Supporting Information

SYNTHESIS OF NOVEL 2-AMINO-N-HYDROXYBENZAMIDE

ANTIMICROBIALS

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EXPERIMENTAL SECTION

GENERAL

Chemicals were procured from Sigma Aldrich and used as such without further purification. All solvents used for the spectroscopic and other physical studies were reagent grade and were further purified. Melting points were determined using a calibrated thermometer by Guna Digital Melting Point apparatus. They were expressed in degrees centigrade (°C) and are uncorrected. IR spectra were recorded as neat samples on Bruker Alpha- EcoATR-FTIR (Attenuated Total Reflection-Fourier Transform Infrared) interferometer with single reflection sampling module equipped with ZnSe crystal and reported in reciprocal centimetres (cm⁻¹). ¹H and ¹³C NMR spectra were recorded as solutions in DMSO-*d*₆ on a Bruker AMX 500 MHz spectrometer operating at 400 MHz for ¹H, 100 MHz for ¹³C NMR. The ¹H and ¹³C chemical shifts were expressed in δ with reference to

tetramethylsilane (TMS) as an internal standard. Electron Impact (EI), HRMS were recorded on VG 7070 H ev instrument at 70 ev.

Typical Protocol for the Reaction

1 mmole of Isatoic anhydride and 1 mmole of acetohydroxamic acid were taken in a 50 ml round bottomed flask and 10 ml of acetonitrile was added. The contents were stirred magnetically for about 3 hours at room temperature. After completion of the reaction as indicated by TLC, by using SiO₂ as adsorbent and 4:6 ethyl acetate & n-hexane as eluent. The crude product was separated by filtration and purified by recrystallization from EtOH. The other compounds (**3b-j**) were prepared employing the above procedure.

Compound characterization

2-amino-*N*-hydroxy-*N*-Acetylbenzamide (3a): Yield (95%), mp 85-87 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 2.1 (s, 3H), 5.3 (brs, 2H), 6.4 (m, *J*= 8.1 Hz, 2H), 7.2 (m, *J*= 8.1 Hz, 1H), 7.9 (m, *J*= 8.1 Hz, 1H), 9.2 (brs, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 175.6 (acetyl -C=O), 165.2 (benzamide -C=O), 150.6 (Ar C-2), 135.7 (Ar C-4), 130.3 (Ar C-6), 115.6 (Ar C-5), 114.9 (Ar C-1), 106.9 (Ar C-3), and 23.8 (-CH₃); IR (Neat, ν , cm⁻¹): 3480 (-NH₂), 3164 (-OH), 1684 (-C=O), 1608 (Ar), 2823 (-CH₃); HRMS *m/z* (EI); calcd for C₉H₁₀N₂O₃ 194.07333, found 194.07310.

2-Amino-*N*-hydroxy-*N*-propionylbenzamide (3b): Yield (95%), mp 90-92 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 1.0 (t, 3H), 2.3 (q, 2H), 5.4 (brs, 2H), 6.5 (m, *J*= 8.1 Hz, 2H), 7.0 (d, *J*= 8.1 Hz, 1H), 7.8 (d, *J*= 8.1 Hz, 1H), 9.0 (brs, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 175.7 (acetyl -C=O), 165.3 (benzamide -C=O), 150.6 (Ar C-2), 135.7 (Ar C-4), 130.3 (Ar C-6), 115.6 (Ar C-5), 114.9 (Ar C-1), 106.9 (Ar C-3), 23.8 (-CH₂-) and 13.6 (-CH₃); IR (Neat, ν ,

cm⁻¹): 3481 (-NH₂), 3161 (-OH), 1656 (-C=O), 1603 (Ar), 2943 (-CH₂-), 3481 (-CH₃); HRMS *m/z* (EI); calcd for C₁₀H₁₂N₂O₃ 208.06620, found 208.06560.

2-Amino-*N*-hydroxy-*N*-isobutyrylbenzamide (3c): Yield 99%, mp 136-138 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 1.2 (d, 6H), 2.6 (m, 1H), 5.6 (brs, 2H), 6.7 (m, *J*= 8.1 Hz, 2H), 7.2 (d, *J*= 8.1 Hz, 1H), 7.9 (d, *J*= 8.1 Hz, 1H), 9.1 (brs, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 176.8 (acetyl -C=O), 166.0 (benzamide -C=O), 150.8 (Ar C-2), 135.7 (Ar C-4), 130.0 (Ar C-6), 116.6 (Ar C-5), 116.3 (Ar C-1), 106.9 (Ar C-3), 38.4 (-CH-) and 27.0 (-CH₃); IR (Neat, ν, cm⁻¹): 3490 (-NH₂), 3167 (-OH), 1724 (-C=O), 1613 (Ar, -C=C-), 2970 (-CH₃), 2854 (-CH₂-); HRMS *m/z* (EI); calcd for C₁₁H₁₄N₂O₃ 222.10044, found 222.10020.

2-Amino-*N*-hydroxy-*N*-pivaloylbenzamide (3d): Yield 99%, mp 109-111 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 1.3 (s, 9H), 5.6 (brs, 2H), 6.7 (m, *J*= 8.1 Hz, 2H), 7.3 (d, *J*= 8.1 Hz, 1H), 7.9 (d, *J*= 8.1 Hz, 1H), 9.4 (brs, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 175.2 (acetyl -C=O), 166.0 (benzamide -C=O), 150.0 (Ar C-2), 135.3 (Ar C-4), 130.9 (Ar C-6), 116.5 (Ar C-5), 116.3 (Ar C-1), 106.9 (Ar C-3), 32.7 (quaternary carbon) and 19.1 (-CH₃); IR (Neat, ν, cm⁻¹): 3224 (-OH), 1727 (-C=O), 1610 (Ar), 2960 (-CH₃) ; HRMS *m/z* (EI); calcd for C₁₂H₁₆N₂O₃ 236.11609, found 236.11509.

2-Amino-*N*-benzoyl-*N*-hydroxybenzamide (3e): Yield 99%, mp 149-151 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 5.7 (brs, 2H), 6.7 (m, *J*= 8.3 Hz, 2H), 7.3 (m, *J*= 8.3 Hz, 1H), 7.6 (m, *J*= 8.3 Hz, 1H), 7.9 (m, 5H), 9.7 (s, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 163.2 (benzoyl -C=O), 163.0 (benzamide -C=O), 149.8 (Ar C-2), 135.6 (Ar C'-1), 133.4 (Ar C-4), 128.6 (Ar C'-4), 126.4 (Ar C'-3 and 5), 120.4 (Ar C'-2 and 6), 117.3 (Ar C-6), 115.3 (Ar C-1 and 5), 111.6 (Ar C-3); IR (Neat, ν, cm⁻¹): 3450 (-NH₂), 3220 (-OH), 1732 (-C=O), 1606 (Ar), 1592 (-CH₃); HRMS *m/z* (EI); calcd for C₁₄H₁₂N₂O₃ 256.08479, found 256.08380.

2-amino-*N*-hydroxy-*N*-(4-methylbenzoyl) benzamide (3f): Yield 99%, mp 155-157 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 2.4 (s, 3H), 6.1 (brs, 2H), 6.5 (m *J*= 8.0 Hz, 2H), 7.2 (d, *J*= 8.4 Hz, 2H), 7.3 (d, *J*= 8.4 Hz, 2H) 7.4 (d, *J*= 8.0 Hz, 1H), 7.8 (t, *J*= 8.0 Hz, 1H), 9.3 (brs, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 161.1 (benzoyl -C=O), 160.0 (benzamide -C=O), 149.7 (Ar C-2), 141.7 (Ar C'-4), 134.0 (Ar C-4), 132.4 (Ar C'-1), 131.2 (Ar C'-3 and 5), 130.0 (Ar C-6), 128.4 (Ar C'-2 and 6), 119.4 (Ar C-5), 117.9 (Ar C-1), 116.5 (Ar C-3) and 25.7 (-CH₃); IR (Neat, ν, cm⁻¹): 3434 (-NH₂), 3218 (-OH), 1729 (-C=O), 1598 (Ar), 2936 (-CH₃); HRMS *m/z* (EI); calcd for C₁₅H₁₄N₂O₃ 270.11124, found 270.11000.

***N*-Acetyl-2-amino-6-chloro-*N*-hydroxybenzamide (3g):** Yield 99%, mp 163-165 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 2.4 (s, 3H), 6.1 (brs, 2H), 6.6 (d, *J*= 8.0 Hz, 1H), 7.1 (d, *J*= 8.0 Hz, 1H), 7.3 (t, *J*= 8.0 Hz, 1H), 9.4 (brs, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 170.3 (acetyl -C=O), 162.2 (benzamide -C=O), 150.6 (Ar C-2), 135.4 (Ar C-4), 134.3 (Ar C-6), 121.2 (Ar C-1), 120.1 (Ar C-5), 115.5 (Ar C-3) and 22.7 (-CH₃); IR (Neat, ν, cm⁻¹): 3482 (-NH₂), 3172 (-OH), 1712 (-C=O), 1605 (Ar), 2924 (-CH₃); HRMS *m/z* (EI); calcd for C₉H₉ClN₂O₃ 228.03679, found 228.03600.

2-amino-6-chloro-*N*-hydroxy-*N*-(4-methylbenzoyl) benzamide (3h): Yield 99%, mp 144-146 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 2.6 (s, 3H), 6.3(brs, 2H), 6.6 (d, *J*= 8.0 Hz, 1H), 7.0 (d, *J*= 8.4 Hz, 2H), 7.1 (d, *J*= 8.4 Hz, 2H) 7.3 (d, *J*= 8.0 Hz, 1H), 7.4 (t, *J*= 8.0 Hz, 1H), 9.4 (brs, 1H); ¹³C NMR (DMSO- *d*₆) δ (ppm): 161.5 (benzoyl -C=O), 161.4 (benzamide -C=O), 156.5 (Ar C-2), 145.2 (Ar C'-4), 134.5 (Ar C-4), 132.6 (Ar C'-1), 132.2 (Ar C'-3 and 5), 130.2 (Ar C-6), 128.5 (Ar C'-2 and 6), 119.2 (Ar C-5), 117.9 (Ar C-1), 115.3 (Ar C-3) and 26.8 (-CH₃); IR (Neat, ν, cm⁻¹): 3448 (-NH₂), 3214 (-OH), 1728 (-C=O), 1598 (Ar), 2924 (-CH₃); HRMS *m/z* (EI); calcd for C₁₅H₁₃ClN₂O₃ 304.63459, found 304.63441.

***N*-Acetyl-2-amino-5-chloro-*N*-hydroxybenzamide (3i):** Yield 99%, mp 131-133 °C, ¹H NMR (DMSO- *d*₆) δ (ppm): 2.4 (s, 3H), 6.2 (brs, 2H), 7.6 (d, *J*= 8.0 Hz, 1H), 7.3 (d, *J*= 8.0

Hz, 1H), 8.3 (s, 1H), 9.4 (brs, 1H)); ^{13}C NMR (DMSO- d_6) δ (ppm): 170.3 (acetyl -C=O), 162.8 (benzamide -C=O), 150.6 (Ar C-2), 134.8 (Ar C-4), 134.3 (Ar C-6), 121.2 (Ar C-1), 120.1 (Ar C-5), 115.6 (Ar C-3) and 22.5 (-CH₃); IR (Neat, ν , cm⁻¹): 3448 (-NH₂), 3214 (-OH), 1722 (-C=O), 1612 (Ar), 2917 (-CH₃); HRMS m/z (EI); calcd for C₉H₉ClN₂O₃ 228.03683, found 228.03610.

2-amino-5-chloro-*N*-hydroxy-*N*-(4-methylbenzoyl) benzamide (3j): Yield 99%, mp 160-162 °C, ^1H NMR (DMSO- d_6) δ (ppm): 2.6 (s, 3H), 6.2 (brs, 2H), 6.6 (d, 1H), 7.1 (d, J = 8.4 Hz, 2H), 7.3 (d, J = 8.4 Hz, 2H) 7.3 (d, J = 8.0 Hz, 1H), 7.4 (d, J = 8.0 Hz, 1H), 9.4 (brs, 1H)); ^{13}C NMR (DMSO- d_6) δ (ppm): 163.6 (benzoyl -C=O), 163.4 (benzamide -C=O), 156.5 (Ar C-2), 144.2 (Ar C'-4), 134.6 (Ar C-4), 132.6 (Ar C'-1), 132.2 (Ar C'-3 and 5), 130.2 (Ar C-6), 128.5 (Ar C'-2 and 6), 119.2 (Ar C-5), 117.9 (Ar C-1), 115.3 (Ar C-5), 114.8 (Ar C-3) and 25.7 (-CH₃); IR (Neat, ν , cm⁻¹): 3451 (-NH₂), 3216 (-OH), 1732 (-C=O), 1598 (Ar), 2922 (-CH₃); HRMS m/z (EI); calcd for C₁₅H₁₃ClN₂O₃ 304.63460, found 304.63443.

Spectral characterization of compound 3c

^1H NMR Spectrum of compound 3c

¹³C NMR Spectrum of compound 3c

IR Spectrum of compound 3c

Mass Spectrum of compound 3c