Supporting Information

Microwave-Assisted Synthesis Utilizing Supported Reagents: A Rapid and Efficient Acylation Procedure

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General Experimental for microwave synthesis

All reagents were obtained from commercial suppliers and were used without further purification. All microwave reactions were performed using an Emrys ™ Optimizer in a septa capped 2-5 mL Smith ™ process vial with stirring. Initial heating of 300W was used to bring the reaction to desired temperature. Power required to maintain target temperature was controlled by Emrys ™ Optimizer Software (version 2.5.0.10). The time reported for the reaction includes the time required to reach the target temperature. Compounds **4** and **8** were purified by MPLC on an Analogix IntelliFlash 280 (0-100% EtOAc/hexanes) using Analogix RS-4 cartridges. All isolated compounds were homogenous by LC/MS with four methods of detection (UV 220 & 254 nM, ELSD, and ion chromatograph).

Spectroscopic Data

1-Methyl-1H-indole-3-carboxylic acid benzylamide (2): ^{1}H NMR: (400 MHz, DMSO-d_6) δ 3.82 (s, 3H, Indole-N-CH_3), 4.47 (d, 2H, *J*= 6.0 Hz, CO-NH-CH_2-Ar), 7.14 (d t, 1H, *J*=2.0, 8.0 Hz, ArH), 7.20–7.25 (m, 2H, ArH), 7.30–7.35 (m, 4H, ArH), 7.48 (d, 1H, *J*= 9.0 Hz, ArH), 8.30 (s, 1H, Indole ArH), 8.15 (d, 1H, *J*=9.0 Hz, 1H), 8.39 (br t, 1H, *J*= 8.0 Hz, -CO-NH-); ^{13}C NMR: (100 MHz, DMSO-d_6) δ 164.1, 140.4, 136.6, 131.7, 128.1, 127.1, 126.5, 126.4, 121.9, 121.1, 120.5, 110.1, 109.5, 41.8, 32.9; MS (ESI), m/z 265.0 (100%) [M+H]; HRMS (EI) calcd for $C_{17}H_{16}N_2O$ 264.1263, found 264.1266.

1-Methyl-1H-indole-3-carboxylic acid phenylamide (4): ^{1}H NMR: (400 MHz, DMSO-d_6) δ 3.87 (s, 3H, Indole-N-CH_3), 7.13 (t, 1H, *J*= 6.0 Hz, ArH), 7.20 (t, 1H; *J*= 6.0 Hz, ArH), 7.25 (t, 1H, *J*= 8.0 Hz, 1H ArH), 7.33 (t, 2H, J= 8.0 Hz, ArH), 7.53 (d, 1H, *J*= 8.0 Hz, ArH), 7.77 (d, 2H, *J*= 8.0 Hz, ArH), 8.20 (d, 1H, *J*= 8.0 Hz, ArH), 8.25 (s, 1H, Indole ArH), 9.70 δ (s, 1H, CO-NH-); ^{13}C NMR: (100 MHz, DMSO-d_6) δ 32.8, 109.5, 110.3, 119.6, 119.9, 120.9, 121.2, 122.2, 122.6, 126.7, 128.5, 128.6, 132.4, 136.8, 139.8, 162.9; MS (ESI), m/z 251.1 (100%) [M+H]; HRMS (EI) calcd for $C_{16}H_{14}N_2O$ 250.1106, found 250.1104.

1-Methyl-1H-indole-3-carboxylic acid N-methyl-phenethylamide (5): ^{1}H NMR: (400 MHz, DMSO-d_6) δ 2.87 (t, 2H, *J*= 8.0 Hz; CH_2-), 3.08 (s, 3H, $CONCH_3$), 3.69 (t, 2H, *J*= 8.0 Hz; CH_2), 3.80 (s, 3H, Indole-N-CH_3), 7.10 (dt, 1H, *J*= 1.0, 8.0 Hz; ArH), 7.19-7.31 (m, 6H, ArH), 7.46 (d, 1H, *J*= 8.0 Hz. ArH), 7.57 (br s, 1H, Indole ArH), 7.70 (d, 1H, *J*=8.0 Hz, ArH); ^{13}C NMR: (100 MHz, DMSO-d_6) δ 32.6, 33.4, 39.3l, 50.1, 109.1, 110.0, 120.2, 120.8, 121.8, 126.1, 126.8, 128.3, 128.7, 131.2, 136.0, 139.2, 165.8; MS (ESI), m/z 293.2 (100%) [M+H]; HRMS (EI) calcd for $C_{19}H_{20}N_2NaO$ 315.1468, found 315.1265.

(1-Methyl-1H-indol-3-yl)-morpholin-4-yl-methanone (6): ^{1}H NMR: (400 MHz, DMSO-d_6) δ 3.60 (s, 8H), 3.82 (s, 3H, Indole-N-CH_3), 7.15 (t, 1H, *J*= 8.0 Hz, ArH), 7.22 (t, 1H, *J*= 8.0 Hz, ArH), 7.49 (d, 1H, *J*=8.0 Hz, ArH), 7.71 (d, 1H, *J*= 8.0 Hz, ArH),

7.75 (s, 1H, Indole ArH); ^{13}C NMR: (100 MHz, DMSO-d_6) δ 32.7, 66.3, 108.3, 110.3, 120.3, 120.4, 121.9, 126.3, 132.1, 136.2, 165.3; MS (ESI), m/z 245.1 (100%) [M+H]; HRMS (EI) calcd for $C_{14}H_{16}N_2NaO_2$ 267.1109, found 267.1110.

1-Methyl-1H-indole-3-carboxylic acid methyl-(2-pyridin-2-yl-ethyl)-amide (7): ^{1}H NMR: (400 MHz, DMSO-d_6) δ 3.03 (t, 2H, *J*=7.0 Hz; CH_2), 3.07 (s, 3H, $CONCH_3$), 3.80 (s, 3H, Indole-N-CH_3), 3.83 (t, 2H, *J*= 7.0 Hz; CH_2); 7.10 (dd, 1H, *J*= 1.0, 8.0 Hz, ArH), 7.18-7.23 (m, 2H, ArH), 7.28 (d, 1H, *J*= 8.0 Hz, ArH), 7.46 (dt, 1H, *J*= 1.0, 8.0 Hz, ArH), 7.65 (s, 1H, Indole ArH), 7.67-7.71 (m, 2H, ArH), 8.47 (dd; 1H; *J*= 1.0, 4.0 Hz, ArH); ^{13}C NMR: (100 MHz, DMSO-d_6) δ 32.6, 35.8, 39.3, 48.6, 109.1, 110.0, 120.2, 120.8, 121.5, 121.8, 123.2, 126.8, 131.3, 136.0, 136.4, 149.0, 159.0, 165.7; MS (ESI), m/z 294.2 (100%) [M+H]; HRMS (EI) calcd for $C_{18}H_{19}N_3NaO$ 315.1426, found 315.1422.

1-Methyl-1H-indole-3-carboxylic acid dibenzylamide (8): ^{1}H NMR: (400 MHz, DMSO-d_6) δ 3.75 (s, 3H, Indole-N-CH_3), 4.65 (s, 4H, $ArCH_2N$), 7.15 (dt, 1H, *J*= 2.0, 8.0 Hz., ArH), 7.20-7.30 (m, 7H, ArH), 7.35 (m, 4H, ArH), 7.48 (d, 1H, *J*= 8.0 Hz, ArH), 7.62 (s, 1H, Indole ArH), 7.83 (d, 1H, *J*= 8.0 Hz. ArH); ^{13}C NMR: (100 MHz, DMSO-d_6) δ 32.7, 56.2, 108.3, 110.2, 120.5, 122.1, 127.0, 127.1, 127.2, 128.6, 130.8, 136.2, 137.6, 166.6; MS (ESI), m/z 355.1 (100%) [M+H]; HRMS (EI) calcd for $C_{24}H_{22}N_2NaO$ 377.1630, found 377.1629.

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