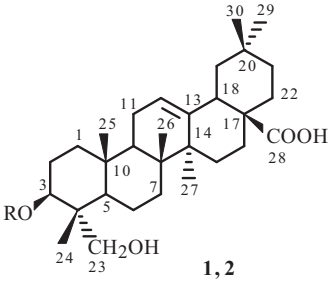
TRITERPENE SAPONINS AND OTHER CONSTITUENTS FROM *Fatsia japonica*

Hak-Ju Lee,[1] Hyun-Jung Lee,[1] Kyoungtae Lee,[2] Ha-Young Kang,[1] Dongho Lee,[3] and M. Khan[1,4*]

UDC 547.918

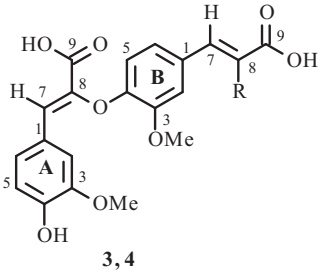
Fatsia japonica Decne. (Araliaceae) is used in eastern folk medicine [1]. Various class of compounds such as triterpene saponins [2–5], squalene, fatty acids and their methyl esters [6], anthocynanins [7], and sterols [6] and their glycosides [8] have been isolated from this plant.

Shade air-dried and powdered roots (16.3 kg) and mature fruits (425.0 g) of *F. japonica* were extracted with 95% ethanol. Dried EtOH extracts of roots (752.2 g) and fruits (58.9 g) were dissolved in water and fractionated with *n*-hexane, dichloromethane, and ethyl acetate. The dichloromethane- soluble fraction (139.0 g) of *F. japonica* root produced some precipitate, which was filtered to give two fractions, FRD-1 (precipitate) and FRD-2 (filtrate). FRD-1 on a silica gel column ($CHCl_3$–MeOH 7:1) gave compound **1** (415 mg). On the other hand, fraction FRD-2 on a Sephadex LH-20 column (MeOH) gave four fractions, FRD-2-1 to FRD-2-4. Fraction FRD-2-2 (20 g) on a silica gel column ($CHCl_3$–MeOH 20:1) gave 15 fractions, FRD-2-2-1 to FRD-2-2-15. Separate column chromatography of FRD-2-2-6, FRD-2-2-9, and FRD-2-2-10 on Sephadex LH-20 columns using acetone as an eluent yielded compounds **4** (90 mg), **3** (350 mg), and **7** (50 mg), respectively. The EtOAc-soluble fraction of *F. japonica* fruit (6 g) was chromatographed on a Sephadex LH-20 column using MeOH as eluent to give five fractions, FFE-I to FFE-V. Fraction FFE-I was further chromatographed on a silica gel column using $CHCl_3$–MeOH (7:1, v/v) as eluent to yield nine fractions, FFE-I to FFE-IX. Separate preparative TLC of fractions FFE-I-II and FFE-I-VIII in $CHCl_3$–MeOH (5:1, v/v) and fractions FFE-I-IV in a solvent system of $CHCl_3$–MeOH–H_2O (15:6:0.6, v/v/v) gave compounds **1** (40 mg), **5** (20 mg), and **2** (190 mg), respectively. The shade air-dried and powdered wood (4.7 kg) of *F. japonica* was extracted with acetone. The dried acetone extract of wood was dissolved in water and fractionated with *n*-hexane, dichloromethane, and ethyl acetate. The EtOAc-soluble fraction of *F. japonica* wood (2.12 g) on a Sephadex column (MeOH–EtOH, 1:1, v/v) gave four fractions. Fraction 3 (114.5 mg) was further purified on a silica column using benzene–MeOH (5:1, v/v) as eluent to give compound **6** (64.2 mg).

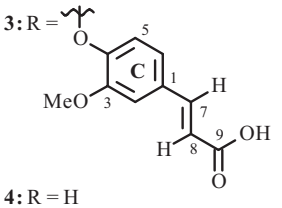


1, 2

1: R = α-L-Ara*p*
2: R = β-D-Glc*p*

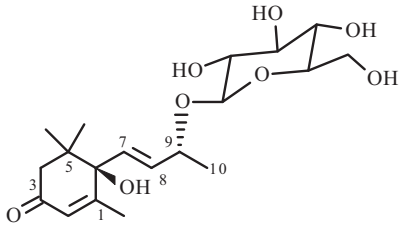


3, 4



3: R =

4: R = H



5

1) Division of Wood Chemistry & Microbiology, Korea Forest Research Institute, Seoul 130-712, Korea, fax: +82 2 961 2747; 2) College of Pharmacy, Chung-Ang University, 221 Huekseok-Dong Dongjak-gu, Seoul 156-756, Korea; 3) Division of Biotechnology, College of Life Sciences and Biotechnology, Korea University, Seoul 136-701, Korea; 4) Department of Chemistry, College of Science, King Saud University, P. O. Box 2455, Riyadh 11451, Saudi Arabia, e-mail: mdk_cimap@yahoo.com. Published in Khimiya Prirodnykh Soedinenii, No. 3, pp. 419–420, May–June, 2010. Original article submitted November 20, 2008.