Supplementary Data

**Comparative inner morphological and chemical studies on *Reynoutria* species in Korea**

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1H and 13C NMR assign data of isolated compounds

Resveratrolsoside (1): Pale white powder; C_{20}H_{22}O_{8}; FAB-MS (m/z): 390.2 [M+H]+; 1H-NMR (DMSO-d_6, 500MHz) δ: 9.22 (2H, s, OH-3,5), 7.51 (1H, d, J = 8.8 Hz, H-2,’6’), 7.02 (2H, d, J = 8.8 Hz, H-3,’5’), 7.00 (1H, d, J = 16.8 Hz, H-8), 6.93 (1H, d, J = 16.8 Hz, H-7), 6.42 (2H, d, J = 2.0 Hz, H-2, 6), 6.14 (1H, t, J = 2.0 Hz, H-4), 4.89 (1H, d, J = 7.4 Hz, H-1’), 3.70 (1H, m, H-a’), 3.48 (1H, m, H-b’), 3.33 (1H, m, H-3’), 3.31 (1H, m, H-5’), 3.26 (1H, m, H-2’), 3.13 (1H, m, H-4’); 13C-NMR (DMSO-d_6, 125 MHz) δ: 159.0 (C-3,5), 157.5 (C-4’), 131.3 (C-1’), 131.3 (C-3,’5’), 127.8 (C-8), 127.6 (C-7), 116.9 (C-2,’6’), 104.9 (C-2, 6), 102.5 (C-4), 100.8 (C-1’), 77.5 (C-5’), 77.1 (C-5’), 73.7 (C-2’), 70.2 (C-4’), 61.2 (C-6’).

Polydatin (2): White powder; C_{20}H_{22}O_{8}; FAB-MS (m/z): 390.1 [M]+; 1H-NMR (500 MHz, DMSO-d_6): δ: 7.40 (2H, d, J = 8.6 Hz, H-2,’6’), 7.03 (1H, d, J = 16.3 Hz, H-b), 6.87 (1H, d, J = 16.3 Hz, H-a), 6.76 (2H, d, J = 8.6 Hz, H-3,’5’), 6.74 (1H, br t, H-2), 6.57 (1H, br t, H-6), 6.34 (1H, t, J = 2.1 Hz, H-4) 4.81 (1H, d, J = 7.6 Hz, glc H-1’), 3.18 – 3.49 (glc H-2’ – 6’); 13C-NMR (125 MHz, DMSO-d_6) δ: 159.4 (C-3), 158.8 (C-5), 157.8 (C-4’), 139.8 (C-1), 129.0 (C-1’), 128.5 (C-b), 128.4 (C-2,’6’), 125.7 (C-a), 116.0 (C-3,’5’), 107.7 (C-6), 105.2 (C-4), 103.2 (C-2), 102.2 (C-1’), 77.6 (C-5’), 77.2 (C-3’), 73.8 (C-2’), 70.2 (C-4’), 61.2 (C-6’).

Emodin-1-O-β-D-glucoside (3): Pale red powder; FAB-MS (m/z): 433.2 [M+H]+; 1H-NMR (DMSO-d_6, 500 MHz) δ: 13.24 (1H, s, OH), 7.69 (1H, s, H-4), 7.53 (1H, s, H-2), 7.08 (1H, d, J = 2.4 Hz, H-5), 6.59 (1H, d, J = 2.4 Hz, H-7), 5.13 (1H, d, J = 7.6 Hz, H-1’) 2.50 (3H, s, CH₃), 3.73 (1H, m, H-6’a), 3.51 (1H, m, H-6’b), 3.47 (1H, m, H-5’), 3.43 (1H, m, H-2’), 3.34 (1H, m, H-3’), 3.24 (1H, m, H-4’); 13C-NMR (DMSO-d_6, 125 MHz) δ: 186.6 (C-9), 182.7 (C-10), 165.0 (C-8), 165.0 (C-6), 158.8 (C-1’), 147.1 (C-3), 134.8 (C-10a), 134.6 (C-4’a), 128.7 (C-2), 122.0 (C-4), 118.9 (C-9a), 110.6 (C-8a), 108.7 (C-7), 107.7 (C-5), 101.2 (C-1’), 77.8 (C-5’), 77.0 (C-3’), 73.8 (C-2’), 70.1 (C-4’), 61.1 (C-6’), 22.2 (CH₃).

trans-Resveratrol (4): Pale yellow powder; C_{13}H_{12}O; EI-MS (m/z): 228 [M]+; 1H-NMR (500 MHz, DMSO-d_6) δ: 9.54 (4 ‘-OH), 9.18 (3, 5-OH) 7.39 (2H, d, J = 8.6 Hz, H-2,’6’), 6.93 (1H, d, J = 16.3 Hz, H-b), 6.81 (1H, d, J = 16.3 Hz, H-a), 6.75 (2H, d, J = 8.6 Hz, H-3,’5’), 6.38 (2H, d, J = 2.0 Hz, H-2, 6), 6.12 (1H, t, J = 2.0 Hz, H-4); 13C-NMR (125 MHz, DMSO-d_6) δ: 159.0 (C-3, 5), 157.7 (C-4’, 139.7 (C-1), 128.5 (C-1’), 128.3 (C-2,’6’, b), 126.1 (C-a), 116.0 (C-3,’5’), 104.7 (C-2, 6), 102.2 (C-4)

6-methoxy-3-methyl-1,6,8-trihydroxy-2-naphthonic acid-8-O-β-D-glucoside (5): Pale yellow powder; C_{19}H_{16}O_{9}; FAB-MS (m/z): 410 [M]+; 1H-NMR (CD_{3}OD, 500 MHz) δ: 7.05 (1H, s, H-4), 7.03 (1H, d, J = 2.3 Hz, H-7), 6.84 (1H, d, J = 2.3 Hz, H-5), 5.12 (1H, d, J = 7.7 Hz, H-1’), 3.89 (3H, s, OCH₃), 2.31 (3H, s, CH₃), 3.97 (1H, m, H-6’a), 3.77 (1H, m, H-6’b), 3.59 (1H, m, H-2’), 3.56 (1H, m, H-5’), 3.55 (1H, m, H-3’), 3.46 (1H, m, H-4’); 13C-NMR (CD_{3}OD, 125 MHz) δ: 171.0 (C-11), 159.1 (C-6), 155.8 (C-8), 152.4 (C-1), 137.8 (C-10), 134.1 (C-3), 122.6 (C-2), 118.9 (C-4), 108.9 (C-9), 103.0 (C-7), 102.9 (C-1’), 101.1 (C-5), 74.4 (C-3’), 76.7 (C-5’), 73.5 (C-2’), 69.9 (C-4’), 61.0 (C-6’), 54.6 (OCH₃), 18.8 (CH₃).

Emodin-8-O-β-D-glucoside (6): Yellowish powder; C_{13}H_{12}O; FAB-MS (m/z): 433.2 [M+H]+; 1H-NMR (500 MHz, DMSO-d_6) δ: 13.2 (1H, br s, OH-1), 7.46 (1H, br s, H-4), 7.27 (1H, d, J = 2.4 Hz, H-5), 7.16 (1H, br s, H-2), 6.98 (1H, d, J = 2.4 Hz, H-7), 5.05 (1H, d, J = 7.6 Hz, H-1’), 3.72 (1H, m, H-6’a), 3.52 (1H, m, H-6’b), 3.43 (1H, m, H-2’), 3.39 (1H, m, H-5’), 3.33 (1H, m, H-3’), 3.24 (1H, m, H-4’) 2.41 (3H, s, 3-CH₃); 13C-NMR (125
Physcion-8-O-β-D-glucoside (7): Yellowish powder; C_{22}H_{22}O_{10}; ESI-MS (m/z): 445.1 [M–H]; ¹H-NMR (500 MHz, DMSO-d_{6}) δ: 13.10 (1-OH), 7.50 (1H, br s, H-4), 7.37 (1H, br d, H-5), 7.19 (2H, br d, H-2,7), 5.18 (1H, d, J = 7.7 Hz, H-1'), 3.51 ~ 3.19 (glc-H 2' ~ 6'), 3.97 (3H, s, 6-OCH_{3}), 2.41 (3H, s, 3-CH_{3}); ¹³C-NMR (125 MHz, DMSO-d_{6}) δ: 187.0 (C-9), 182.4 (C-10), 165.2 (C-6), 162.2 (C-8), 161.2 (C-1), 147.6 (C-3), 136.8 (C-10a), 132.6 (C-4a), 124.6 (C-2), 119.8 (C-4), 115.0 (C-8a), 114.9 (C-9a), 108.7 (C-7), 107.0 (C-5), 101.1 (C-1'), 77.9 (C-5'), 77.1 (C-3'), 73.7 (C-2'), 70.3 (C-4'), 61.2 (6-OCH_{3}), 21.9 (3-CH_{3}).

2-Methoxy-6-acetyl-7-methyljuglone (8): Red needles; C_{14}H_{12}O_{5}; EI-MS (m/z): 260 [M]^+; ¹H-NMR (CDCl_{3}, 300 MHz) δ: 12.53 (1H, s, 5-OH), 7.54 (1H, s, H-8), 6.13 (1H, s, H-3), 3.95 (3H, s, 2-OCH_{3}), 2.61 (3H, s, 6-COCH_{3}), 2.37 (3H, s, 7-CH_{3}); ¹³C-NMR (CDCl_{3}, 125 MHz) δ: 202.9 (COCH_{3}), 190.3 (C-4), 179.1 (C-1), 161.0 (C-2), 158.1 (C-5), 143.5 (C-7), 136.7 (C-9), 130.5 (C-6), 121.7 (C-8), 112.4 (C-10), 109.7 (C-3), 56.8 (2-OCH_{3}), 31.9 (6-COCH_{3}), 20.0 (7-CH_{3}).

Emodin (9): Orange needles; C_{15}H_{10}O_{5}; EI-MS (m/z): 270 [M]^+; ¹H-NMR (CDCl_{3}, 300 MHz, DMSO-d_{6}) δ: 12.07 (1H, s, 1-OH), 12.01 (1H, s, 8-OH), 7.46 (1H, br d, H-4), 7.15 (1H, br d, H-2), 6.57 (1H, d, J = 2.4 Hz, H-7), 2.47 (3H, s, 3-CH_{3}); ¹³C-NMR (CDCl_{3}, 125 MHz) δ: 190.6 (C-9), 181.8 (C-10), 166.3 (C-8), 164.9 (C-1), 161.9 (C-6), 148.7 (C-3), 135.5 (C-10a), 133.3 (C-4a), 124.6 (C-4), 120.9 (C-2), 113.8 (C-9a), 109.4 (C-5), 109.3 (C-8a), 108.4 (C-7), 22.2 (3-CH_{3}).

Physcion (10): Yellowish powder; C_{16}H_{12}O_{5}; EI-MS (m/z): 284 [M]^+; ¹H-NMR (300 MHz, CDCl_{3}) δ: 12.34 (1H, s, 1-OH), 12.14 (1H, s, 8-OH), 7.64 (1H, d, J = 1.2 Hz, H-4), 7.38 (1H, d, J = 2.6 Hz, H-5), 7.10 (1H, d, J = 1.2 Hz, H-2), 6.70 (1H, d, J = 2.6 Hz, H-7), 3.96 (3H, s, 6-OCH_{3}), 2.47 (3H, s, 3-CH_{3}); ¹³C-NMR (125 MHz, CDCl_{3}) δ: 190.8 (C-9), 182.1 (C-10), 166.6 (C-8), 165.2 (C-1), 162.5 (C-6), 148.5 (C-3), 135.3 (C-10a), 133.2 (C-4a), 124.5 (C-4), 121.3 (C-2), 113.7 (C-9a), 110.3 (C-8a), 108.2 (C-5), 106.8 (C-7), 56.1 (6-OCH_{3}), 22.2 (3-CH_{3}).