

SESQUITERPENE LACTONES FROM *Ferula olgae*

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From the roots of *Ferula olgae* Rgl. et Schmelh. (*F. penninervis* Rgl. et Schmelh. s.l.), collected in June, 1970, by M. G. Pimenov (Kirghizia, valley of the R. Kokomeren) we have isolated two new sesquiterpene lactones which we have called olgin and olgoferin.

Olgin forms colorless needles with the composition $C_{21}H_{24}O_7$, mp 176-178°C (from ethanol) $[\alpha]_D^{20} + 25^\circ$ (c 4.0; chloroform). IR spectrum, cm^{-1} : 1795 (γ -lactone C=O), 1745 (OCO), 1712 (C=O), 1688 ($CO-C=C$), 1638 and 1616 (double bonds in conjugation) (Fig. 1). UV spectrum: λ_{max} 254 nm (ϵ 12,672) (C=C-CO-C=C). The NMR spectrum is given in Fig. 2.

The dehydrogenation of the substance over Se formed chamazulene. The results obtained permitted us to assign olgin to the acylated sesquiterpene lactones.

The mass spectrum of olgin shows a molecular peak of medium intensity with m/e 388 (17.2%) and the peaks $M^+ - CH_3COOH$ with m/e 328, 0.8%; $M^+ - \begin{array}{c} H_2C \\ | \\ H_3C \end{array} C-COOH$ with m/e 302, 2.16%; and $M^+ - CH_3COOH - \begin{array}{c} H_2C \\ | \\ H_3C \end{array} C-COOH$ with m/e 242, 100%, which confirms the presence of the acyl radicals of methacrylic and acetic acids in olgin.

On the basis of the IR, UV, NMR, and mass spectra, structure (I) is proposed as the most probable for olgin (see Fig. 2);

Olgoferin also consists of a white crystalline substance, with the composition $C_{23}H_{26}O_7$, mp 236-239°C (from ethanol), $[\alpha]_D^{20} + 46.9^\circ$ (c 5.1; chloroform), mol. wt. 414 (mass spectrometrically).

IR spectrum, ν_{max} , cm^{-1} : 1790 (γ -lactone C=O), 1710 ($CO-C=C$), 1690 ($CO-C=C$), 1640 and 1620 (double bonds in conjugation). UV spectrum: λ_{max} 253.5 nm (ϵ 22,011). The NMR spectrum of olgoferin has the signals of the protons of five methyl groups: a singlet at 1.6 ppm (3H), singlets at 1.85 and 2.15 ppm

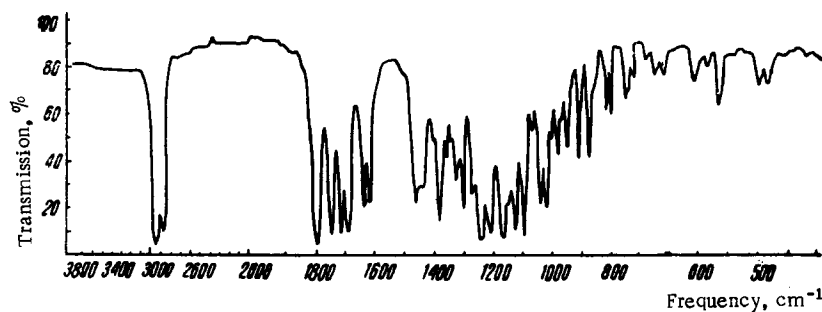


Fig. 1. IR spectrum of olgin.

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