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CHEMICAL CONSTITUENTS FROM THE ROOT BARK OF *Paeonia delavayi*

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The genus *Paeonia* is the only member of the family Paeoniaceae. The plants in this genus are rich in monoterpene glycosides, which have been established as the main biologically active constituents [1–3]. The root bark of *Paeonia delavayi* Franch., one of the main sources of Chinese traditional medicine "mudanpi", is an important herb known for its analgesic, sedative, and antiinflammatory properties. It is also used as a remedy for female diseases in traditional oriental medicine [4–6]. Previous studies on this plant led to the isolation of monoterpene glycosides [7, 8]. In continuation of our investigation into the chemical constituents of this plant, we isolated nine compounds **1–9**.

The root bark of *P. delavayi* was collected from Lijiang County, Yunnan Province, the People's Republic of China and was identified by Prof. Zheng-Wei Lu of Kunming Institute of Botany, Chinese Academy of Science. A voucher specimen has been deposited in the Herbarium of Kunming Institute of Botany.

The air-dried powdered root bark of *P. delavayi* (5 kg) was extracted with 95% EtOH three times at room temperature. The EtOH extract was concentrated in vacuum to give a residue. The residue was suspended in water and successively treated with EtOAc. The EtOAc extract (53 g) was subjected to chromatography on eluting with $CHCl_3$–MeOH gradient (1:0–0:1) to give eight fractions (I–VIII). Fraction I was repeatedly subjected to silica gel column chromatography with petroleum ether–EtOAc (9:1) to give compounds **7** (11 mg) and **9** (325 mg). Fraction II was subjected to silica gel column chromatography with petroleum ether–acetone (9:1) to give compounds **1** (27 mg) and **3** (18 mg). Fraction III was subjected to silica gel column chromatography with chloroform–acetone gradient (9:1, 4:1) to give compounds **2** (25 mg) and **6** (21 mg). Repeated chromatography of fraction V on silica gel with $CHCl_3$–MeOH gradient (95:5, 9:1, 85:15) and RP-18 silica gel with MeOH–H_2O gradient (3:7, 4:6, 1:1) afforded compounds **4** (12 mg) and **5** (35 mg). Fraction VI was submitted to silica gel column chromatography with $CHCl_3$–MeOH (4:1) to afford compound **8** (68 mg). The compounds identified as oleanolic acid (**1**) [9, 10], 3*β*,23-dihydroxy-30-norolean-12, 20(29)-dien-28-oic acid (**2**) [9, 10], akebonic acid (**3**) [11], arjunglucoside II (**4**) [12], 3-*O*-*β*-D-glucopyranoside *β*-sytosterine (**5**) [13, 14], syringic acid (**6**) [15], *p*-hydroxybenzoic acid (**7**) [16], gallic acid (**8**) [17], and benzoic acid (**9**) [18].

Oleanolic Acid (1). $C_{30}H_{48}O_3$, mp 202–204°C, colorless crystals (acetone). IR (KBr, ν, cm^{-1}): 3440, 2938, 2870, 1695, 1461, 1385, 1363, 1271, 1183, 1030, 996).

3*β*,23-Dihydroxy-30-norolean-12,20(29)-dien-28-oic Acid (2). $C_{29}H_{44}O_4$, mp 241–243°C, colorless crystals (acetone). IR (KBr, ν, cm^{-1}): 3438, 2940, 1688, 1465, 1384, 1298, 1215, 1105, 885.

Akebonic Acid (3). $C_{29}H_{44}O_3$, mp 152–154°C, colorless crystals (acetone). IR (KBr, ν, cm^{-1}): 3424, 2935, 1691, 1653, 1463, 1384, 1297, 1212, 1102, 996, 886.

Arjunglucoside II (4). $C_{36}H_{58}O_{10}$, white powder. UV (MeOH, λ_{max}, nm): 207.0 (log ε 3.71). IR (KBr, ν, cm^{-1}): 3414, 2941, 1731, 1556, 1391, 1259, 1177, 1072, 893, 472.

The structures of these compounds were confirmed using a combination of spectral analyses, including NMR and mass spectrometry and by comparison with reported spectroscopic data in the literature. Compounds **1–8** were isolated from *P. delavayi* Franch. for the first time.

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