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FLAVONOIDS OF *Artemisia glabella*

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Artemisia glabella Kar. et Kir. is endemic to Kazakhstan. It provides a source for the new domestic antitumor preparation arglabin [1]. The test plot at the Institute of Phytochemistry plans to produce 15-17 tons of raw material each year [2, 3]. We studied the flavonoid composition of this plant.

Sesquiterpene lactones were isolated by steam distillation from *A. glabella* after extraction of the essential oil. Then the material was exhaustively extracted with 96% ethanol to extract the flavonoids. The concentrated alcohol extract was treated with water and successively extracted with $CHCl_3$ and ethylacetate. Column chromatography on silica gel (KSK) using elution by benzene and benzene—ethylacetate (1:10 and 10:1 by vol.) isolated compounds **1-3** from the ethylacetate extract and **4** from the $CHCl_3$ extract.

Compounds **1-4** were identified by their physicochemical constants and spectral data (UV, ^1H NMR, mass) and by comparison with authentic samples. Comparison of the data with the literature [4-7] enabled the isolated compounds to be identified: cirsilineol (5,4′-dihydroxy-6,7,3′-trimethoxyflavone) (**1**), pictolinarigenin (5,7-dihydroxy-6,4′-dimethoxyflavone) (**2**), casticin (5,3′-dihydroxy-3,6,7,4′-tetramethoxyflavone) (**3**), bonanzin (5,7-dihydroxy-3,6,3′,4′-tetramethoxyflavone) (**4**). The content of **1-4** per dry weight is 0.012, 0.0078, 0.0027, and 0.0038%, respectively.

5,4′-Dihydroxy-6,7,3′-trimethoxyflavone (cirsilineol) (1). $C_{18}H_{16}O_7$, mp 203-204°C, M^+ 344. ^1H NMR (500 MHz, DMSO-d_6, δ, ppm): 7.60 (1H, dd, J_1 = 2 Hz, J_2 = 2 Hz, H-6′), 7.57 (1H, d, J = 2 Hz, H-2′), 6.93 (1H, d, J = 8.5 Hz, H-5′), 6.91 (1H, s, H-3), 6.92 (1H, s, H-8), 3.73-3.91 (3H, s, OCH_3), 13.00 (1H, s, 5-OH).

5,7-Dihydroxy-6,4′-dimethoxyflavone (pictolinarigenin) (2). $C_{17}H_{14}O_6$, mp 206-208°C, M^+ 314. UV spectrum (λ_{max}, nm, CH_3OH): 275, 330; $NaOCH_3$: 275, 295 sh; $AlCl_3$: 261, 277 sh, 302, 355; $AlCl_3$/HCl: 260, 280 sh, 300, 349; NaOAc: 257, 296 sh, 308 sh, 365; NaOAc/H_3BO_3: 276, 333.

5,3′-Dihydroxy-3,6,7,4′-tetramethoxyflavone (casticin) (3). $C_{19}H_{18}O_8$, mp 169-170°C, M^+ 374 (100). ^1H NMR (300 MHz, $CDCl_3$, δ, ppm): 6.48 (1H, s, H-8), 7.69 (1H, d, J = 2.0 Hz, H-2′), 7.03 (1H, d, J = 8.5 Hz, H-5′), 7.65 (1H, dd, J = 8.5, 2.0 Hz, H-6′), 3.85, 3.91, 3.95, 3.97 (12H, singlets), 12.60 (1H, br. s, OH). ^1H NMR of the acetate (300 MHz, $CDCl_3$, δ, ppm): 6.49 (1H, s, H-8), 7.75 (1H, d, J = 8.5 Hz, H-2′), 7.16 (1H, d, J = 8.5 Hz, H-5′), 7.66 (1H, dd, J = 8.5, 2.0 Hz, H-6′), 3.87, 3.91, 3.95 (12H, singlets), 2.35 (3H, s, OAc), 12.49 (1H, br. s, OH).

5,7-Dihydroxy-3,6,3′,4′-tetramethoxyflavone (bonanzin) (4). $C_{19}H_{18}O_8$, mp 157-158°C, M^+ 374. UV spectrum (λ_{max}, nm, CH_3OH): 346, 272, 254; $NaOCH_3$: 374, 310, 294, 273; $AlCl_3$: 371, 297 sh, 279, 262; $AlCl_3$/HCl: 402 sh, 365, 281, 261; NaOAc: 375, 310, 274; NaOAc/H_3BO_3: 348, 271, 254 sh.

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