

FLAVONOIDS OF THE AERIAL PART OF *Centaurea pullata*

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This report is a continuation of our research on the chemical constituents of the various *Centaurea* species (Asteraceae) [1]. The main secondary metabolites of *Centaurea* species are sesquiterpene lactones and flavonoids [2, 3].

Previously isolated constituents were 11,13-dehydromelitensin, 11 β ,13-dihydrocnicin, and 11 β ,13-dihydro-19-desoxycnicin [4, 5].

The present study is a complete investigation of the flavonoids of *C. pullata* L.

Aerial parts were collected during the flowering period (May–June 2000) from the area of Constantine in the east of Algeria. The plant was identified by Dr. M. Kaabeche of the Biology Department of the University of Setif on the basis of Quezel and Santa (1963) [6]. A voucher specimen of the plant material remains in the herbarium at the University of Constantine (Botanical Department).

Aerial parts (575 g) were extracted with methanol (3 times) at room temperature. The MeOH extract was evaporated in vacuum. The condensed solution was diluted with 251 mL of water. The solution was treated with Pb(OAc)₄ and filtered. The residue was successively treated with chloroform and ethylacetate. The solvents were removed to afford chloroform (6.0 g) and ethylacetate (3.0 g) fractions.

The crude syrup (4.0 g) was chromatographed on silica gel (200–400 mesh) using chloroform and chloroform containing increasing proportions of the ethylacetate as eluents, and repeated CC of the fraction eluted with petroleum ether–ethylacetate (1:1) afforded **1** (3.43 mg) and **2** (3.41 mg). These compounds were identified using UV, mass, and PMR spectra.

Jaceosidin (1) (5,7,4'-trihydroxy-3',6-dimethoxyflavone), mp 223–224°C, UV spectrum (MeOH, $\lambda_{\max}$, nm): 270, 340; +NaOH: 340, 410; +AlCl₃: 280, 370; +AlCl₃/HCl: 280, 370; NaOAc: 276, 359.

PMR (300 MHz, CDCl₃, δ , ppm, J/Hz): 7.39 (1H, dd, J₁ = 2, J₂ = 8, H-6'), 7.29 (1H, d, J = 2, H-2'), 6.92 (1H, d, J = 8, H-5'), 6.49 (1H, s, H-8), 6.48 (1H, s, H-3), 3.92 (6H, s, OCH₃). Mass spectrum (CID/NH₃) m/z: 331 [M+H]⁺, C₁₇H₁₄O₇ [7, 8].

Cirsilineol (2) (5,4'-dihydroxy-3',6,7-trimethoxyflavone), oil, UV spectrum (MeOH, $\lambda_{\max}$, nm): 280, 340; +NaOH: 280, 370; +AlCl₃: 280, 370; +AlCl₃/HCl: 280, 360; NaOAc: 277, 356.

PMR (300 MHz, CDCl₃, δ , ppm, J/Hz): 7.51 (1H, dd, J₁ = 2, J₂ = 8, H-6'), 7.33 (1H, d, J = 2, H-2'), 6.98 (1H, d, J = 8, H-5'), 6.57 (1H, s, H-8), 6.56 (1H, s, H-3), 4.09 (3H, s, OCH₃), 3.99 (6H, s, OCH₃). Mass spectrum (CID/NH₃) m/z: 345 [M+H]⁺, C₁₈H₁₆O₇ [9, 10].

Thus, these compounds are isolated from *C. pullata* for the first time.

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