

LACTONES OF *Tanacetum pseudoachillea*

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The plant *Tanacetum pseudoachillea* C. Winkl., family Compositae is widely distributed in Central Asia [1, 2]. It has not been studied previously for its lactone content.

We have investigated the leaves and flower heads of this plant collected in May, 1971, in the Tashkent oblast. The plant was extracted with ethanol and the combined lactones were freed from ballast materials with aqueous ethanol and were chromatographed on alumina (activity grade IV).

A petroleum ether eluate yielded a substance with the composition $C_{29}H_{50}O$, mp 138-139°C (from ether-petroleum ether) which was identified by its IR spectrum and a mixed melting point as β -sitosterol. On elution with petroleum ether-benzene (1:1), crystals were obtained with mp 122-125°C (from hexane). Benzene-ether (1:1) eluates gave a substance with mp 208-212°C (from ethanol). Both these substances proved to be lactones, with properties differing from those of lactones described in the literature; we have called them, respectively, tanacin and tachillin.

The IR spectrum of tanacin shows absorption bands at (cm^{-1}) 1760 (γ -lactone carbonyl), 1710, 1258 (ester group), and 1655 (double bond). The NMR spectrum (δ scale) shows singlets of methyl groups at (ppm) 1.27 (CH_3C-) and 1.85 (CH_3CO-).

The lactone proton appears in the form of a triplet at 4.13 ppm ($J=8$ Hz), and doublets ($J=3$ Hz) in the 5.85 and 6.29 ppm regions are due to the protons of an exocyclic methylene group.

Tachillin has the composition $C_{20}H_{26}O_5$, mol. wt. 346 (mass spectrometry). The IR spectrum of tachillin has absorption bands in the regions (cm^{-1}) 3475 (OH group), 1758 (γ -lactone carbonyl), 1712, 1270 (ester group), and 1652 and 1673 (double bonds). The NMR spectrum (δ scale) has a singlet at 0.83 ppm corresponding to an angular methyl group, a broadened singlet at 1.80 ppm corresponding to the methyl group on a double bond, a triplet corresponding to a lactone proton (4.05 ppm, $J=11$ Hz), and a pair of doublets at 5.38 and 6.03 ppm ($J=3$ Hz), each of one proton unit, characterizing an exocyclic methylene group conjugated with a lactone carbonyl group.

The acetylation of tachillin with acetic anhydride in dry pyridine gave a monoacetyl derivative with the composition $C_{22}H_{28}O_6$, mp 100-101°C (from hexane), mol. wt. 388 (mass spectrometry).

The hydrogenation of tachillin in the presence of Raney nickel formed a tetrahydro derivative with the composition $C_{20}H_{30}O_5$, mp 133-135°C (from ether-hexane), mol. wt. 350 (mass spectrometry).

The lactones isolated belong to the group of bicyclic sesquiterpene lactones. Their study is continuing.

LITERATURE CITED

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