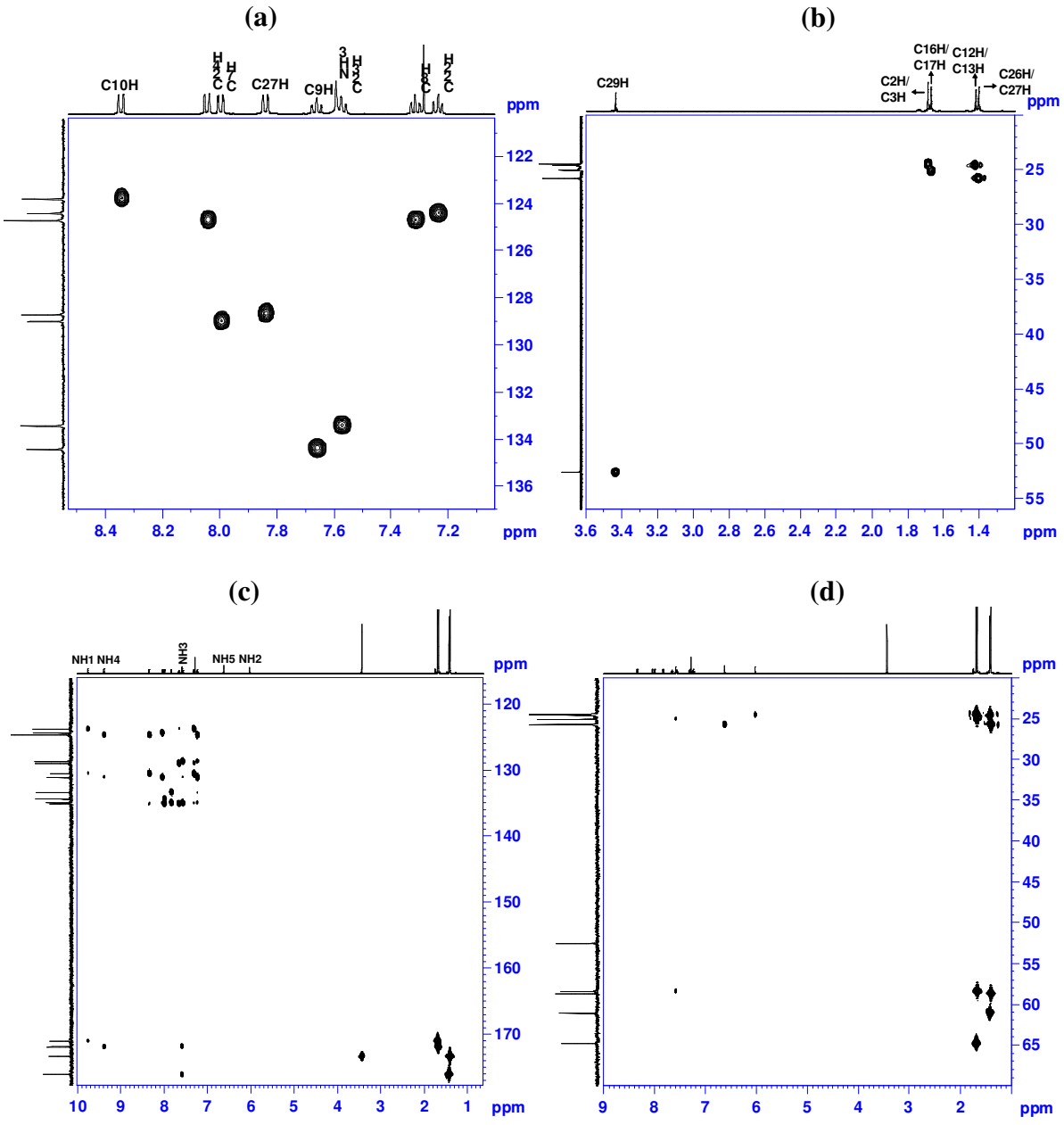


Fig. S1 Partial HSQC (**a** and **b**) and HMBC (**c** and **d**) spectra of **2a** (500 MHz, $CDCl_3$). For better view, aromatic and aliphatic region are given separately.

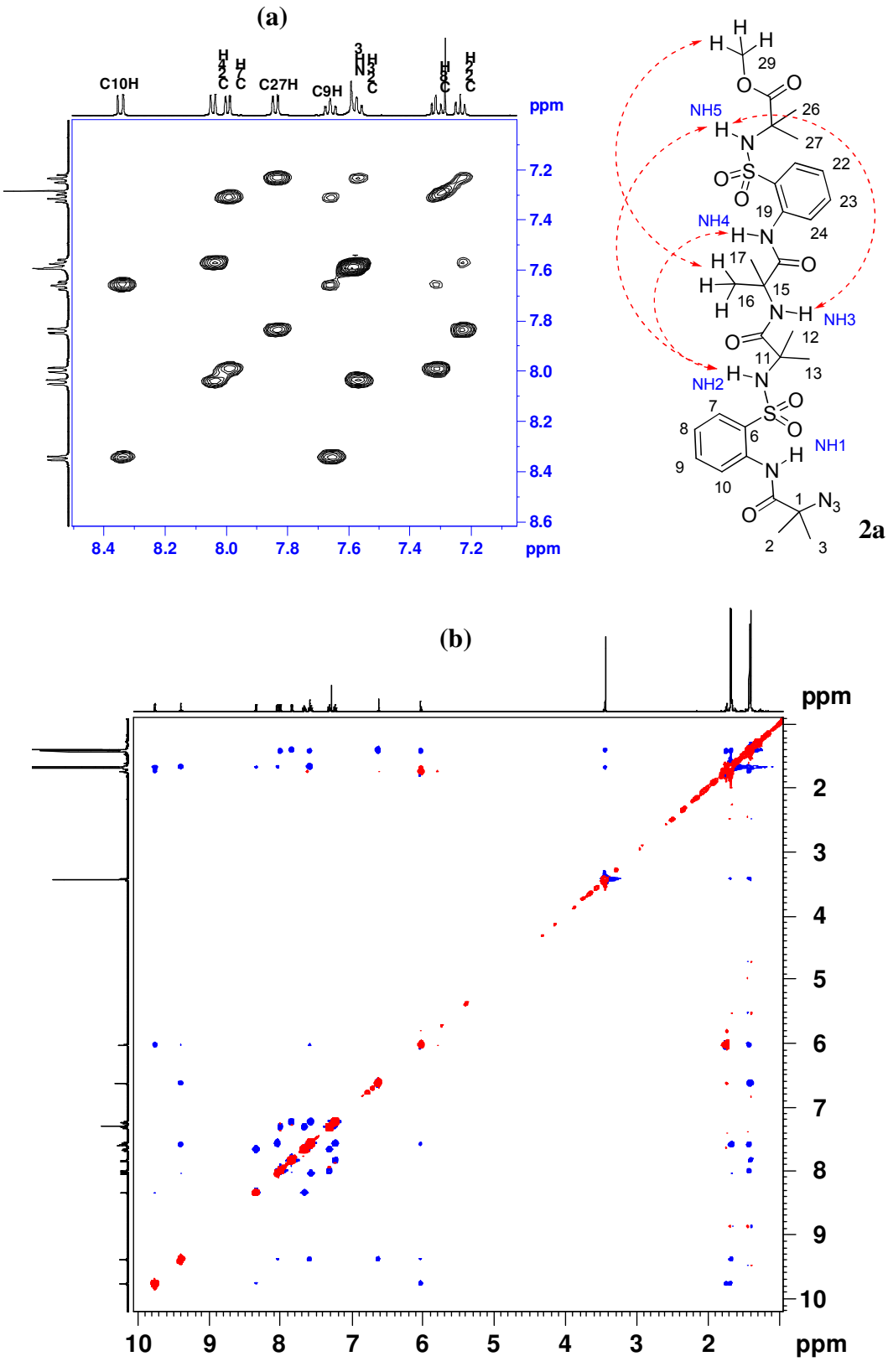


Fig. S2 Partial COSY (**a**) and NOESY (**b**) spectra of **2a** (500 MHz, $CDCl_3$).

Table S9. Comparison of experimental inter-residual distances (NOE) and inter-residual distances obtained from x-ray crystal of **2a**. The reference distance between two aromatic protons was considered as 2.3 Å. Distances of 2.0 ± 0.5 Å, 3.0 ± 1.0 Å and 4.0 ± 1.5 Å were incorporated for strong, medium and weak NOE intensities, respectively.

Chemical Shift of Proton 1 [ppm]	Chemical Shift of Proton 2 [ppm]	NOE between	NOE Intensity	Distance obtained from X-ray crystal (Å)
7.6625	7.304	9H & 8H	Strong	2.3
7.5688	7.2207	23H & 22H	Strong	2.3
9.7598	8.3347	NH1&10H	Weak	3.34
9.3903	8.0224	NH4 & 24H	Weak	3.38
9.3903	7.5851	NH4 & NH3	Medium	2.63
9.3903	6.6168	NH4 & NH5	Strong	3.00
9.3851	6.013	NH4 & NH2	Medium	3.53
9.765	6.013	NH1 & NH2	Strong	2.69
9.7598	1.6715	NH1 & 2H/3H	Medium	3.03/3.86
9.3851	1.6611	NH4 & 16H/17H	Medium	2.99/3.86
9.765	1.4113	NH1 & 12H/13H	Medium	4.27/4.70
8.0424	1.6611	24H & 16H/17H	Weak	4.33/4.98
8.339	1.6715	10H & 2H/3H	Weak	4.54/4.80
7.9903	1.4113	7H & 12H/13H	Medium	3.07/3.26
7.8342	1.3904	21H & 26H/27H	Medium	3.85
7.5896	1.4008	NH3 &12H/13H	Medium	2.55
7.5844	1.6611	NH3 & 16H/17H	Strong	2.34
6.6268	1.3904	NH5 & 26H/27H	Strong	2.31
6.0231	1.4008	NH2 & 12H/13H	Medium	2.30
8.0372	3.4206	29H & 24H	Weak	3.96
7.5844	6.013	NH2 & NH3	Weak	3.09
3.4314	1.3904	29H & 26H/27H	Medium	4.18
3.4366	1.6715	29H & 16H/17H	Medium	5.96
1.6724	1.3904	12/13H & 16/17H	Medium	3.67

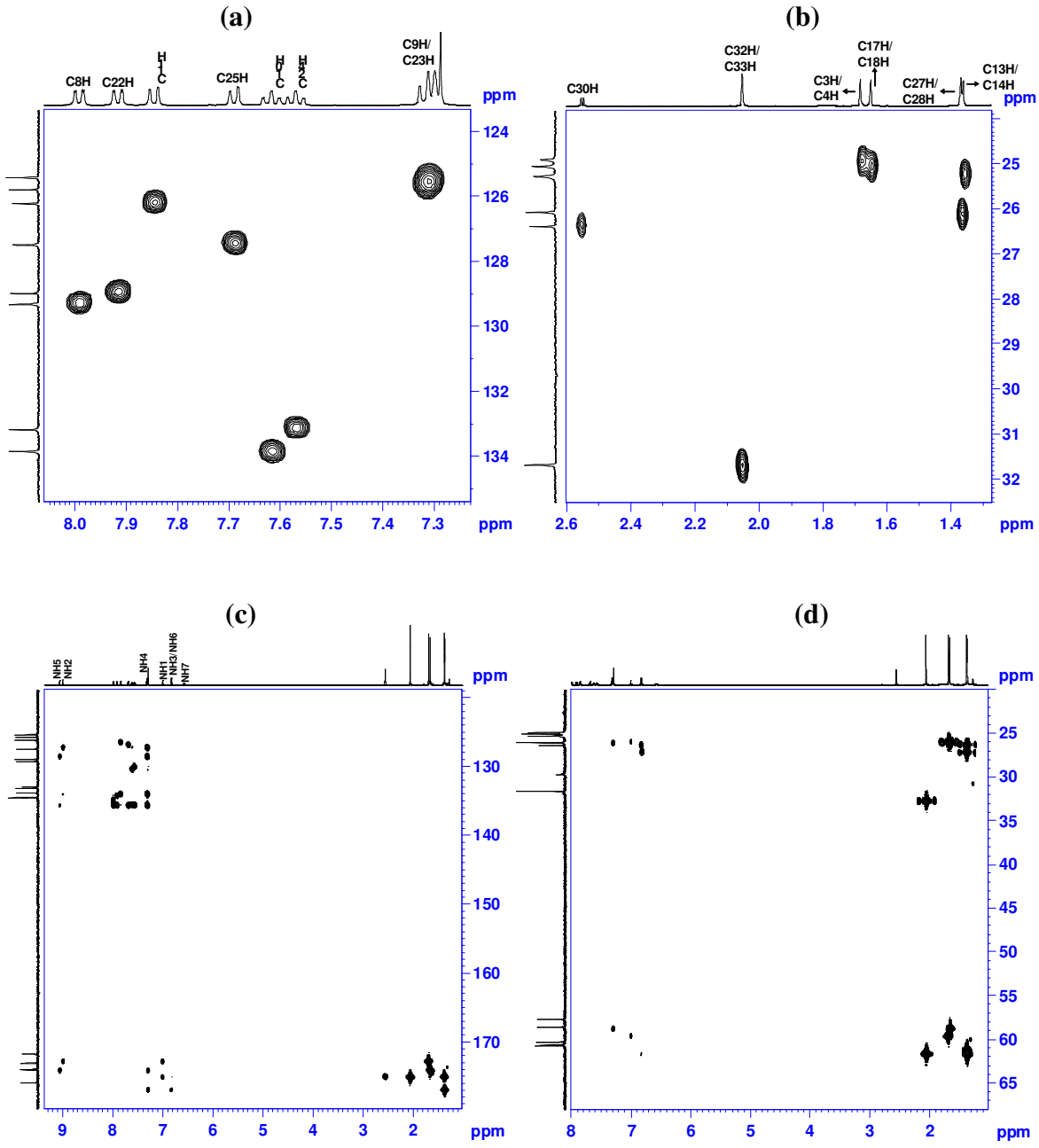


Fig. S3 Partial HSQC (**a** and **b**) and HMBC (**c** and **d**) spectra of **2b** (500 MHz, $CDCl_3$). For better view, aromatic and aliphatic region are given separately.

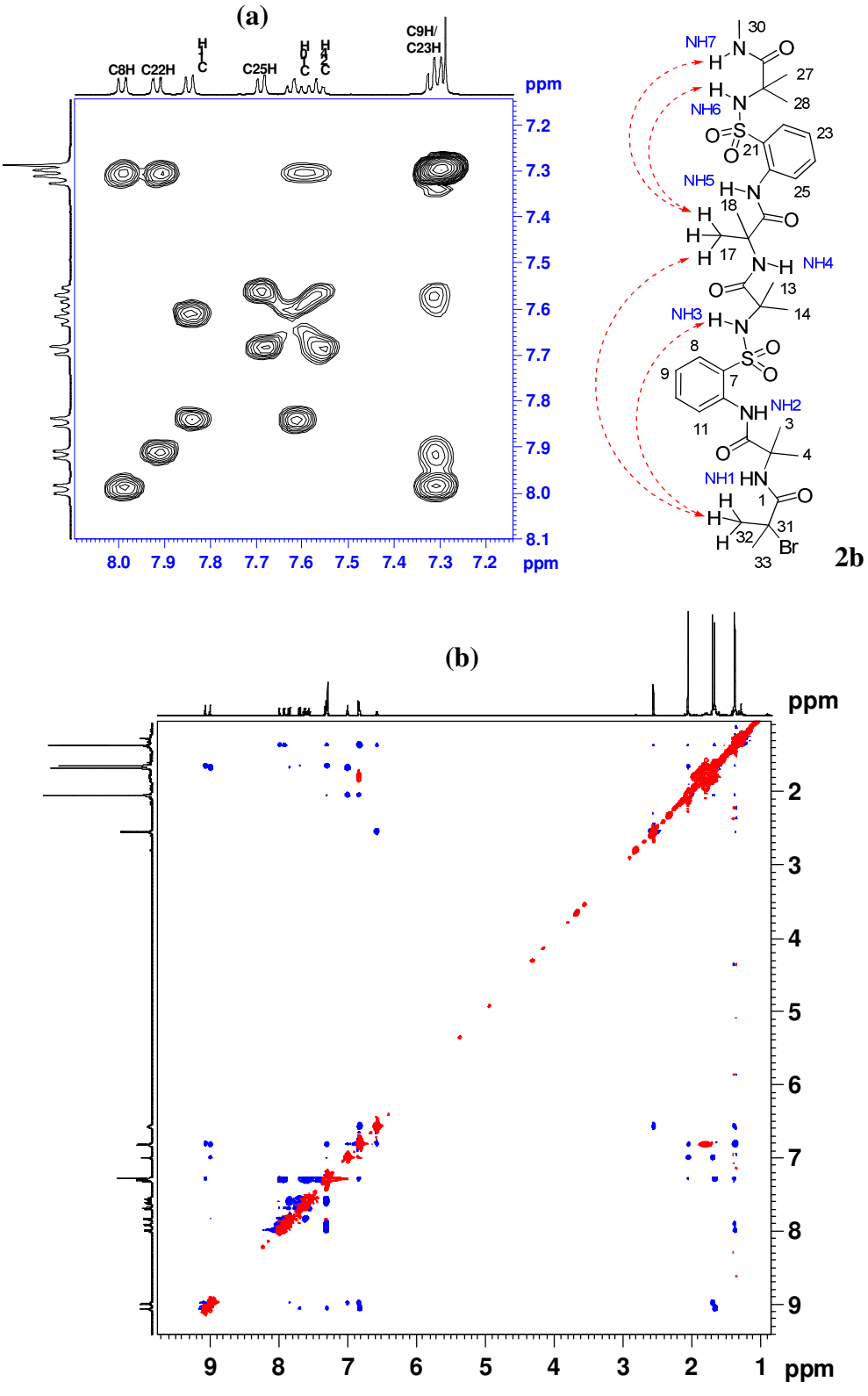


Fig. S4 Partial COSY (**a**) and NOESY (**b**) spectra of **2b** (500 MHz, $CDCl_3$).

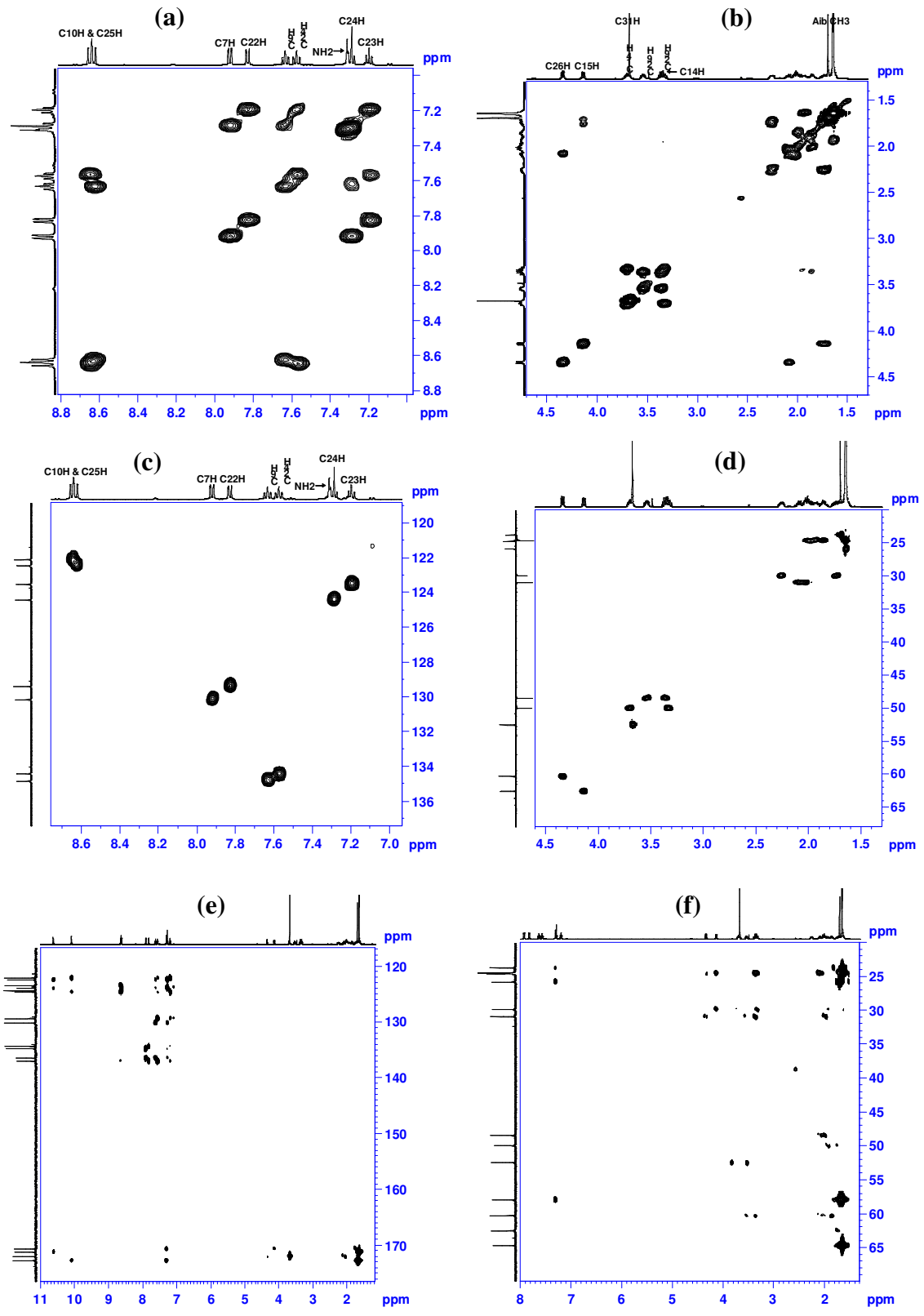


Fig. S5 Partial COSY (**a** and **b**), HSQC (**c** and **d**) and HMBC (**e** and **f**) spectra of **5a** (500 MHz, $CDCl_3$).

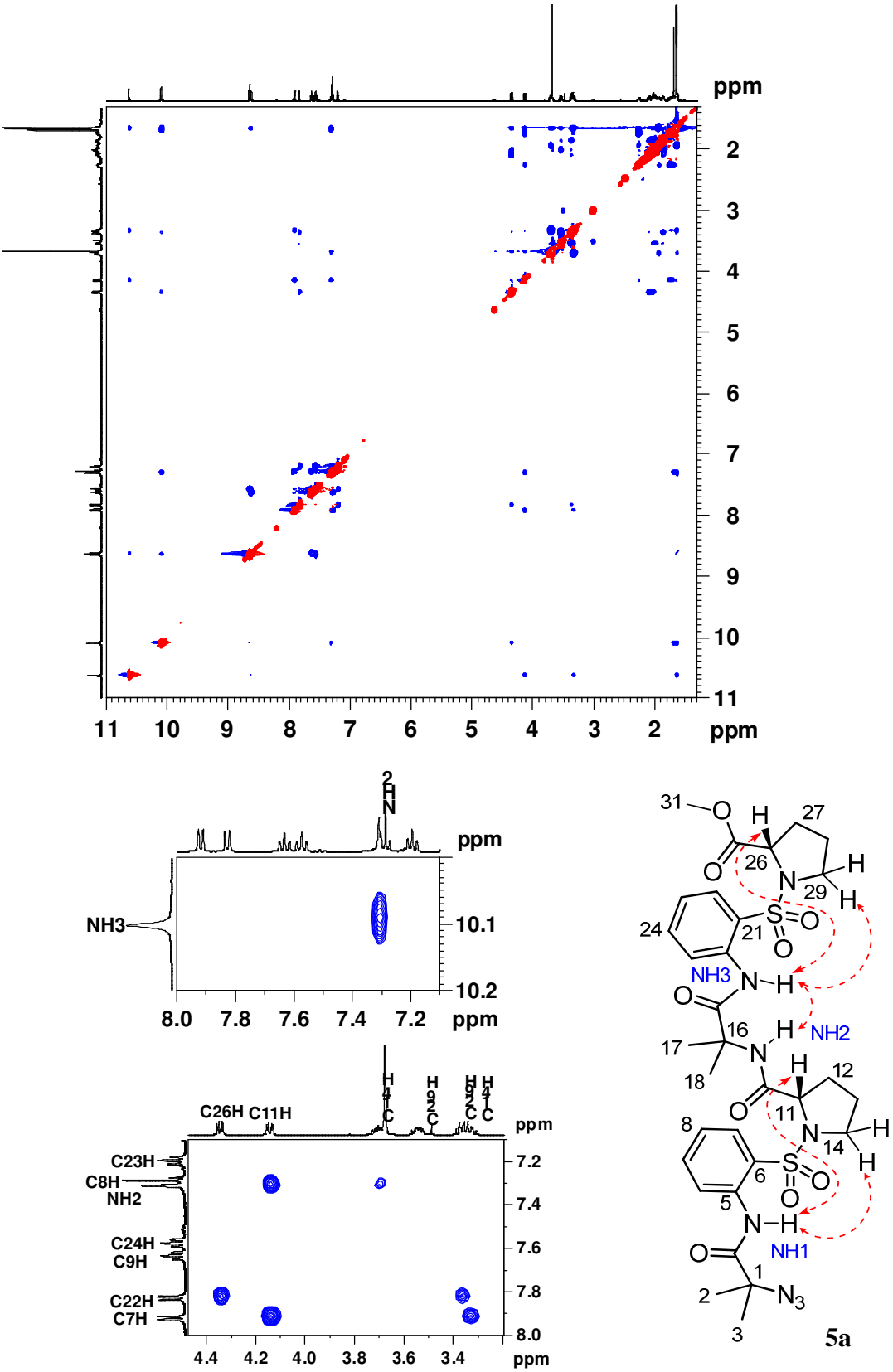


Fig. S6 2D NOESY spectra and selected NOESY excerpt of **5a** (500 MHz, $CDCl_3$).

Table S10. Comparison of experimental inter-residual distances (NOE) of **5a** with inter-residual distances obtained from x-ray crystal of **5b** (a close analogue of **5a**). The reference distance between two aromatic protons was considered as 2.3 Å. Distances of 2.0 ± 0.5 Å, 3.0 ± 1.0 Å and 4.0 ± 1.5 Å were incorporated for strong, medium and weak NOE intensities, respectively.

Chemical Shift of Proton 1 [ppm]	Chemical Shift of Proton 2 [ppm]	NOE between	NOE Intensity	Distance obtained from X-ray crystal (Å)
7.6324	7.2741	8H & 9H	Strong	2.30
7.5745	7.1814	23H & 24H	Strong	2.30
10.6216	8.6072	NH1 & 7H	Weak	4.52
10.0945	8.6303	NH3 & 25H	Weak	3.46
10.1002	7.3089	NH2 & NH3	Medium	4.07
10.6216	4.1328	NH1 & 11H	Weak	4.79
10.6158	3.6923	NH1 & 14A	Medium	3.00
10.6216	3.3214	NH1 & 14B	Medium	2.79
10.6216	1.6406	NH1 & 2H	Medium	2.90
10.0945	4.3298	NH3 & 26H	Medium	2.79
10.0945	3.53	NH3 & 29A	Weak	5.06
10.0945	3.3561	NH3 & 29B	Weak	5.59
10.1002	1.6174	NH3 & 18H	Strong	2.14
10.0945	1.6869	NH3 & 17H	Strong	2.29
8.6346	1.6406	10H & 3H	Medium	4.71
7.308	1.629	NH2 & 18H	Medium	3.09
7.308	1.6869	NH2 & 17H	Strong	2.99
7.308	1.9188	NH2 & 13A	Medium	2.80
7.8236	4.3414	22H & 26H	Medium	4.13
7.9221	4.1328	11H & 7H	Strong	2.36
7.9163	3.3214	7H &14B	Medium	4.19
7.8236	3.3445	22H & 29B	Strong	2.33
7.8236	3.53	22H & 29A	Medium	3.86
7.3022	4.1328	11H & NH2	Medium	3.32
7.308	3.6807	NH2 & 14A	Weak	3.33
4.342	1.6406	26H & 18H	Medium	3.29
4.342	1.9999	26H & 28A	Medium	2.79
4.342	2.0811	26H & 27A	Strong	2.27
4.342	3.3445	26H & 29B	Weak	3.72

4.342	3.6575	26H & 31H	Weak	-
4.1335	3.6807	11H & 14A	Medium	3.17
4.1393	3.3214	11H & 14B	Weak	3.88
4.1393	2.2549	11H & 12A	Strong	2.66
4.1393	1.7333	11H & 13A	Medium	3.88
4.1393	1.629	11H & 18H	Weak	4.53
3.6932	1.6406	14A & 2H	Medium	3.60
3.3341	1.629	14B & 2H	Medium	3.23
3.7048	1.9188	14A & 13A	Strong	2.51
3.5368	1.8492	29A & 28B	Medium	2.92
3.5368	1.9999	29A & 28A	Strong	2.38
3.363	1.8492	29B & 28B	Strong	2.38

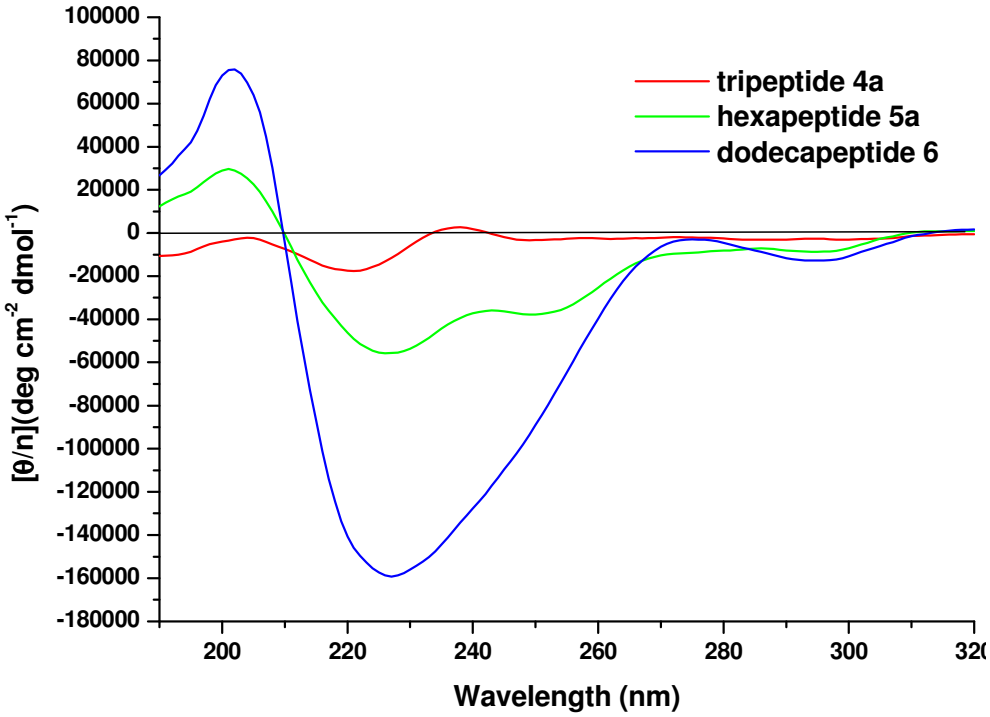


Fig. S7 Representative CD spectra of (Aib-^{S}Ant-Pro)$_n$ oligomers: tetramer **4a**, hexamer **5a** and doadecamer **6** in trifluroethanol. All spectra were recorded at 298 K with a concentration of 0.2 mM.