

COUMARINS OF *Seseli asperulum*

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UDC 547.9:581.89

In an investigation of two representatives of the section *Macrostylopodium* Schischk of the genus *Seseli* (family Umbelliferae) — *S. sessiliflorum* Schrenk and *S. coronatum* Ledeb. — sulfur-containing coumarin derivatives have been isolated [1-4]. It might be expected that *Seseli asperulum* (Trautv) Schischk, growing on the southern slope of Tarbagatai range and morphologically similar to *Seseli coronatum* Ledeb., an endemic species of the Zaisanskaya depression, would have a similar chemical composition.

The roots of *S. asperulum* collected in the environs of Siirektaz (Semipalatinsk oblast, Balkash-Alakul'skaya depression) were extracted with petroleum ether and acetone. The results of chromatography of the extracts in a thin layer [Silufol, petroleum ether-ethyl acetate (1:1)] showed that *S. asperulum* is very close in composition to *S. coronatum* and contains at least six coumarin derivatives with R_f 0.62 (I), 0.52 (II), 0.5 (III), 0.49 (IV), 0.38 (V), 0.26 (VI).

From the concentrated petroleum ether extract by chromatography on silica gel (L 40/100 μ) in the petroleum ether-ethyl acetate system with a gradient of increasing concentrations of the latter we isolated anomalin $C_{24}H_{26}O_7$ with mp 173-174°C (I) and deltoin, $C_{19}H_{20}O_5$, with mp 105-106°C (II), identical with authentic samples according to their IR and NMR spectra and mixed melting points.

From the subsequent fractions we obtained a small amount of psoralen, $C_{11}H_6O_3$, mp 166-167°C, identical with an authentic sample. From an acetone extract by chromatography on silica gel using the same eluting mixture we obtained isofloroselin, $C_{23}H_{24}O_7S$, with mp 123-124°C (IV), seseliflorin, $C_{18}H_{18}O_5S$, with mp 143-144°C (V), and securin [5], $C_{23}H_{20}O_6$, with mp 212-213°C (VI), identified by their IR and NMR spectra and mixed melting points with authentic samples.

Thus, the similarity of the chemical compositions of *S. coronatum* [6] and *S. asperulum* confirms their close taxonomic positions; the latter species differs only by the presence of deltoin and by the absence of seselirin.

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All-Union Scientific-Research Institute of Medicinal Plants. Translated from *Khimiya Prirodnikh Soedinenii*, No. 6, pp. 785-786, November-December, 1974. Original article submitted May 30, 1974.

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