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Continuing a systematic investigation of the sesquiterpene lactones of the genus *Tanacetum* L. [1], we have studied the epigeal part of the plant *Tanacetum santolina* C. Winkl., family Compositae.

To isolate the lactones, this plant (1350 g), collected in the flowering stage in June, 1975, on the Ustyurt plateau (Karakalpakia) was extracted five times with chloroform, and the solvent was distilled off to dryness. The concentrated residue was treated with aqueous ethanol (1:1), and the precipitate that deposited was filtered off. The neutral substances were extracted from the filtrate with hexane and chloroform. In the chloroform-extracted material two substances were detected with  $R_f$  0.38 and 0.24 [TLC, benzene-methanol (9:1), Silufol UV-254]. This resin (22 g) was chromatographed on silica gel. When the column was eluted with benzene-hexane (7:3) and with benzene, two substances were isolated.

Substance (I): mp 186-187°C (from ethanol), mol. wt. 306 (mass spectrometrically), composition  $C_{17}H_{22}O_5$ , yield 0.25 g.

The IR spectrum (tablets with KBr) showed absorption bands at 3520  $cm^{-1}$  (OH group), 1755-1740 and 1265  $cm^{-1}$  due to carbonyl groups, one of which is in an unsaturated  $\gamma$ -lactone ring and the other in an ester group. With acetyl chloride, compound (I) gave an acetyl derivative with the composition  $C_{19}H_{24}O_6$ , mp 197-198°C.

On comparing literature information [2-4] with the facts given above, and also by analyzing the IR, PMR, and mass spectra we came to the conclusion that substance (I) is cumambrin A. A direct comparison of (I) with this substance showed their identity.

Substance (II): mp 178-179°C (from ethanol), mol. wt. 264 (mass spectrometrically), composition  $C_{15}H_{20}O_4$ , yield 0.6 g.

IR spectrum:  $\nu_{\max}^{KBr}$  3500  $cm^{-1}$  (OH), 1745  $cm^{-1}$  ( $\gamma$ -lactone carbonyl), 1660  $cm^{-1}$  (C=C).

When heated (70°C) with a 5% solution of KOH, (II) dissolved, but the initial substance was not recovered on acidification. A compound  $C_{15}H_{20}O_4$  with mp 125-126°C (from ethanol) was obtained which was characterized as a relactonization product.

With acetic anhydride in pyridine, (II) formed an acetate identical with cumambrin A. Consequently, substance (II) is cumambrin B. This is the first time that these substances have been found in plants of the genus *Tanacetum*.

## LITERATURE CITED

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