SUPPORTING INFORMATION

Highly efficient synthesis of amides from ketoximes using trifluoromethanesulfonic anhydride

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EXPERIMENTAL (GENERAL)

The reagents employed were of high purity commercial samples which were used as received (Fischer, Merck and Sigma Aldrich). Reactions were carried out in oven-dried RB flask. Column chromatography was performed on silica gel (200-400 mesh). TLC was performed on alumina silica gel 60F_{254} (Fischer) detected by UV light (254 nm) and iodine vapors. The melting points were determined by open capillaries on a Buchi apparatus and are uncorrected. The IR spectra were recorded on a Nicolet-Impact-410 FT-IR spectrometer, using KBr pellets. $^1$H NMR and $^{13}$C NMR spectra were recorded on a Bruker AC-300F, 300 MHz, spectrometer in DMSO-d$_6$ using TMS as an internal standard with $^1$H resonance frequency of 300 MHz, $^{13}$C resonance frequency of 75 MHz. GC analyses were performed on Nucon 5700 series Gas chromatograph. GC-MS analyses were performed on Shimadzu 2010 series mass selective detector instrument. Elemental analysis was carried out by using Heraus CHN rapid analyzer. All the compounds gave C, H and N analysis within ± 0.4% of the theoretical values. Dry DCM was obtained from commercial source by the standard procedure.

Typical procedure for the synthesis of amides using triflic anhydride

The desired ketoxime (2.0 mmol) in 5 mL dry DCM was taken in an oven-dried RB flask. To the reaction mixture was added drop wise triflic anhydride (2.0 mmol) in DCM (5mL) under nitrogen for 10 to 15 minutes. The reaction mixture was stirred at RT and the progress of the reaction was monitored by TLC and GC-MS (Table 1). After completion of reaction, the contents were poured to crushed ice (100 mL) and neutralized with 10% NaHCO$_3$ solution (20 mL) and extracted with DCM (15 mL x 3). The pure products were obtained by column chromatography with hexane-ethyl acetate and DCM-methanol mixture. All the amides were characterized by GC-MS, $^1$H, $^{13}$C NMR and by elemental analysis and the results are compared with authentic samples.
Characterization data of various amides

**N-Methylacetamide (1)** \(^{1,2,3,4,5,6}\)

Yield: 170 mg (72%); colorless liquid, MP = 204-206 °C; Rf: 0.48 (80:20 Hexane:EtOAc, Iodine vapors); IR (KBr): 3345, 1660, 1246, 1028, 822 cm\(^{-1}\). \(^1\)H NMR (300MHz, DMSO-\(d_6\)): \(\delta = 2.18\) (s, 3H, CH\(_3\)), 2.83 (s, 3H, CH\(_3\)), 10.31 (s, 1H, NH). \(^{13}\)C NMR (75MHz, DMSO-\(d_6\)): \(\delta = 168.2, 28.7, 23.4\) GC-MS: m/z 73 [M]\. Anal. Calc. For C\(_5\)H\(_9\)NO: C, 60.58; H, 9.15; N, 14.13% found: C, 60.57; H, 9.14; N, 14.15 %.

**Piperidin-2-one (2)** \(^{1,2,3,5}\)

Yield: 190 mg (73%); colorless liquid, Rf: 0.37 (80:20 Hexane:EtOAc, Iodine vapors); IR (KBr): 3342, 1672, 1541, 1308, 796 cm\(^{-1}\). \(^1\)H NMR (300MHz, DMSO-\(d_6\)): \(\delta = 2.18\) (m, 4H), 2.34 (m, 2H), 3.36 (m, 2H), 10.44 (s, 1H, NH). \(^{13}\)C NMR (75MHz, DMSO-\(d_6\)): \(\delta = 169.1, 38.8, 36.2, 26.5, 24.2\). GC-MS: m/z 99 [M]+. Anal. Calc. For C\(_3\)H\(_7\)NO: C, 60.58; H, 9.15; N, 14.13% found: C, 60.57; H, 9.14; N, 14.13 %.

Note: TLC Plate, SM = Starting material, C = Co spot, P = Product
\textbf{N-Phenylacetamide (4) $^{1,2,3,4,5,6}$}

\begin{center}
\includegraphics[width=0.5\textwidth]{NPhenylacetamide.png}
\end{center}

Yield: 288 mg (96%); colorless solid, MP = 114-116 °C; Rf: 0.47 (95:5, DCM:MeOH, UV); IR (KBr): 3351, 3031, 1669, 1582, 1530, 1474, 1421, 1285, 1230, 698 cm\textsuperscript{-1}. \textsuperscript{1}H NMR (300MHz, DMSO-$d_6$): $\delta = 2.48$ (s, 3H, CH$_3$), 7.75 (m, 5H), 10.15 (s, 1H, NH). \textsuperscript{13}C NMR (75MHz, DMSO-$d_6$): $\delta = 167.1$, 138.8, 128.3, 127.6, 124.1, 121.9, 121.6, 22.9. GC-MS: m/z 149 [M]$^+$. Anal. Calc. For C$_9$H$_{11}$NO: C, 72.46; H, 7.43; N, 9.39% found: C, 72.45; H, 7.41; N, 9.40%.

\textit{Note: TLC Plate, SM= Starting material, C= Co spot, P= Product}

\textbf{N-p-tolylacetamide (5) $^{1,2,3,4}$}

\begin{center}
\includegraphics[width=0.5\textwidth]{NpTolylacetamide.png}
\end{center}

Yield: 245 mg (92%); colorless solid, MP = 145-148 °C; Rf: 0.35 (98:2, DCM:MeOH, UV); IR (KBr): 3331, 1665, 1573, 1394, 1310, 921, 719 cm\textsuperscript{-1}. \textsuperscript{1}H NMR (300MHz, DMSO-$d_6$): $\delta = 2.32$ (s, 3H, CH$_3$), 2.38 (s, 3H, CH$_3$), 6.87 (d, 2H, $j = 8.5$ Hz), 7.42 (d, 2H, $j = 8.5$ Hz), 10.34 (s, 1H, NH). \textsuperscript{13}C NMR (75MHz, DMSO-$d_6$): $\delta = 168.4$, 142.5, 135.2, 129.6, 122.1, 24.6, 22.8. GC-MS: m/z 135 [M]$^+$. Anal. Calc. For C$_8$H$_9$NO: C, 71.09; H, 6.71; N, 10.36% found: C, 71.07; H, 6.70; N, 10.34%.

\textit{Note: TLC Plate, SM= Starting material, C= Co spot, P= Product}
**N-(4-Methoxyphenyl)acetamide (6)**\(^1,3,4\)

![N-(4-Methoxyphenyl)acetamide (6) structure]

Yield: 286 mg (96%); colorless solid, MP = 130-132 °C; Rf: 0.48 (95:5 DCM:MeOH, UV); IR (KBr): 3341, 1669, 1576, 1343, 1320, 887, 689 cm\(^{-1}\).\(^1\) \(^1\)H NMR (400MHz, DMSO-\(d_6\)): \(\delta = 2.37\) (s, 3H, CH\(_3\)), 3.86 (s, 3H, OCH\(_3\)), 6.89 (d, 2H, j = 8.5 Hz), 7.46 (d, 2H, j = 8.5 Hz), 9.97 (s, 1H, NH). \(^13\)C NMR (100MHz, DMSO-\(d_6\)): \(\delta = 169.6, 154.5, 134.2, 130.2, 122.6, 56.4, 22.6\). GC-MS: m/z 165 [M]+. Anal. Calc. For C\(_9\)H\(_{11}\)NO\(_2\): C, 65.44; H, 6.71; N, 8.48% found: C, 65.42; H, 6.70; N, 8.47%.

**Note**: TLC Plate, SM= Starting material, C= Co spot, P= Product

**N-(4-Nitrophenyl)acetamide (7)**\(^1,2,3,4\)

![N-(4-Nitrophenyl)acetamide (7) structure]

Yield: 266 mg (94%); pale yellow solid, MP = 215-218 °C; Rf: 0.25 (95:5, DCM:MeOH, UV); IR (KBr): 3320, 1667, 1565, 1380, 1302, 829, 834 cm\(^{-1}\). \(^1\)H NMR (400MHz, CDCl\(_3\)+ DMSO-\(d_6\)): \(\delta = 2.30\) (s, 3H, CH\(_3\)), 7.84 (d, 2H, j = 9.0 Hz), 8.40 (d, 2H, j = 9.0 Hz), 10.12 (s, 1H, NH). \(^13\)C NMR (100MHz, CDCl\(_3\)+ DMSO-\(d_6\)): \(\delta = 169.1, 145.7, 142.8, 124.6, 122.1, 22.2\). GC-MS: m/z 180 [M]+. Anal. Calc. For C\(_8\)H\(_8\)N\(_2\)O\(_3\): C, 53.33; H, 4.48; N, 15.55% found: C, 53.32; H, 4.46; N, 15.54%.

**Note**: TLC Plate, SM= Starting material, C= Co spot, P= Product

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**N-(4-Aminophenyl)acetamide (8)**

Yield: 285 mg (94%); colorless solid, MP = 165-167 °C; Rf: 0.34 (95:5, DCM:MeOH, UV); IR (KBr): 3340, 1672, 1580, 1323, 1314, 857, 670 cm⁻¹. ¹H NMR (300MHz, DMSO-dma): δ = 2.27 (s, 3H, CH₃), 6.68 (d, 2H, j = 8.5 Hz), 7.42 (d, 2H, j = 8.5 Hz), 10.18 (s, 1H, NH). ¹³C NMR (75MHz, DMSO-d₆): δ = 170.2, 142.5, 130.6, 122.8, 118.3, 22.8. GC-MS: m/z 150 [M]+. Anal. Calc. For C₈H₁₀N₂O: C, 63.98; H, 6.71; N, 18.65% found: C, 63.97; H, 6.70; N, 18.66%.

**Note:** TLC Plate, SM = Starting material, C = Co spot, P = Product

**N-(4-Chlorophenyl)acetamide (9)**

Yield: 288 mg (95%); colorless solid, MP = 176-178 °C; Rf: 0.33 (95:5, DCM:MeOH, UV); IR (KBr): 3342, 1670, 1590, 1353, 1322, 890, 667 cm⁻¹. ¹H NMR (400MHz, DMSO-d₆): δ = 2.38 (s, 3H, CH₃), 7.42 (d, 2H, j = 9.0 Hz), 7.60 (d, 2H, j = 9.0 Hz), 10.28 (s, 1H, NH). ¹³C NMR (100MHz, DMSO-d₆): δ = 168.4, 138.8, 130.9, 129.4, 124.3, 23.4. GC-MS: m/z 169 [M]+. Anal. Calc. For C₈H₇ClNO: C, 56.65; H, 4.75; N, 8.26% found: C, 56.66; H, 4.74; N, 8.25%.

**Note:** TLC Plate, SM = Starting material, C = Co spot, P = Product
**N-(4-Bromophenyl)acetamide (10)**

Yield: 268 mg (90%); brown solid, MP = 163-165 °C; Rf: 0.34 (95:5, DCM:MeOH, UV); IR (KBr): 3336, 1665, 1570, 1323, 1310, 812, 654 cm⁻¹. ¹H NMR (400MHz, DMSO-d₆): δ = 2.18 (s, 3H, CH₃), 7.40 (d, 2H, j = 9.0 Hz), 7.68 (d, 2H, j = 9.0 Hz), 9.98 (s, 1H, NH). ¹³C NMR (100MHz, DMSO-d₆): δ = 169.2, 138.8, 131.2, 125.4, 121.3, 23.8. GC-MS: m/z 213 [M-1]⁺, 215 [M+1]⁺. Anal. Calc. For C₈H₈BrNO: C, 44.89; H, 3.77; N, 6.54% found: C, 44.88; H, 3.75; N, 6.55%.

**N-(4-Fluorophenyl)acetamide (11)**

Yield: 280 mg (92%); colorless solid, MP = 153-155 °C; Rf: 0.38 (95:5, DCM:MeOH, UV); IR (KBr): 3330, 1668, 1530, 1345, 1312, 845, 656 cm⁻¹. ¹H NMR (400MHz, DMSO-d₆): δ = 2.10 (s, 3H, CH₃), 7.12 (d, 2H, j = 9.0 Hz), 7.80 (d, 2H, j = 9.0 Hz), 10.38 (s, 1H, NH). ¹³C NMR (100MHz, DMSO-d₆): δ = 169.2, 159.8 (C-F, J = 245.20Hz), 134.3, 124.3, 116.4, 22.8. GC-MS: m/z 153 [M]⁺. Anal. Calc. For C₈H₆FNO: C, 62.74; H, 5.26; N, 9.15% found: C, 62.75; H, 5.24; N, 9.15%.

*Note: TLC Plate, SM= Starting material, C= Co spot, P= Product*
**N-phenylbenzamide (12)**

Yield: 285 mg (96%); colorless solid, MP = 161-163 °C; Rf: 0.52 (80:20, Hexane:EtOAc, UV); IR (KBr): 3359, 1660, 1580, 1530, 1478, 1420, 1320, 1285, 688 cm⁻¹. ^1^H NMR (300MHz, DMSO-d₆): δ = 7.35 (m, 2H), 7.62 (m, 3H), 7.86 (m, 2H), 8.10 (m, 3H), 10.32 (s, 1H, NH). ^1^C NMR (75MHz, DMSO-d₆): δ = 166.3, 136.8, 134.8, 132.3, 131.6, 129.1, 128.9, 128.4, 127.6, 122.9, 121.4, 120.6. GC-MS: m/z 197 [M⁺]. Anal. Calc. For C₁₃H₁₁NO: C, 79.16; H, 5.62; N, 7.10% found: C, 79.17; H, 5.60; N, 7.10%.

**Note: TLC Plate, SM= Starting material, C= Co spot, P= Product**

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**N-(4-Fluorophenyl)benzamide (13)**

Yield: 260 mg (88%); colorless solid, MP = 169-172 °C; Rf: 0.55 (80:20, Hexane:EtOAc, UV); IR (KBr): 3341, 1652, 1535, 1325, 1312, 845, 650 cm⁻¹. ^1^H NMR (300MHz, DMSO-d₆): δ = 7.05 (d, 2H, j = 9.0 Hz), 7.54 (m, 2H), 7.68 (d, 2H, j = 9.0 Hz), 7.95 (m, 3H), 10.18 (s, 1H, NH). ^1^C NMR (75MHz, DMSO-d₆): δ = 166.6, 160.2, (C-F, j = 246.12Hz), 135.2, 131.6, 130.7, 129.8, 129.3, 128.5, 128.0, 127.4, 124.6, 123.4, 116.8. GC-MS: m/z 215 [M⁺]. Anal. Calc. For C₁₃H₁₀FNO: C, 72.55; H, 4.68; N, 6.51% found: C, 72.55; H, 4.66; N, 6.50%.

**Note: TLC Plate, SM= Starting material, C= Co spot, P= Product**
**N-(4-Bromophenyl)benzamide (14)**

Yield: 266 mg (90%); pale yellow solid, MP = 162-165 °C; Rf: 0.67 (80:20, Hexane:EtOAc, UV); IR (KBr): 3334, 1656, 1540, 1320, 1332, 840, 760 cm⁻¹. ¹H NMR (300MHz, DMSO-d₆): δ = 7.36 (d, 2H, j = 9.0 Hz), 7.58 (m, 2H), 7.72 (d, 2H, j = 9.0 Hz), 8.16 (m, 3H), 10.28 (s, 1H, NH). ¹³C NMR (75MHz, DMSO-d₆): δ = 164.5, 159.4, 136.2, 132.6, 130.7, 129.8, 129.0, 128.5, 128.1, 127.2, 123.8, 118.4. GC-MS: m/z 275 [M-1]+, 277 [M+1]⁺. Anal. Calc. For C₁₅H₁₅BrNO: C, 56.55; H, 3.65; N, 5.07% found: C, 56.53; H, 3.64; N, 5.05 %.

**N-(4-Nitrophenoxy)benzamide (15)**

Yield: 256 mg (87%); pale yellow solid, MP = 202-204 °C; Rf: 0.611 (98:2, DCM:MeOH, UV); IR (KBr): 3333 1650, 1563, 1325, 1312, 1280, 945, 780, 694 cm⁻¹. ¹H NMR (300MHz, DMSO-d₆): δ = 7.56 (m, 5H), 7.80 (d, 2H, j = 8.5 Hz), 8.34 (d, 2H, j = 8.5 Hz), 9.80 (s, 1H, NH). ¹³C NMR (75MHz, DMSO-d₆): δ = 164.6, 148.2, 142.2, 132.6, 131.1, 129.8, 129.3, 128.7, 128.1, 127.4, 124.6, 123.4, 121.2. GC-MS: m/z 242 [M]+. Anal. Calc. For C₁₃H₁₀N₂O₅: C, 64.46; H, 4.16; N, 11.56% found: C, 64.45; H, 4.16; N, 11.54 %.

Note: TLC Plate, SM = Starting material, C = Co spot, P = Product
**N-(2-Methoxyphenyl)acetamide (16)**

Yield: 248 mg (86%); colorless solid, MP = 87-90 °C; Rf: 0.611 (98:2, DCM:MeOH, UV); IR (KBr): 3340, 3331, 1674, 1580, 1520, 1466, 1411, 1280, 1230, 792 cm⁻¹. \(^1^H\) NMR (300MHz, DMSO-d₆): δ = 2.42 (s, 3H, CH₃), 3.86 (s, 3H, OCH₃), 6.96 (m, 4H), 10.25 (s, 1H, NH). \(^1^C\) NMR (75MHz, DMSO-d₆): δ = 171.1, 153.2, 126.3, 124.1, 121.9, 121.6, 113.4, 56.8, 22.9. GC-MS: m/z 165 [M]\(^+\). Anal. Calc. For C₈H₉NO: C, 71.09; H, 6.71; N, 10.36% found: C, 71.08; H, 6.71; N, 10.35%.

**Note:** TLC Plate, SM = Starting material, C = Co spot, P = Product

**N-(3-Methoxyphenyl)acetamide (17)**

Yield: 265 mg (90%); colorless solid, MP = 103-105 °C; Rf: 0.514 (98:2, DCM:MeOH, UV); IR (KBr): 3338, 1670, 1540, 1530, 1468, 1421, 1230, 1218, 754 cm⁻¹. \(^1^H\) NMR (300MHz, DMSO-d₆): δ = 2.36 (s, 3H, CH₃), 3.92 (s, 3H, OCH₃), 6.72 (d, 2H, j = 8.5 Hz), 7.76 (m, 2H), 10.15 (s, 1H, NH). \(^1^C\) NMR (75MHz, DMSO-d₆): δ = 170.6, 161.5, 140.4, 131.6, 114.4, 110.3, 105.6, 55.4, 24.1. GC-MS: m/z 165 [M]\(^+\). Anal. Calc. For C₈H₉NO: C, 71.09; H, 6.71; N, 10.36% found: C, 71.07; H, 6.71; N, 10.34%.

**Note:** TLC Plate, SM = Starting material, C = Co spot, P = Product
**N-(Naphthalene-2-yl)acetamide (18)**

![Chemical Structure](image)

Yield: 230 mg (85%); colorless solid, MP = 176-178 °C; Rf: 0.36 (80:20, Hexane:EtOAc, UV); IR (KBr): 3331, 3020, 1668, 1584, 1530, 1424, 1410, 1235, 1250, 658 cm⁻¹. ¹H NMR (300MHz, DMSO-d₆): δ = 2.18 (s, 3H, CH₃), 6.75 (m, 2H), 7.10 (m, 2H), 7.89 (m, 3H), 10.10 (s, 1H, NH). ¹³C NMR (75MHz, DMSO-d₆): δ = 170.2, 136.4, 132.4, 127.8, 126.4, 125.8, 124.6, 124.1, 121.9, 118.6, 110.3, 23.2. GC-MS: m/z 185 [M⁺]. Anal. Calc. For C₁₂H₁₁NO: C, 77.81; H, 5.99; N, 7.56% found: C, 77.80; H, 5.98; N, 7.54%.

**Note:** TLC Plate, SM= Starting material, C = Co spot, P= Product

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**N-(Thiophen-2-yl)acetamide (19)**

![Chemical Structure](image)

Yield: 230 mg (85%); colorless solid, MP = 159-161 °C; Rf: 0.36 (97:3, DCM:MeOH, UV); ¹H NMR (300MHz, DMSO-d₆): δ = 2.08 (s, 3H, CH₃), 6.75 (m, 1H), 6.90 (m, 1H), 7.38 (m, 1H), 10.24 (s, 1H, NH). ¹³C NMR (75MHz, DMSO-d₆): δ = 171.3, 144.4, 126.6, 122.4, 112.8, 23.2. GC-MS: m/z 141 [M⁺]. Anal. Calc. For C₆H₇NOS: C, 51.04; H, 5.00; N, 9.92% found; C, 51.01; H, 4.98; N, 9.90%.

**Note:** TLC Plate, SM= Starting material, C = Co spot, P= Product
Caprolactam (3) 1, 3, 4

Yield: 230mg; colorless solid, MP = 68-71 °C; Rf: 0.51 (80:20, Hexane:EtOAc, iodine vapors); $^1$H NMR (300MHz, DMSO-d$_6$): δ = 1.2 (m, 2H, CH$_2$), 1.55 (m, 2H, CH$_2$), 2.15 (m, 2H, CH$_2$), 2.44 (m, 2H, CH$_2$), 10.08 (s, 1H, NH). $^{13}$C NMR (75MHz, DMSO-d$_6$): δ = 179.2, 39.2, 35.8, 30.1, 29.6, 21.8. GC-MS: m/z 113 [M]$.^+$ Anal. Calc. For C$_6$H$_{11}$NO: C, 63.68; H, 9.80; N, 12.38% found; C, 63.70; H, 9.78; N, 12.35%

Note: TLC Plate, SM= Starting material, C = Co spot, P= Product

References and notes


$^1$H-NMR Spectra of N-Methylacetamide (Table No. 2, Entry No. 1)
$^{13}$C-NMR Spectra of N-Methylacetamide (Table No. 2, Entry No. 1)
GCMS Spectra of N-Methylacetamide (Table No. 2, Entry No. 1)
$^1$H-NMR Spectra of Piperidin-2-one (Table No. 2, Entry No. 2)
$^{13}$C-NMR Spectra of Piperidin-2-one (Table No. 2, Entry No. 2)
GCMS Spectra of Piperidin-2-one (Table No. 2, Entry No. 2)
$^1$H-NMR Spectra of $\omega$-Caprolactam (Table No. 2, Entry No.3)
$^{13}$C-NMR Spectra of ε-Caprolactam (Table No. 2, Entry No. 3)
GCMS Spectra of \( \text{C}^6 \)-Caprolactam (Table No. 2, Entry No. 3)
IR Spectra of N-Phenylacetamide (Table No. 2, Entry No. 4)
$^1$H-NMR Spectra of N-Phenylacetamide (Table No. 2, Entry No. 4)
$^{13}$C-NMR Spectra of $N$-Phenylacetamide (Table No. 2, Entry No.4)
GCMS Spectra of N-Phenylacetamide (Table No. 2, Entry No. 4)
IR Spectra of N-p-tolylacetamide (Table No. 2, Entry No. 5)
$^1$H-NMR Spectra of N-p-tolylacetamide (Table No. 2, Entry No.5)
$^{13}$C-NMR Spectra of N-p-tolylacetamide (Table No. 2, Entry No.5)
GCMS Spectra of N-p-tolylacetamide (Table No. 2, Entry No. 5)

Mol Weight = 149.
IR Spectra of N-(4-Methoxyphenyl)acetamide (Table No. 2, Entry No. 6)
$^1$H-NMR Spectra of N-(4-Methoxyphenyl)acetamide (Table No. 2, Entry No. 6)
$^{13}$C-NMR Spectra of N-(4-Methoxyphenyl)acetamide (Table No. 2, Entry No. 6)
GCMS Spectra of N-(4-Methoxyphenyl)acetamide (Table No. 2, Entry No. 6)

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Sample Information

Analyzed by: Admin
Sample Type: Unknown
Level: 1
Sample Name: SB 03
Sample ID:
IS Amount: [1]=1
Line#: 1, R.Time: 3.1
Mass/Peak: 30
Run Mode: Single 3.1 (372)
BG Mode: Novis Group 1 - Event 1

Mol Weight = 165

Entry No. 06
IR Spectra of N-(4-Nitrophenyl)acetamide (Table No. 2, Entry No. 7)
$^1$H-NMR Spectra of N-(4-Nitrophenyl)acetamide (Table No. 2, Entry No.7)
$\text{C-NMR Spectra of } N-(4\text{-Nitrophenyl})\text{acetamide (Table No. 2, Entry No.7)}$

Entry No. 07
GCMS Spectra of N-(4-Nitrophenyl)acetamide (Table No. 2, Entry No.7)
IR Spectra \(N\)-(4-Aminophenyl)acetamide (Table No. 2, Entry No.8)
$^1$H-NMR Spectra of N-(4-Aminophenyl)acetamide (Table No. 2, Entry No.8)
\(^{13}\)C-NMR Spectra of N-(4-Aminophenyl)acetamide (Table No. 2, Entry No.8)
GCMS Spectra of N-(4-Aminophenyl)acetamide (Table No. 2, Entry No.8)

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Sample Information

Analyzer: : Admin
Sample Type: : Unknown
Level #: 1
Sample Name: : SB 05
Sample ID: 
IS Amount: [II]=1
Line#: 1, Ret: 0.1
MassPeaks: 77
RawMode: Single 0.1(10)
BG Mode: None, Group 1 - Event 1

Mol Weight = 150
Entry No. 08
IR Spectra of N-(4-Chlorophenyl)acetamide (Table No. 2, Entry No. 9)
$^1$H-NMR Spectra of N-(4-Chlorophenyl)acetamide (Table No. 2, Entry No.9)
$^{13}$C-NMR Spectra \textit{N}-\textit{(4-Chlorophenyl)}acetamide (Table No. 2, Entry No.9)
GCMS Spectra of N-(4-Chlorophenyl)acetamide (Table No. 2, Entry No.9)

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Sample Information

Entry No 09

Mol. Weight = 169
IR Spectra of N-(4-Bromophenyl)acetamide (Table No. 2, Entry No.10)
$^1$H-NMR Spectra of N-(4-Bromophenyl)acetamide (Table No. 2, Entry No.10)
$^{13}$C-NMR Spectra $N$-(4-Bromophenyl)acetamide (Table No. 2, Entry No. 10)
GCMS Spectra of N-(4-Bromophenyl)acetamide (Table No. 2, Entry No.10)
IR Spectra of N-(4-Fluorophenyl)acetamide (Table No. 2, Entry No.11)
$^1$H-NMR Spectra of N-(4-Fluorophenyl)acetamide (Table No. 2, Entry No11)
$^{13}$C-NMR Spectra $N$-(4-Fluorophenyl)acetamide (Table No. 2, Entry No.11)
GCMS Spectra of $N$-(4-Fluorophenyl)acetamide (Table No. 2, Entry No.11)
IR Spectra of N-phenylbenzamide (Table No. 2, Entry No.12)
$^1$H-NMR Spectra of N-phenylbenzamide (Table No. 2, Entry No12)
$^{13}$C-NMR Spectra N-phenylbenzamidine (Table No. 2, Entry No.12)
GCMS Spectra of N-phenylbenzamide (Table No. 2, Entry No.12)

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Sample Information

- Analyzed by: Admin
- Sample Type: Unknown
- Level #: 1
- Sample Name: SD 9A
- Sample ID: 
- IS Amount: 111

Chromatogram SB 9A E:\GCMS\Data\karnar@kman\12.gcd

**Spectrum**

- Linear 1: R Time 3.33 (Scan #402)
- Mass Peaks: 111
- Raw Mode: Single 3.33 (402) Base Peak: 105 (1715643)
- B/G Mode: None Group 1 - Event 1

**m/z**

- 51
- 65
- 77
- 92
- 115
- 139
- 167
- 190
- 197

**Mol Weight = 197**

Entry No. 12
GCMS Spectra of N-phenylbenzamide (Table No. 2, Entry No.12)
IR Spectra of N-(4-Fluorophenyl)benzamide (Table No. 2, Entry No.13)
$^1$H-NMR Spectra of N-(4-Fluorophenyl)benzamide (Table No. 2, Entry No13)
$^{13}$C-NMR Spectra $N$-(4-Fluorophenyl)benzamide (Table No. 2, Entry No.13)
GCMS Spectra of N-(4-Fluorophenyl)benzamide (Table No. 2, Entry No. 13)
IR Spectra of N-(4-Bromophenyl)benzamide (Table No. 2, Entry No.14)
$^1$H-NMR Spectra of N-(4-Bromophenyl)benzamide (Table No. 2, Entry No14)
$^{13}$C-NMR Spectra $N$-(4-Bromophenyl)benzamide (Table No. 2, Entry No.14)
GCMS Spectra of N-(4-Bromophenyl)benzamide (Table No. 2, Entry No.14)
$^1$H-NMR Spectra of $N$-(4-Nitrophenyl)benzamide (Table No. 2, Entry No15)
$^{13}$C-NMR Spectra N-(4-Nitrophenyl)benzamide (Table No. 2, Entry No. 15)
GCMS Spectra of N-(4-Nitrophenyl)benzamide (Table No. 2, Entry No.15)
IR Spectra of N-(2-Methoxyphenyl)acetamide (Table No. 2, Entry No.16)
$^1$H-NMR Spectra of N-(2-Methoxyphenyl)acetamide (Table No. 2, Entry No16)
$^{13}$C NMR Spectra $N$-(2-Methoxyphenyl)acetamide (Table No. 2, Entry No.16)
GCMS Spectra of \( N-(2\text{-Methoxyphenyl})\)acetamide (Table No. 2, Entry No.16)
IR Spectra of N-(3-Methoxyphenyl)acetamide (Table No. 2, Entry No.17)
$^1$H-NMR Spectra of N-(3-Methoxyphenyl)acetamide (Table No. 2, Entry No17)
$^{13}$C-NMR Spectra N-(3-Methoxyphenyl)acetamide (Table No. 2, Entry No.17)
GCMS Spectra of N-(3-Methoxyphenyl)acetamide (Table No. 2, Entry No.17)

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Sample Information

Analyzed by: Admin
Sample Type: Unknown
Level #: 1
Sample Name: SB 14
Sample ID:
Line#: 1, R1: mc:3.0
MaxiPeaks: 65
ResMode: Simple 3.0
BG Mode: New Group 1, Event 1

m/z

Entry No. 17

Mol Weight = 165
$^1$H-NMR Spectra $N$-(Naphthalene-2-yl)acetamide (Table No. 2, Entry No. 18)
$^{13}$C-NMR Spectra $N$-(Naphthalene-2-yl)acetamide (Table No. 2, Entry No. 18)
GCMS Spectra of N-(Naphthalene-2-yl)acetamide (Table No. 2, Entry No. 18)
$^1$H-NMR Spectra $N$-(thiophen-2-yl)acetamide (Table No. 2, Entry No 19)
$^{13}$C-NMR Spectra $N$-(thiophen-2-yl)acetamide (Table No. 2, Entry No.19)
GCMS Spectra of N-(thiophen-2-yl)acetamide (Table No. 2, Entry No.19)