AGUERINS A AND B FROM *Saussurea elegans*

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UDC 547.314

Continuing a study of the sesquiterpene lactones of the epigeal part of an ethanolic extract of *Saussurea elegans* Ledeb., in the eluates after the isolation of elegin [1] and in its mother liquors we have detected the presence of another two substances of lactone nature by chromatography.

By repeated rechromatography on a column of silica gel with elution by petroleum ether—ethyl acetate, benzene—ethyl acetate and benzene—ethyl acetate—ether—ethanol mixtures in various ratios, these residues were separated into two components having the form of colorless oils (I and II): (I) — $C_{19}H_{24}O_5$, $[\alpha]_D^{21}$ +85° (c 0.9; $CHCl_3$), II — $C_{19}H_{22}O_5$, $[\alpha]_D^{21}$ +92° (c 0.92; $CHCl_3$).

The IR spectrum of (I), in the form of an oil on a NaCl plate, showed absorption bands of stretching vibrations at 3450 cm^{-1} (hydroxy), 1770 cm^{-1} (carbonyl of a γ-lactone), 1740 cm^{-1} (ester carbonyl), and 1660 and 1641 cm^{-1} (double bonds).

The mass spectra contain the peaks of ions with m/z 332 (M^+), 244 [M^+ — HO — CO — $CH(CH_3)_2$], and strong ions with m/z 71 [—CO—$CH(CH_3)_2$] and 43 [—$CH(CH_3)_2$]. The PMR spectrum of (I) has the following characteristic signals (JNM-4H-100, C_5D_5N, 0 — HMDS, ppm): doublet (6 H), 1.09 — the protons of the methyls of an isopropyl group, triplet (H) at 4.32 — the signal of a lactone proton; doublets with centers (1 H each) at 4.80 and 5.03 — the protons of an exomethylene group at C-10; doublet (1 H) at 6.10 and broadened singlet (3 H) at 5.51 — the signals of the protons of exomethylene groups at C-11 and C-4.

The IR spectrum of (II) showed the absorption bands of a hydroxyl (3500 cm^{-1}), the carbonyl of a γ-lactone ring (1770 cm^{-1}), the carbonyl of an α,β-unsaturated ester (1725 cm^{-1}), and of a double bond (1645 cm^{-1}).

The mass spectrum has the following characteristic peaks: with m/z 330 (M^+) and 244 (M^+ — OH—C(=O)—C(—CH_3)=CH_2), and of ions with m/z 69 (—C(=O)—C(—CH_3)=CH_2) and 41 (—C(—CH_3)=CH_2).

The hydrolysis of (I) and (II) (MeOH—K_2CO_3) in a current of nitrogen unambiguously led to a diol with the composition $C_{16}H_{22}O_5$, (M^+ m/z 294), mp 156-157°C, which corresponds to the product of the saponification of 8α-acetoxyzaluzanin D and cynaropicrin [2, 3]. The hydrolysis products show that the lactones isolated differ only by the nature of the acyl residue and, as can be seen from their mass spectra, in (I) the acyl residue is that of isobutyric acid, and in (II) that of methacrylic acid.

Thus, substances (I) and (II) are according to their saponification products and the results of PMR, mass, and IR spectroscopy, and comparison with literature information, identical, with aguerins A and B, respectively [4]. This is the first time that the presence of these sesquiterpene lactones has been recorded for plants of the genus *Saussurea*.

LITERATURE CITED

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Institute of the Chemistry of Plant Substances, Academy of Sciences of the Uzbek SSR, Tashkent. Translated from Khimiya Prirodnykh Soedinenii, No. 6, pp. 788-789, November-December, 1983. Original article submitted June 10, 1983.

 0009-3130/83/1906- 0752$07.50