Flavonoid compounds of *Lamyropsis cynaroides*

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1. Subject and source

*Lamyropsis* (Charadze) Dittrich (Asteraceae) was erected to generic rank and clearly defined by Dittrich (1971). It is a member of tribe *Cardueae* Cass. subtribe *Carduinae* Dumort. and most closely related to the genera *Cirsium* and *Ptilostemon*. It currently comprises a total of 8 perennial species distributed from S Europe eastwards to Central Asia (Bremer, 1994). The morphological links of the genus with other genera of *Carduinae* and the isolated occurrence of its representatives were considered as evidence for a rather primitive position in the subtribe (Greuter and Dittrich, 1973). *Lamyropsis cynaroides* (Lam.) Dittrich is a spiny herb known from the South part of Greek mainland, the Aegean Islands and S. Anatolia. The material of the species (aerial parts) used in this study was collected from the region of Tripolis (Peloponnisos) on May 1993. A voucher specimen has been kept in the Herbarium of Patras University (UPA) under the number Skaltsa and Lazari 102.

2. Previous work

No previous chemical work has been recorded on the genus *Lamyropsis*. 

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3. Present study

The air-dried aerial parts of the plant (0.65 kg) were finely ground and extracted at room temperature with cyclohexane–Et<sub>2</sub>O–MeOH (1 : 1 : 1). The extract was washed with brine, the aqueous layer re-extracted with EtOAc, and the organic layer dried over Na<sub>2</sub>SO<sub>4</sub> and concentrated under reduced pressure to obtain a viscous mass. The residue (19 g) were dissolved in MeOH and cooled at −20°C; the soluble compounds were subjected to vacuum liquid chromatography, performed over Silica gel (Merck, Art.7736 — fractions of 400 ml) using cyclohexane–EtOAc–Me<sub>2</sub>CO–MeOH mixtures of increasing polarity as eluents to give several fractions. Repeated CC of the fraction eluted with MeOH over silica gel using CH<sub>2</sub>Cl<sub>2</sub>–MeOH mixtures, followed by further purification on HPLC (MeOH–H<sub>2</sub>O 1 : 1) and preparative TLC (carried out on Merck, Cellulose plates; Art. 5716 with 30% aqueous solution of acetic acid) yielded apigenin, quercetin, naringenin, orientin, chrysoeriol-7-O-β-D-glucopyranoside, apigenin-7-O-β-D-glucopyranoside, luteolin-7-O-β-D-glucopyranoside, quercetin-3-O-β-D-glucopyranoside, and rutin.

The isolated compounds were identified by spectroscopic methods (UV, 1H-NMR). 1H-NMR spectra were taken on a Bruker-AC 200 spectrometer in DMSO-d<sub>6</sub> and CDCl<sub>3</sub> solutions and chemical shifts are recorded in δ-values. UV spectra were registered on a Shimadzu UV-160A spectrophotometer, according to standard procedures (Mabry et al., 1970).

4. Chemotaxonomic significance

The extraction procedure is the appropriate one for the isolation of sesquiterpene lactones. In contrast with previously studied species of the same tribe (Garcia et al., 1996; Lazari et al., 1998; Skaltsa et al., 1999; Wagner, 1977; Zdero and Bohlmann, 1990), *Lamyropsis cynaroides* found to be deficient of these substances.

The presence of naringenin is significant, since according to Scott (1990) flavanones within tribe *Cardueae* were restricted to the genera *Carthamus*, *Centaurea* and *Silybum* and have more recently been found in *Onopordum* (Lazari et al., 1997). However, detection of a flavanone in *L. cynaroides* is expected as similar compounds have been found in two genera of the *Carduinae*, where *Lamyropsis* belongs. According to the general rule, flavonoids in *Cardueae* occur predominantly as flavones and flavonols (Scott, 1990).

References


