COUMARINS OF THE FRUIT OF *Angelica komarovii*

E. B. Zorin, N. V. Ivashchenko,
M. E. Perel'son, V. V. Vandyshev,
and M. G. Pimenov

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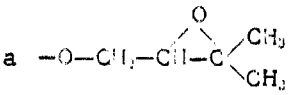
In a study of the fruit of *Angelica komarovii* collected in the valley of the R. Oital close to the village of Aktob (Oshsk province, KirgSSR), we found a considerable amount of coumarins in it. By extraction with ethanol and absorption chromatography on silica gel with elution by benzene and mixtures of benzene and ethyl acetate with gradually increasing proportions of the latter, we isolated three crystalline compounds possessing the properties of coumarins: (I) — $C_{24}H_{30}O_3$, mp 61-63°C; (II) — $C_{17}H_{16}O_5$, mp 101-102°C; (III) — $C_{17}H_{18}O_7$, mp 117-118°C. On the basis of their physicochemical constants and their UV, IR, and PMR spectra, substances (I)-(III) have been identified as, respectively, umbelliprenin, phellopterin, and biacangelicin.

From an ethanolic extract of fruit collected in the environs of Lake Iskander-Kul' (Zaravshan range), by column chromatography on silica gel with elution by benzene, we have isolated three crystalline coumarins. Two of them — (IV), $C_{24}H_{30}O_3$, mp 61-63°C, and (V) $C_{16}H_{14}O_4$, mp 102-103°C — have been identified on the basis of their UV and IR spectra and mixed melting points with authentic samples as umbelliprenin and imperatorin.

Substance (VI) — $C_{17}H_{16}O_6$, mp 87-89°C (methanol), M^+ 316, $[\alpha]_D^{20}$ −50° (c 1.0; pyridine); $\lambda_{max}^{ethanol}$, nm (log ε): 222(4.40), 241(4.14), 249(4.14), 271(4.21), 313(4.05); λ_{min}: 237(4.12), 245(4.12), 255(4.06), 288(3.79). The UV spectrum of (VI) is typical for linear furocoumarins with O-alkyl substituents in positions 5 and 8 [1]. The PMR spectrum ($CDCl_3$), 20°C, 0 — HMDS, HA-100D confirmed this conclusion. In the region of aromatic protons there are only four doublets with spin-spin coupling constants of 10 and 2.5 Hz, relating, respectively, to the protons of α-pyrone and furan rings (δ, ppm): 6.19, d, 10 Hz, 1 H (3-H); 8.03, d, 10 Hz, 1 H (4-H), 6.94, d, 2.5 Hz, 1 H (4'-H); 7.55, d, 10 Hz (1 H, 5'-H). One of the substituents is a methoxyl (three-proton singlet at 4.11 ppm) and the second is a  grouping (two-proton doublet at 4.36 ppm, J = 5.5 Hz; 1-proton triplet at 3.23 ppm, J = 5.5 Hz; two three-proton singlets at 1.17 and 1.25 ppm). The relative positions of the substituents in the benzene nucleus follow from the formation by the hydration of (VI) of biacangelicin, $C_{17}H_{18}O_7$, mp 116-117°C. Thus, substance (VI) is the levorotatory isomer of biacangelicol [2].

LITERATURE CITED

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