AROMATIC COMPOUNDS OF *Laser trilobum*

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UDC 547.587

Continuing an investigation of the roots of *Laser trilobum* (L.) Borkh., collected in the Talysh mountains, 3 g of an extract obtained by steeping the roots in acetone three times were chromatographed on a column of alumina (activity grade IV, 70 × 4 cm). Two substances were isolated. Fractions 42-46, eluted with hexane—chloroform (7:1) yielded a viscous oily substance (I) with the composition $C_{21}H_{26}O_7$.

The IR spectrum of (I) had the absorption bands of an α,β-unsaturated ester group (1720, 1240 cm^{-1}), of the C═C bonds of a benzene ring (1620, 1520 cm^{-1}), and of a double bond in an aliphatic chain (1645 cm^{-1}).

The NMR spectrum of the compound under investigation showed the doublet of a secondary methyl group at 1.20 ppm (J = 6 Hz, 3 H, CH_3—CH<). The signals of vinyl methyl groups with a total area of 12 proton units at 1.90 ppm, the singlet of a methoxy group at 3.92 ppm, a multiplet at 5.42 ppm (1 H) and a doublet at 5.87 ppm (J = 7 Hz, 1 H) relate to protons geminal to ester groups. A two-proton multiplet at 6.15 ppm is due to the olefinic protons of ester groups.

The presence and nature of ester groups were determined by saponification. This gave a sublimable acid with the composition $C_5H_8O_2$, mp 65°C, identified by comparison of its IR spectrum with that of an authentic sample [1] as tiglic acid. From the neutral fraction of the saponification reaction mixture was isolated a viscous oily substance with the composition $C_{11}H_{14}O_5$, the IR spectrum of which contained the absorption bands of OH groups (3350 cm^{-1}) and of a benzene ring (1630, 1610, 1510 cm^{-1}).

In the NMR spectrum of the saponified product the signals belonging to protons geminal to ester groups had shifted upfield and appeared in the 3.5-4.5 ppm region. There were no signals due to vinyl methyl groups and the olefinic protons of ester groups. A doublet of a secondary methyl group (1.00 ppm, J = 6 Hz, 3 H), the singlet of a methoxy group (3.87 ppm, 3 H), the singlet of a methylenedioxy group (5.95 ppm, 2 H), and the signals of two meta-interacting protons of a benzene ring (6.45 ppm, 2 H) were present.

A comparison of the IR and NMR spectra of the initial substance and its saponified product with the spectra of an aromatic ester isolated from *Ferula oopoda* (Boiss. et Buhse) Boiss. [2] and its saponification product showed their respective identities.

Fractions 84-95, eluted by hexane—chloroform (1:1), yielded a crystalline substance with the composition $C_{29}H_{50}O$, mp 136-137°C (from ethanol), identified by its IR spectrum as β-sitosterol, which we have also isolated from the roots of *Peucedanum paucifolium* Ledeb. and *Peucedanum caucasicum* (Bieb.) C. Koch.

LITERATURE CITED

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V. L. Komarov Institute of Botany of the Academy of Sciences of the Azarbaidzhan SSR, Baku. Translated from Khimiya Prirodnykh Soedinenii, No. 6, p. 796, November-December, 1983. Original article submitted May 25, 1983.

0009-3130/83/1906-0762$07.50