COUMARINS OF THE ROOTS OF *Seseli grandivittatum*

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UDC 547.587.53

Continuing a study of the coumarin composition of representatives of the family Umbelliferae growing in Georgia, we have investigated the *Seseli grandivittatum* (Somm. et Lev.) Schischk.

To isolate coumarins the dry comminuted roots of the plant collected in the fruit-bearing period in the environs of Tbilisi were extracted with methanol, the solvent was evaporated off, the residue was diluted with water, and the coumarins were extracted with ether. The combined coumarins obtained from the ether and consisting of five components were chromatographed on a column of silica gel. Elution was performed successively with petroleum ether, benzene, and diethyl ether. As a result, three individual coumarins were isolated: (I) — $C_{15}H_{16}O_3$, mp 83-84 C, (II) — $C_{21}H_{22}O_7$, mp 162-163; and (III) — $C_{24}H_{26}O_7$, mp 169-172 C, $[\alpha]_D^{20}$ — 74° (c 1.0; ethanol).

From their physicochemical constants, elementary compositions, PC analysis, UV, IR, and NMR spectra, and mixed melting points, substances (I-III) were identified as osthole, libanotin, and anomalin, respectively [1-3].

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Original article submitted January 15, 1976.

COUMARINS OF *Leucanthemum sibiricum*

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UDC 547.587.51

The epigeal part of *Leucanthemum sibiricum* [*Chrysanthemum sibiricum*] (Korean chrysanthemum; family Compositae) was collected in the environs of the village of Tuzhinka, Eravinskii region of the Buryat ASSR in August, 1973, in the flowering period [1].

The raw material (2 kg) was comminuted and extracted with chloroform. The evaporated extract was chromatographed on a column of acidic alumina. Elution with ether gave a substance with mp 202-203°C (from ethanol), R_f 0.18 (TLC, silica gel 40/100 μ) in the petroleum ether—diethyl ether (1:2) system and R_f 0.80 in the ethanol—petroleum ether (2:1) system yield 0.01 . Its IR spectrum, exhibited absorption bands characteristic for hydroxycoumarins: 1670-1680 cm^{-1} (carbonyl of benzo-α-pyrone), 1623, 1580, and 1410, cm^{-1} (aromatic nucleus), and 3100-3400 cm^{-1} (hydroxy group) [2].

All-Union Scientific-Research Institute of Pharmacy, Moscow. Translated from Khimiya Prirodnykh Soedinenii, No. 4, pp. 536-537, July-August, 1976. Original article submitted January 19, 1976.

A comparison of the IR and UV spectra of the substance under investigation with those of an authentic sample of scopoletin showed their similarity. A mixture of the substance with an authentic sample of scopoletin gave no depression of the melting point [3].

The column was then eluted with petroleum ether–ether (1:1). The second substance eluted had mp 271°C (methanol); yield 0.12 g. In the systems mentioned above, the substance showed R_f 0.00, and in the benzene–ethyl acetate (2:1) system R_f 0.05. A comparison of its UV and IR spectra with the spectra of an authentic sample of esculetin showed that they were similar. A mixture with an authentic sample of esculetin gave no depression of the melting point.

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COUMARINS OF *Koelpinia linearis*

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UDC 547.9;582.89

The epigeal part of *Koelpinia linearis* Pall. – an annual plant belonging to the subfamily Cichoriodeae Kitam., family Asteraceae – was collected in Azerbaidzhan on the semibarren hills of Kyurovdag near the town of Ali-Bairamly in May, 1974.

The air-dry raw material (leaves and flowers, 0.5 kg each, separately) were comminuted and extracted with ethanol. According to paper chromatography, the concentrated and purified combined phenolic compounds numbered eight in the flowers and more than 30 in the leaves of the plant. By fractional and column chromatography of the combined phenolic compounds from the leaves, three individual substances were isolated.

Substance I, $C_{15}H_{16}O_8$ – transparent needles with mp 212-215°C (from aqueous C_2H_5OH), $[\alpha]_D^{21}$ – 104.5° (c 0.01; C_2H_5OH) – was identified as esculetin 7-β-D-glucopyranoside (cichorin).

Substance (II). $C_{15}H_{16}O_9 \cdot 2H_2O$, with mp 158-160°C, was characterized as esculetin 6-β-D-glucopyranoside (esculin).

Substance (III). $C_9H_6O_4$, with mp 268-270°C, is 6,7-dihydroxycoumarin or esculetin.

This is the first time that these coumarins have been isolated from *K. linearis*, and their structures were shown by chemical reactions, by comparison with authentic samples, and by structural methods of analysis [1, 2].

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Pyatigorsk Pharmaceutical Institute. Translated from Khimiya Prirodnykh Soedinenii, No. 4, p. 537, July-August, 1976. Original article submitted February 2, 1976.