Synthesis and Characterization of some Novel Multi-substituted 6,7-dihydro-5H-cyclopenta[b]pyridine Derivatives

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Spectral Data

2-(3-oxo-1-phenyl-3-(thiophen-3-yl)propyl)cyclopentanone (3a): Colorless solid (Yield: 85%); mp 108-111 °C; IR (KCl, cm⁻¹): 3100, 3021, 2954, 2871, 1727, 1671, 1506, 1452, 1411, 1319, 1216, 726, 686; ¹H-NMR (400 MHz, CDCl₃) δ 8.02 (s, 1H), 7.66 (d, *J* = 5.2 Hz, 1H), 7.37 (d, *J* = 5.2 Hz, 1H), 7.23-7.15 (m, 5H), 3.79-3.75 (m, 1H), 3.68-3.62 (m, 1H), 3.33 (dd, *J* = 16.7, 8.0 Hz, 1H), 3.26 (dd, *J* = 16.6, 7.6 Hz, 1H), 2.35-2.24 (m, 3H), 2.17-1.90 (m, 3H); ¹³C-NMR (100 MHz, CDCl₃) δ 193.4, 184.0, 142.3, 142.1, 131.9, 128.9, 128.5, 128.4, 128.2, 126.2, 52.8, 44.1, 41.2, 38.8, 28.9, 20.2; *Anal.Calc.* (%) for C₁₈H₁₈O₂S. C: 72.45; H: 6.08; S: 10.75; Found C: 72.64; H: 6.17; S: 10.83

2-(1-(4-chlorophenyl)-3-oxo-3-(thiophen-3-yl)propyl)cyclopentanone (3b): Colorless solid (Yield: 86%); mp 113-116 °C; IR (KCl, cm⁻¹): 3098, 3018, 2960, 1698, 1683, 1586, 1467, 1411, 1170, 816, 696; ¹H-NMR (400 MHz, CDCl₃) δ 8.00 (s, 1H), 7.41 (d, *J* = 5.6 Hz, 1H), 7.23 (brd, *J* = 8.4 Hz, 2H), 7.21 (brd, *J* = 8.4 Hz, 2H), 7.15 (d, *J* = 5.6 Hz, 1H), 3.78-3.70 (m, 1H), 3.69-3.63 (m, 1H), 3.31 (dd, *J* = 16.8, 7.8 Hz, 1H), 3.20 (dd, *J* = 16.8, 7.4 Hz, 1H), 2.40-2.20 (m, 2H), 2.06-1.78 (m, 4H); ¹³C-NMR (100 MHz, CDCl₃) δ 193.1, 192.7,

142.1, 140.5, 132.6, 131.6, 129.8(2C), 128.6(2C), 126.8, 126.6, 52.7, 43.9, 42.0, 38.8, 27.8, 20.2; *Anal. Calc.* (%) for $C_{18}H_{17}ClO_2S$. C: 64.95; H: 5.15; S: 9.63; Found C: 65.18; H: 5.01; S: 9.41.

2-(1-(4-bromophenyl)-3-oxo-3-(thiophen-3-yl)propyl)cyclopentanone (3c):

Colorless solid (Yield: 80%); mp 115-117 °C; IR (KCl, cm^{-1}): 3080, 3025, 2930, 1705, 1678, 1570, 1458, 1140, 678; 1H -NMR (400 MHz, $CDCl_3$) δ 8.02 (s, 1H), 7.72 (d, J = 8.0 Hz, 2H), 7.57 (d, J = 8.0 Hz, 2H), 7.55 (d, J = 5.2 Hz, 1H), 7.41 (d, J = 5.2 Hz, 1H), 3.72-3.60 (m, 2H), 3.26 (dd, J = 16.4, 7.7 Hz, 1H), 3.04 (dd, J = 16.4, 7.1 Hz, 1H), 2.72-3.60 (m, 2H), 2.44-2.40 (m, 2H), 1.83-1.77 (m, 2H); ^{13}C -NMR (100 MHz, $CDCl_3$) δ 194.2, 193.5, 144.1, 141.6, 132.8, 130.1, 129.8(2C), 128.6(2C), 127.1, 126.7, 52.7, 43.9, 42.0, 38.8, 27.8, 20.2; *Anal. Calc.* (%) for $C_{18}H_{17}BrO_2S$. C: 57.30; H: 4.54; S: 8.50; Found C: 57.61; H: 4.69; S: 8.17.

2-(3-oxo-3-(thiophen-3-yl)-1-(*p*-tolyl)propyl)cyclopentanone (3d): Colorless solid (Yield: 92%); mp 136-139 °C; IR (KCl, cm^{-1}): 3105, 2961, 1728, 1667, 1518, 1438, 1182, 974, 818, 699; 1H -NMR (400 MHz, $CDCl_3$) δ 8.01 (s, 1H), 7.46 (d, J = 5.6 Hz, 1H), 7.20 (d, J = 5.2 Hz, 1H), 7.16 (d, J = 8.0 Hz, 2H), 6.98 (d, J = 8.0 Hz, 2H), 3.74-3.62 (m, 2H), 3.27 (dd, J = 17.6, 7.6 Hz, 1H), 3.21 (dd, J = 17.6, 6.8 Hz, 1H), 2.46-2.39 (m, 1H), 2.06-1.98 (m, 1H), 1.88-1.78 (m, 2H), 1.69-1.42 (m, 2H), 2.22 (s, 3H); ^{13}C -NMR (100 MHz, $CDCl_3$) δ 193.6, 193.1, 142.3, 139.2, 138.9, 132.0, 129.2(2C), 128.3(2C), 126.2, 126.1, 52.9, 44.2, 40.8, 38.8, 27.8, 21.0, 20.2; *Anal. Calc.* (%) for $C_{19}H_{20}O_2S$. C: 73.04; H: 6.45; S: 10.26; Found C: 72.54; H: 6.58; S: 10.32.

2-(1-(4-methoxyphenyl)-3-oxo-3-(thiophen-3-yl)propyl)cyclopentanone (3e):

Colorless solid (Yield: 72%); mp 129-133 °C; IR (KCl, cm^{-1}): 3104, 3006, 2958, 1722, 1671,

1506, 1454, 1319, 1216, 786, 676; ^1H -NMR (400 MHz, CDCl_3) δ 8.05 (s, 1H), 7.35 (d, J = 5.2 Hz, 1H), 7.06-6.98 (m, 3H; 2H ArH, 1H thienyl), 6.64 (d, J = 8.4 Hz, 2H), 3.69-3.49 (m, 5H; 3H $-\text{OCH}_3$, 2H $-\text{CH}$), 3.29 (dd, J = 17.6, 7.6 Hz, 1H), 3.18 (dd, J = 17.6, 7.4 Hz, 1H), 2.41-2.32 (m, 2H), 2.08-1.96 (m, 2H), 1.69-1.51 (m, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 193.5, 193.0, 152.4, 142.3, 136.2, 132.0, 129.2(2C), 127.0(2C), 126.7, 126.5, 56.8, 52.9, 44.3, 40.5, 38.8, 29.5, 20.2; *Anal. Calc.* (%) for $\text{C}_{19}\text{H}_{20}\text{O}_3\text{S}$, C: 69.48; H: 6.14; S: 9.76; Found C: 69.11; H: 6.34; S: 9.82

2-(1-(3-bromophenyl)-3-oxo-3-(thiophen-3-yl)propyl)cyclopentanone (3f):
Colorless solid (Yield: 80%); mp 120-122 $^{\circ}\text{C}$; IR (KCl, cm^{-1}): 3078, 3020, 2950, 1700, 1672, 1580, 1250, 700; ^1H -NMR (400 MHz, CDCl_3) δ 8.06 (s, 1H), 7.49-7.45 (m, 1H), 7.37-7.35 (m, 1H), 7.28-7.25 (m, 2H), 7.13-7.10 (m, 2H), 3.78-3.69 (m, 1H), 3.65-3.56 (m, 1H), 3.20 (dd, J = 17.5, 7.4 Hz, 1H), 3.17 (dd, J = 17.5, 7.1 Hz, 1H), 2.48-2.39 (m, 2H), 2.36-2.21 (m, 2H), 1.88-1.58 (m, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 192.7, 192.4, 144.9, 142.1, 132.4, 131.4, 130.1, 129.9, 127.2, 126.8, 126.4, 122.2, 53.3, 44.1, 41.2, 38.7, 28.9, 20.2; *Anal. Calc.* (%) for $\text{C}_{18}\text{H}_{17}\text{BrO}_2\text{S}$, C: 57.30; H: 4.54; S: 8.50; Found C: 57.28; H: 4.38; S: 8.45.

2-(3-oxo-3-(thiophen-3-yl)-1-(m-tolyl)propyl)cyclopentanone (3g): Colorless solid (Yield: 85%); mp 89-92 °C; IR (KCl, cm⁻¹): 3100, 2958, 1727, 1666, 1508, 1448, 1162, 984, 816, 698; ¹H-NMR (400 MHz, CDCl₃) δ 7.97 (s, 1H), 7.40 (d, *J* = 5.2 Hz, 1H), 7.16-7.01 (m, 2H), 7.00-6.88 (m, 3H), 3.78-3.68 (m, 1H), 3.65-3.49 (m, 1H), 3.38 (dd, *J* = 16.8, 7.6 Hz, 1H), 3.23 (dd, *J* = 16.8, 7.2 Hz, 1H), 2.34-2.29 (m, 2H), 2.21 (s, 3H), 2.06-1.92 (m, 1H), 1.79-1.70 (m, 2H), 1.60-1.35 (m, 1H), ¹³C-NMR (100 MHz, CDCl₃) δ 193.5, 193.0, 142.3, 137.9, 132.5, 131.9, 130.9, 129.2, 128.2, 127.4, 126.4, 125.2, 52.8, 44.2, 42.1, 38.8, 29.7, 21.5, 20.2; *Anal. Calc.* (%) for C₁₉H₂₀O₂S. C: 73.04; H: 6.45; S: 10.26; Found C: . C: 72.81; H: 6.52; S: 10.29.

2-(1-(2-methoxyphenyl)-3-oxo-3-(thiophen-3-yl)propyl)cyclopentanone (3h): Colorless solid (Yield: 79%); mp 128-130 °C; IR (KCl, cm⁻¹): 3104, 3006, 2958, 1722, 1671, 1506, 1454, 1319, 1216, 786, 676; ¹H-NMR (400 MHz, CDCl₃) δ 7.99 (s, 1H), 7.34 (d, *J* = 5.4 Hz, 1H), 7.15-6.92 (m, 3H, 2H ArH, 1H thienyl), 6.69-6.54 (m, 2H), 3.69-3.42 (m, 5H; 3H -OCH₃, 2H -CH), 3.25 (dd, *J* = 15.6, 7.2 Hz, 1H), 3.15 (dd, *J* = 15.6, 6.8 Hz, 1H), 2.28-2.08 (m, 2H), 1.81-1.69 (m, 2H), 1.54-1.42 (m, 2H); ¹³C-NMR (100 MHz, CDCl₃) δ 193.6, 193.0, 158.1, 142.3, 134.3, 132.5, 132.0, 129.4, 129.2, 127.0, 126.9, 126.2, 56.8, 52.8, 44.3, 42.4, 40.8, 27.7, 20.2; *Anal. Calc.* (%) for C₁₉H₂₀O₃S. C: 69.48; H: 6.14; S: 9.76; Found C: 69.04; H: 6.27; S: 9.79.

2-(3-oxo-1-(thiophen-2-yl)-3-(thiophen-3-yl)propyl)cyclopentanone (3i): Colorless viscous oil (Yield: 70%); IR (KCl, cm⁻¹): 3110, 3070, 3053, 2980, 1699, 1685, 1390, 710; ¹H-NMR (400 MHz, CDCl₃) δ 8.03 (s, 2H), 7.43 (d, *J* = 5.0 Hz, 1H), 7.38-7.34 (m, 2H), 7.09 (brd, *J* = 5.0 Hz, 1H), 4.08-3.99 (m, 1H), 3.42 (dd, *J* = 15.4, 7.0 Hz, 1H), 3.28 (dd, *J* = 15.4, 6.8 Hz, 1H), 2.30-2.25 (m, 1H), 2.30-2.25 (m, 1H), 2.09-2.02 (m, 1H), 1.96-1.88 (m, 2H),

1.67-1.59 (m, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 192.9, 185.0, 148.2, 145.4, 133.5, 129.3, 128.1, 126.1, 125.1, 124.8, 56.3, 47.8, 37.7, 36.2, 24.1, 21.3, *Anal. Calc.* (%) for $\text{C}_{16}\text{H}_{16}\text{O}_2\text{S}_2$. C: 63.13; H: 5.30; S: 21.07; Found C: 63.01; H: 5.58; S: 21.35.

4-Phenyl-2-(thiophen-3-yl)-6,7-dihydro-5H-cyclopenta[b]pyridine (5a): Yellow crystals (Yield: 92%); mp 102-105 $^{\circ}\text{C}$; IR (KCl, cm^{-1}): 3080, 3035, 2995, 2852, 1552, 1441, 1374, 1330, 1021, 701; ^1H -NMR (400 MHz, CDCl_3) δ 9.19 (s, 1H), 7.87 (dd, $J = 5.2, 1.2$ Hz, 1H), 7.75 (s, 1H), 7.60 (m, 5H), 7.53-7.50 (m, 1H), 3.79 (t, $J = 7.6$ Hz, 2H), 3.16 (t, $J = 7.4$ Hz, 2H), 2.33 (p, $J = 7.6$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 161.0, 144.9, 137.3, 135.3, 131.3, 130.3, 130.1, 128.8(2C), 127.6(2C), 127.4, 125.5(2C), 120.1, 31.7, 30.1, 23.3; *Anal. Calc.* (%) for $\text{C}_{18}\text{H}_{15}\text{NS}$. C: 77.94; H: 5.45; N: 5.05; S: 11.56; Found C: 78.21; H: 5.53; N: 4.85; S: 11.41.

4-(4-chlorophenyl)-2-(thiophen-3-yl)-6,7-dihydro-5H-cyclopenta[b]pyridine (5b): Yellow crystal (Yield: 95%); mp 130-133 $^{\circ}\text{C}$; IR (KCl, cm^{-1}): 3080, 2950, 2912, 2810, 1502, 1482, 1404, 1354, 1323, 698; ^1H -NMR (400 MHz, CDCl_3) δ 8.39 (s, 1H), 7.71 (dd, $J = 5.1, 1.2$ Hz, 1H), 7.58 (dd, $J = 5.1, 1.2$ Hz, 1H), 7.38 (brd, $J = 8.4$ Hz, 2H), 7.28 (brd, $J = 8.4$ Hz, 2H), 7.18 (m, 1H), 3.13 (t, $J = 7.6$ Hz, 2H), 2.96 (t, $J = 7.2$ Hz, 2H), 2.12 (p, $J = 7.2$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 166.8, 152.5, 144.6, 142.3, 137.3, 134.4, 132.6, 129.7(2C), 128.8(2C), 126.3, 126.1, 122.9, 117.8, 34.7, 30.6, 23.4; *Anal. Calc.* (%) for $\text{C}_{18}\text{H}_{14}\text{ClNS}$. C: 69.33; H: 4.53; N: 4.49; S: 10.28; Found C: 69.51; H: 4.68; N: 4.69; S: 10.11.

4-(4-bromophenyl)-2-(thiophen-3-yl)-6,7-dihydro-5H-cyclopenta[b]pyridine (5c): Yellow viscous oil (Yield: 89%); IR (KCl, cm^{-1}): 2965, 2935, 2840, 1494, 1452, 1419, 1382, 1345, 705; ^1H -NMR (400 MHz, CDCl_3) δ 8.30 (s, 1H), 7.69 (d, $J = 1.1$ Hz, 1H), 7.64 (dd, $J = 4.5, 1.1$ Hz, 1H), 7.61 (d, $J = 1.1$ Hz, 1H), 7.42 (brd, $J = 8.2$ Hz, 2H), 7.30 (brd, $J = 8.2$ Hz,

2H), 3.12 (t, 2H, $J = 7.6$ Hz), 3.01 (t, 2H, $J = 7.2$ Hz), 2.13 (p, $J = 7.3$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 161.2, 155.9, 152.6, 145.16, 137.2, 132.4, 132.2, 129.7(2C), 128.7(2C), 128.2, 127.9, 127.1, 117.8, 34.6, 30.4, 23.6; *Anal. Calc.* (%) for $\text{C}_{18}\text{H}_{14}\text{BrNS}$. C: 60.68; H: 3.96; N: 3.93; S: 9.00; Found C: 60.74; H: 3.71; N: 3.85; S: 9.27.

2-(thiophen-3-yl)-4-(p-tolyl)-6,7-dihydro-5H-cyclopenta[b]pyridine (5d): Yellow viscous oil (Yield: 81%); IR (KCl, cm^{-1}): 3106, 3018, 2987, 2958, 2921, 2877, 2856, 2805, 1467, 1448, 1407, 1369, 1328, 1030, 832, 752, 701, 666; ^1H -NMR (400 MHz, CDCl_3) δ 9.11 (s, 1H), 7.84 (dd, $J = 5.2, 1.2$ Hz, 1H), 7.73 (s, 1H), 7.47-7.41 (m, 1H), 7.50 (d, $J = 8.0$ Hz, 2H), 7.38 (d, $J = 8.0$ Hz, 2H), 3.73 (t, $J = 7.6$ Hz, 2H), 3.14 (t, $J = 7.4$ Hz, 2H), 2.46 (s, 3H), 2.25 (p, $J = 7.4$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 161.4, 153.9, 145.3, 141.3, 137.5, 132.8, 132.1, 130.46, 130.2(2C), 128.2(2C), 127.8, 126.0, 120.4, 32.2, 30.8, 23.8, 21.4; *Anal. Calc.* (%) for $\text{C}_{19}\text{H}_{17}\text{NS}$. C: 78.31; H: 5.88; N: 4.81; S: 11.00; Found C: 78.65; H: 5.97; N: 4.70; S: 10.85

4-(4-methoxyphenyl)-2-(thiophen-3-yl)-6,7-dihydro-5H-cyclopenta[b] pyridine (5e): Yellow viscous oil (Yield: 88%); IR (KCl, cm^{-1}): 2952, 2935, 2840, 1494, 1452, 1419, 1363, 1336, 1286, 1247, 1180, 1031, 8795, 785, 703; ^1H -NMR (400 MHz, CDCl_3) δ 9.15 (s, 1H), 7.85 (d, $J = 5.2$ Hz, 1H), 7.72 (s, 1H), 7.59 (d, $J = 8.8$ Hz, 2H), 7.46 (s, 1H), 7.08 (d, $J = 8.8$ Hz, 2H), 3.90 (s, 3H), 3.72 (t, $J = 7.6$ Hz, 2H), 3.15 (t, $J = 7.4$ Hz, 2H), 2.26 (p, $J = 7.4$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 165.5, 159.8, 152.3, 145.5, 142.5, 132.6, 130.4, 129.8(2C), 126.5, 125.7, 122.8, 117.6, 114.0 (2C), 55.5, 32.1, 31.0, 23.8; *Anal. Calc.* (%) for $\text{C}_{19}\text{H}_{17}\text{NOS}$. C: 74.23; H: 5.57; N: 4.56; S: 10.43; Found C: 74.29; H: 5.32; N: 4.21; S: 10.52.

4-(3-bromophenyl)-2-(thiophen-3-yl)-6,7-dihydro-5H-cyclopenta[b]pyridine (5f):

Yellow viscous oil (Yield: 86%); IR (KCl, cm^{-1}): 3060, 3000, 2954, 2871, 2838, 1490, 1463, 1436, 1374, 1357, 1330, 705; ^1H -NMR (400 MHz, CDCl_3) δ 8.54 (s, 1H), 7.73 (d, $J = 4.8$ Hz, 1H), 7.65 (s, 1H), 7.58 (d, $J = 8.4$ Hz, 1H), 7.54 (s, 1H), 7.47 (d, $J = 8.0$ Hz, 1H) 7.38 (d, $J = 8.0$ Hz, 2H), 3.42 (t, $J = 7.2$ Hz, 2H), 3.02 (t, $J = 7.2$ Hz, 2H), 2.24 (p, $J = 7.2$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 167.7, 153.8, 148.6, 142.2, 141.0, 131.9, 130.9, 130.6, 130.1, 128.8, 126.4, 126.2, 125.7, 124.0, 116.3, 31.9, 30.3, 23.0; *Anal. Calc.* (%) for $\text{C}_{18}\text{H}_{14}\text{BrNS}$. C: 60.68; H: 3.96; N: 3.93; S: 9.00; Found C: 60.71; H: 3.81; N: 3.64; S: 9.15.

2-(thiophen-3-yl)-4-(m-tolyl)-6,7-dihydro-5H-cyclopenta[b]pyridine (5g):

Yellow viscous oil (Yield: 88%); IR (KCl, cm^{-1}): 3058, 3016, 2950, 2923, 2869, 2838, 1488, 1452, 1417, 1371, 1334, 1311, 1247, 1216, 1180, 1031, 8795, 789, 709; ^1H -NMR (400 MHz, CDCl_3) δ 8.08 (s, 1H), 7.66 (d, $J = 4.8$ Hz, 1H), 7.48 (s, 1H), 7.29-7.24 (m, 5H), 3.20 (t, $J = 7.2$ Hz, 2H), 3.02 (t, $J = 7.6$ Hz, 2H), 2.46 (s, 3H), 2.14 (p, $J = 7.6$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 166.4, 152.2, 146.3, 142.3, 138.9, 138.3, 133.0, 129.0, 128.8, 128.5, 126.4, 126.1, 125.2, 123.0, 117.8, 34.6, 30.6, 23.5, 21.5; *Anal. Calc.* (%) for $\text{C}_{19}\text{H}_{17}\text{NS}$. C: 78.31; H: 5.88; N: 4.81; S: 11.00; Found C: 78.65; H: 5.74; N: 4.92; S: 11.25.

4-(2-methoxyphenyl)-2-(thiophen-3-yl)-6,7-dihydro-5H-cyclopenta[b] pyridine

(5h): Yellow crystal (Yield: 93%); mp 108-112 $^{\circ}\text{C}$; IR (KCl, cm^{-1}): 3003, 3064, 3004, 2950, 2938, 2875, 2840, 1457, 1434, 1363, 1336, 1041, 875, 765, 703; ^1H -NMR (400 MHz, CDCl_3) δ 8.51 (s, 1H), 7.92 (d, $J = 1.6$ Hz, 1H), 7.66 (dd, $J = 5.2, 1.2$ Hz, 1H), 7.47 (d, $J = 8.8$ Hz, 2H), 7.37 (dd, $J = 4.8, 3.2$ Hz, 1H), 7.00 (d, $J = 8.8$ Hz, 1H), 7.42 (s, 1H), 3.85 (s, 3H), 3.13 (t, $J = 7.6$ Hz, 2H), 3.03 (t, $J = 7.2$ Hz, 2H), 2.08 (p, $J = 7.2$ Hz, 2H); ^{13}C -NMR (100 MHz, CDCl_3) δ 166.5, 159.7, 152.3, 145.6, 142.7, 132.6, 131.2, 130.4, 129.4, 129.2, 126.6, 125.7,

122.5, 117.5, 113.9, 55.2, 34.7, 30.8, 23.5; *Anal. Calc.* (%) for C₁₉H₁₇NOS. C: 74.23; H: 5.57; N: 4.56; S: 10.43; Found C: 74.43; H: 5.21; N: 4.42; S: 10.54.

4-(thiophen-2-yl)-2-(thiophen-3-yl)-6,7-dihydro-5H-cyclopenta[b]pyridine (5i):
Yellow viscous oil (Yield: 84%); IR (KCl, cm⁻¹): 3095, 3060, 3003, 2934, 2911, 1585, 1435, 1404, 1344, 1312, 885, 829, 725, 691; ¹H-NMR (400 MHz, CDCl₃) δ 8.51 (s, 1H), 7.98 (s, 1H), 7.75 (d, *J* = 2.9 Hz, 1H), 7.71 (d, *J* = 2.8 Hz, 1H), 7.69 (d, *J* = 5.0 Hz, 1H), 7.32 (d, *J* = 5.1 Hz, 1H), 7.18 (dd, *J* = 3.9, 4.9 Hz, 1H), 3.18 (t, *J* = 7.6 Hz, 2H), 2.81 (t, *J* = 7.2 Hz, 2H), 2.40 (p, *J* = 7.2 Hz, 2H); ¹³C-NMR (100 MHz, CDCl₃) δ 165.3, 151.5, 145.6, 144.9, 130.6, 130.92, 129.8, 128.7, 127.6, 126.4, 126.1, 124.8, 124.1, 33.5, 29.0, 24.0; *Anal. Calc.* (%) for C₁₆H₁₃NS₂. C: 67.81; H: 4.62; N: 4.94; S: 22.63; Found C: 67.94; H: 4.51; N: 5.06; S: 22.87.