TAMIRIN FROM Tanacetum chiliophyllum

V. A. Mnatsakanyan and L. V. Revazova

UDC 547.314

The species Tanacetum chiliophyllum (Fisch. et C. A. Mey) Sch. Bip. (Pyrethrum chiliophyllum Fisch. et C. A. Mey) is fairly widely distributed in the Armenian SSR [1].

From the epigeal part of the plant collected in July, 1972, in the Ashtarak region in the flowering phase, by aqueous extraction [2] followed by the chromatography of the total extract on a column of alumina (activity grade IV) with elution by benzene we have obtained a crystalline substance (I), $C_{15}H_{18}O_4$, mp 167-168°C $[\alpha]_D^{20} -36.5 \pm 5°$, (c 2.0; methanol), mol. wt. 262 (mass spectrometrically). The IR spectrum of (I) has absorption bands in the following regions, cm^{-1}: 3450 (OH stretching vibrations), 2980 (olefinic hydrogens), 1745 (carbonyl of an α,β-unsaturated γ lactone), 1680 and 1635 (ketonic carbonyl conjugated with a double bond), and 1165, 1030, and 1060 cm^{-1} (C–O bonds of ester and alcohol groups).

In the mass spectrum of the substance there are peaks with m/e 262 (M+), 244, 234, 215, 179, 178, 165,164, 147, 133, 119, 97, 80. In the NMR spectrum of (I) (δ scale) there are signals at 6.4 ppm (1 H, quartet), 6.21 ppm (1 H, quartet, exocyclic methylene conjugated with a lactone carbonyl), 5.9 ppm (2 H, weakly-resolved singlet, methylene conjugated with a ketonic carbonyl), and 1.7 ppm (3 H, broadened singlet, methyl on a double bond).

The characteristics of the IR, NMR, and mass spectra of the lactone obtained and its constants agree completely with those for the sesquiterpene lactone tamirin (deacetylchrysanolide) isolated previously from T. argyrophyllum (C. Koch.) Tzvel [3]. A mixture of (I) with tamyrin melted without depression, and the substances were chromatographically identical.

The isolation of tamirin from T. chiliophyllum, assigned by some systematicians to the genus Pyrethrum [4] shows the closeness of this species to T. argyrophyllum.

LITERATURE CITED

1. A. L. Takhtadzhyan and An. A. Fedorov, Flora of Erevan [in Russian], Leningrad (1972), p. 280.
2. K. S. Rybalko, N. N. Ban'kovskaya, and R. I. Evstratova, Med. Prom. SSSR, 3, 13 (1962).
3. V. A. Mnatsakanyan and L. V. Revazova, Arm. Khim. Zh., 26, 11 (1973).
4. A. A. Grossgeim, Identification Handbook of the Plants of the Caucasus [in Russian], Moscow (1949), p. 460.

A. L. Mndzhoyan Order of the Red Banner of Labor Institute of Fine Organic Chemistry of the Academy of Sciences of the Armenian SSR. Translated from Khimiya Prirodnykh Soedinenii, No. 3, pp. 396-397, May-June, 1974. Original article submitted December 7, 1973.