

Supplementary Information

Synthesis of coumarin-chalcone hybrids and evaluation of their antioxidant and trypanocidal properties

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Contents.

1. Structural identification of compounds 1-5

3-(3',4'-Dihydroxybenzoyl)coumarin (1): White solid; Yield: 89%; Mp 237-239 °C; ¹H NMR (300 MHz, DMSO-*d*₆) δ 10.08 (s, 1H, OH), 9.41 (s, 1H, OH), 8.26 (s, 1H, H-4), 7.81 (d, J = 7.7 Hz, 1H, H-6'), 7.76 – 7.62 (m, 1H, H-7), 7.56 – 7.20 (m, 4H, H-5, H-6, H-2', H-5'), 6.82 (d, J = 8.2 Hz, 1H, H-8); ¹³C NMR (75 MHz, DMSO-*d*₆) δ 190.0, 158.4, 154.2, 152.3, 145.8, 143.7, 133.5, 129.8, 128.9, 127.5, 125.3, 124.3, 118.6, 116.7, 116.4, 115.7; MS (EI) *m/z* (%): 283 ([M+1]⁺, 18), 282 ([M]⁺, 98), 173 (64), 147 (42), 137 (100), 109 (29); Elem. Anal. Calcd. for C₁₆H₁₀O₅ C, 68.09; H, 3.57. Found: C, 68.08; H, 3.57.

6-Methyl-3-(3',4'-dihydroxybenzoyl)coumarin (2): Pale yellow solid; Yield: 77%; Mp 250-252 °C; ¹H NMR (300 MHz, DMSO-*d*₆) δ ppm 10.11 (s, 1H, OH), 9.46 (s, 1H, OH), 8.19 (s, 1H, H-4), 7.66 – 7.44 (m, 2H, H-2', H-6'), 7.44 – 7.14 (m, 3H, H-5, H-7, H-8), 6.81 (d, J = 8.2 Hz, 1H, H-5'), 3.37 (s, 3H); ¹³C NMR (75 MHz, DMSO-*d*₆) δ 189.7, 158.2, 151.9, 151.8, 145.4, 143.2, 134.2, 134.0, 128.9, 127.5, 126.9, 123.8, 117.9, 116.0, 115.9, 115.2, 20.2; MS (EI) *m/z* (%): 297 ([M+1]⁺, 64), 296 ([M]⁺, 89), 268 (22), 267 (39), 187 (100), 137 (85), 109 (64); Elem. Anal. Calcd. for C₁₇H₁₂O₅ C, 68.92; H, 4.08. Found: C, 68.92; H, 4.02.

6-Hydroxy-3-(3',4'-dihydroxybenzoyl)coumarin (3): Bright yellow solid; Yield: 94%; Mp 303-305 °C; ¹H NMR (300 MHz, DMSO-*d*₆) δ 10.09 (s, 1H-OH), 9.85 (s, 1H, OH), 9.47 (s, 1H, OH), 8.17 (s, 1H, H-4), 7.38 – 7.18 (m, 3H, H-5, H-7, H-6'), 7.18 – 7.02 (m, 2H, H-5', H-2'), 6.81 (d, J = 8.2 Hz, 1H, H-8); ¹³C NMR (75 MHz, DMSO-*d*₆) δ 190.2, 158.7, 154.4, 152.2, 147.5, 145.8, 143.5, 128.0, 127.6, 124.1, 121.5, 119.1, 117.6, 116.4, 115.7, 113.6, 104.7. MS (EI) *m/z* (%): 299 ([M+1]⁺, 11), 298 ([M]⁺, 43), 189 (20), 163 (62), 137 (100), 109 (25); Elem. Anal. Calcd. for C₁₆H₁₀O₆ C, 64.43; H, 3.38. Found: C, 64.45; H, 3.38.

5,7-Dihydroxy-3-(3',4'-dihydroxybenzoyl)coumarin (4): Pale yellow solid; Yield 77%; Mp 285-287 °C; ¹H NMR (300 MHz, DMSO-*d*₆) δ 11.36 (s, 1H, OH) 11.13 (s, 1H, OH), 11.05 (s, 1H, OH), 10.79 (s, 1H, OH), 8.07 (s, 1H, H-4), 7.23 (d, J = 2.1 Hz, 1H, H-2'), 7.17 (dd, J = 8.2, 2.1 Hz, 1H, H-6'), 6.80 (d, J = 8.2 Hz, 1H, H-5'), 6.26 (dd, J = 9.6, 1.9 Hz, 2H, H-6, H-8); ¹³C NMR (75 MHz, DMSO-*d*₆) δ 190.6, 164.4, 159.0, 157.7, 151.7, 151.5, 145.6, 140.8, 128.8, 123.6, 119.4, 116.6, 115.5, 101.7, 98.9, 94.6; MS (EI) *m/z* (%): 315 ([M+1]⁺, 12), 314 ([M]⁺, 72), 205 (62), 137 (100), 109 (24); Elem. Anal. Calcd. for C₁₆H₁₀O₇: C, 61.15; H, 3.21. Found: C, 61.14; H, 3.23.

6-Bromo-3-(3',4'-dihydroxybenzoyl)-8-hydroxycoumarin (5): Pale yellow solid; Yield 69%; Mp 300-302 °C; ¹H NMR (300 MHz, DMSO-*d*₆) δ 10.89 (s, 1H, OH), 10.14 (s, 1H, OH), 9.48 (s, 1H, OH), 8.14 (s, 1H, H-4), 7.45 (d, J = 2.2 Hz, 1H, H-6'), 7.38 – 7.12 (m, 3H, H-5, H-7, H-2'), 6.81 (dd, J = 8.1, 3.0 Hz, 1H, H-5'); ¹³C NMR (75 MHz, DMSO-*d*₆) δ 189.3, 157.4, 152.0, 145.8, 145.5, 142.3, 141.9, 128.0, 127.4, 124.0, 121.1, 121.0, 120.5, 115.9, 115.8, 115.2, 40.3, 40.0, 39.7, 39.5, 39.2, 38.9, 38.6; MS (EI) *m/z* (%): 378 ([M+2]⁺, 100), 376 ([M]⁺, 99), 269 (30), 267 (24), 137 (80), 109 (74); Elem. Anal. Calcd. for C₁₆H₉BrO₆: C, 61.15; H, 3.21. Found: C, 61.14; H, 3.23.