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**A Strategy for the Synthesis of Aryl α -Ketoamides Based Upon the Acylation of
Anions Derived from Cyanomethylamines Followed by Oxidative Cleavage**

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Supporting Materials

^1H , ^{13}C and HRMS/MS Results

HRMS and MS Results

Compound Number	Formula [M+H]	Theoretic m/z.	Observed m/z	Deviation in ppm
21a-1	C ₁₂ H ₁₅ N ₂ O ₂	207.1134	207.1139	-2.8
21b-1	C ₁₂ H ₁₅ N ₂ O ₂	207.1134	207.1138	-2.1
21c-1	C ₁₂ H ₁₅ N ₂ O ₂	207.1134	207.1143	-4.8
21d-1	C ₁₁ H ₁₇ N ₂ O ₂	209.1290	209.1282	3.8
21e-1*	C ₁₆ H ₂₄ NO ₂	262.18	262.15	
Compound Number	Formula [M-H]	Theoretic m/z.	Observed m/z	Deviation in ppm
17	C ₁₂ H ₁₄ N ₃ O	216.1137	216.1142	-2.4

*LC-MS result.

Supporting Material: Spectra

α -(*N,N*-Diethylamino)- β -oxo-4-pyridinepropanenitrile, 17. ^1H NMR (500 MHz, CD_3OD) δ 8.63 (d, 2H, $J = 4.50$ Hz), 7.72 (d, 2H, $J = 4.50$ Hz), 3.30 (s, 1H), 3.14 (q, 4H, $J = 7.15$ Hz), 1.26 (t, 6H, $J = 7.20$ Hz); ^{13}C NMR (125 MHz, CD_3OD) δ 174.6, 150.7, 146.2, 123.4, 118.9, 87.6, 52.4, 10.8; HRMS m/z : ($\text{M}-\text{H}$) $^+$ calcd for $\text{C}_{12}\text{H}_{14}\text{N}_3\text{O}$ 216.1137, found 216.1142.

***N,N*-Diethyl- α -oxo-2-pyridineacetamide, 21a-1.** ^1H NMR (500 MHz, CD_3OD) δ 8.72 (d, 1H, $J = 2.30$ Hz), 8.13 – 8.04 (m, 2H), 7.66 (m, 1H), 3.55 (q, 2H, $J = 7.10$ Hz), 3.30 (q, 2H, $J = 7.10$ Hz), 1.29 (t, 3H, $J = 7.25$ Hz), 1.17 (t, 3H, $J = 7.15$ Hz); ^{13}C NMR (125 MHz, CD_3OD) δ 193.1, 169.6, 152.4, 151.2, 139.1, 129.9, 124.4, 43.5, 40.1, 14.3, 13.0; HRMS m/z : ($\text{M}+\text{H}$) $^+$ calcd for $\text{C}_{12}\text{H}_{15}\text{N}_2\text{O}_2$ 207.1134, found 207.1139.

***N,N*-Diethyl- α -oxo-3-pyridineacetamide, 21b-1.** ^1H NMR (500 MHz, CD_3OD) δ 9.02 (s, 1H), 8.82 (d, 1H, $J = 4.90$ Hz), 8.33 (d, 1H, $J = 13.65$ Hz), 7.65 (m, 1H), 3.58 (q, 2H, $J = 7.15$ Hz), 3.31 (q, 2H, $J = 7.10$ Hz), 1.28 (t, 3H, $J = 7.15$ Hz), 1.17 (t, 3H, $J = 7.15$ Hz); ^{13}C NMR (125 MHz, CD_3OD) δ 191.2, 167.5, 155.6, 151.6, 138.5, 130.6, 125.8, 43.7, 40.6, 14.5, 13.0; HRMS m/z : ($\text{M}+\text{H}$) $^+$ calcd for $\text{C}_{12}\text{H}_{15}\text{N}_2\text{O}_2$ 207.1134, found 207.1138.

***N,N*-Diethyl- α -oxo-4-pyridineacetamide, 21c-1.** ^1H NMR (500 MHz, CD_3OD) δ 8.84 (d, 2H, $J = 4.40$ Hz), 7.82 (d, 2H, $J = 4.40$ Hz), 3.59 (q, 2H, $J = 7.20$ Hz), 3.32 (q, 2H, $J = 7.05$ Hz), 1.28 (t, 3H, $J = 7.20$ Hz), 1.17 (t, 3H, $J = 7.05$ Hz); ^{13}C NMR (125 MHz, CD_3OD) δ 191.5, 167.2, 152.1, 141.1, 123.6, 43.7, 40.6, 14.5, 13.1; HRMS m/z : ($\text{M}+\text{H}$) $^+$ calcd for $\text{C}_{12}\text{H}_{15}\text{N}_2\text{O}_2$ 207.1134, found 207.1143.

***N,N*-Diethyl-1-methyl- α -oxo-pyrrole-2-acetamide, 21d-1.** ^1H NMR (500 MHz, CD_3OD) δ 7.16 (s, 1H), 6.68 (m, 1H), 6.22 (m, 1H), 3.98 (s, 3H), 3.49 (q, 2H, $J = 7.20$ Hz), 3.30 (q, 2H, $J = 7.05$ Hz), 1.25 (t, 3H, $J = 7.05$ Hz), 1.16 (t, 3H, $J = 7.05$ Hz); ^{13}C

NMR (125 MHz, CD₃OD) δ 182.5, 169.0, 135.5, 129.0, 125.0, 110.8, 43.9, 40.2, 37.5, 14.4, 13.0; HRMS m/z : (M+H)⁺ calcd for C₁₁H₁₇N₂O₂ 209.1290, found 209.1282.

4-(1,1-dimethylethyl)-*N,N*-diethyl- α -oxo-Benzeneacetamide, 21e-1. ¹H NMR (500 MHz, CD₃OD) δ 7.85 (d, 2H, J = 9.00 Hz), 7.62 (d, 2H, J = 8.50 Hz), 3.54 (q, 2H, J = 7.00 Hz), 3.24 (q, 2H, J = 7.00 Hz), 1.34 (s, 9H), 1.26 (t, 3H, J = 7.00 Hz), 1.12 (t, 3H, J = 7.00 Hz); ¹³C NMR (125 MHz, CD₃OD) δ 192.7, 169.0, 160.4, 132.0, 130.7, 127.5, 43.7, 40.3, 36.4, 31.6, 14.5, 13.3; MS m/z : (M+H)⁺ calcd for C₁₆H₂₄NO₂ 262.18, found 262.15.

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21a-1

21d-1

12e-1