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TWO FLAVONOID GLYCOSIDES FROM *Lycium arabicum*

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Lycium arabicum Schweinf. ex Boiss. is a plant belonging to the Solanaceae family [1] distributed in various parts of the world, especially in South America. In folk medicine of North Africa the decoction of leaves of the species is used for falling, while the juice of leaves is used as an eye lotion for ophthalmic diseases. Its fruits possess properties more or less similar to the leaves [2].

Only one previous phytochemical study on *L. arabicum* has revealed the presence of the coumarin scopoletin and the essential oils in the leaves and stems [3]. However, previous studies on the species *L. chinense* Mill. have led to the identification of alkaloids [3, 4], terpenoids [5], coumarins [6], and essential oils [7, 8], but to our knowledge there has been no report on the flavonoid pattern of the species *L. arabicum*.

The aerial parts of *L. arabicum* were collected during the flowering period in October 2004 from Constantine in the east of Algeria. A voucher specimen (No. CCS13/05/03) has been deposited at the Herbarium of the Biology Department, University Mentouri-Constantine.

Dried leaves (670 g) of *L. arabicum* were macerated for 24 h at room temperature with aqueous methanol (70%) three times, and the filtrates were combined and evaporated to dryness. The residue was dissolved in hot water (500 mL) and kept in the cold for one night. After filtration, the aqueous solution was extracted successively with chloroform, ethyl acetate, and *n*-butanol, which gave, after removal of the solvents under reduced pressure, 8.1; 1.26, and 8.9 g of extract, respectively.

The *n*-butanol extract (8 g) was chromatographed on a polyamide SC6 column using as eluent H_2O–MeOH to give 19 fractions (F1–F19). Fractions F3 and F4 were separated by preparative TLC on silica gel GF254 using $CHCl_3$–MeOH–H_2O, (8:2:0.1) as eluent to give compounds **1** (11 mg) and **2** (17 mg). Purification of the compounds was carried out by using a Sephadex LH-20 column and MeOH–H_2O (7:3) as eluent.

The structures of the compounds were established by UV, NMR, and MS analysis and compared with those already published [9, 10]. The identity of sugar moieties was confirmed by acid hydrolysis with 2 M HCl at 100°C for 1 h and co-chromatography with authentic samples on silica gel TLC impregnated with NaH_2PO_4 (0.2 M) using Me_2CO–H_2O (9:1) as eluent. The detection of sugars was carried out by spraying the plate with aniline malonate before heating it at 100°C, which showed that the two compounds are glucose and rhamnose.

To the best of our knowledge, these compounds are isolated for the first time from the species *Lycium arabicum* Schweinf. ex Boiss.

Compound 1, $C_{27}H_{30}O_{15}$, yellow needles. UV (MeOH, λ_{max}, nm): 267, 300 sh, 348; + NaOH: 275, 322, 402; + $AlCl_3$: 269, 304, 348, 395 sh; + $AlCl_3$/HCl: 273, 304, 348, 392; + NaOAc: 274, 304, 374; + NaOAc/H_3BO_3: 267, 329 sh, 350. ^{1}H NMR (250 MHz, CD_3OD, δ, ppm, J/Hz): 8.07 (2H, dd, J = 9, H-2′, 6′), 6.91 (2H, d, J = 9, H-3′, H-5′), 6.42 (1H, d, J = 2, H-8), 6.22 (1H, d, J = 2, H-6), 5.24 (1H, d, J = 7.5, Glc H-1″), 4.51 (1H, d, J = 2, Rha H-1‴), 3.2–4.25 (10H, sugar protons), 1.12 (3H, d, J = 6, Rha H-6‴). Compound **1** was identified as kaempferol 3-*O*-rhamnosyl(1→6)glucoside.

Compound 2, $C_{27}H_{30}O_{16}$, yellow needles. UV (MeOH, λ_{max}, nm): 256, 264 sh, 300 sh, 359; + NaOH: 272, 327, 409; + $AlCl_3$: 267, 300 sh, 403; + $AlCl_3$/HCl: 267, 299, 361, 410 sh; + NaOAc: 273, 325 sh, 381; + NaOAc/H_3BO_3: 261, 300 sh, 378. Compound **2** was characterized as quercetin 3-*O*-rhamnosyl(1→6)glucoside (rutin).

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