Thus, we have detected nine compounds of iridoid nature for the first time in the bark of the European viburnum, and of these we have isolated substances (I), (VI), and (VII). These substances are based on 7-formyl-4-methylcyclopenta[c]pyran, which is close in structure to baldrinal, isolated from valerian roots [6]. Substances (VI) and (VII) have been identified as allosides of iridoids (I) and (II), respectively, which have been isolated previously from the roots of the European viburnum. Some physicochemical properties of substance (I), not agreeing with the properties of known natural compounds, have been determined.

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SESQUITERPENE LACTONES OF *Artemisia pauciflora*

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UDC 547.314

The flower heads of *Artemisia pauciflora* Web. (oliganthous wormwood) collected in August, 1980, in the mountains of Karkarala, Karaganda province, Kazakh SSR, were exhaustively extracted with acetone. The concentrated extract was treated with 60% ethanol. The precipitate that deposited was filtered off, and the filtrate was treated with chloroform. The resin obtained after evaporation of the chloroform was separated on a column of type KSK silica gel with successive elution with benzene, benzene—ether (5:1) and (1:1), and ether.

The benzene—ether fractions yielded a new sesquiterpene lactone with the composition $C_{15}H_{22}O_3$ (I), mp 155-157°C (ethanol), M^+ 250, which has been called artepaulin.

The IR spectrum (tablets with KBr) showed absorption bands in the 1770 and 1700 cm^{-1} regions (γ-lactone carbonyl and cyclohexanone group, respectively).

The presence of a ketone group was shown by the formation of an oxime of (I) with the composition $C_{15}H_{23}O_3N$, mp 221-223°C (ethanol). IR spectra, ν_{max}^{KBr}, cm^{-1}: 3290 (—OH); 1765 (C=O of a γ-lactone), 1665 (C=N—).

The NMR spectra of (I) (Varian HA-100D, $CDCl_3$, δ scale, 0 — TMS) contained the following signals: singlet at 1.16 ppm (3 H) — angular methyl group; doublets with their centers at 1.16 ppm (3 H, J = 6 Hz) and 1.20 ppm (3 H, J = 6 Hz) — methyl groups at C_4 and C_{11}; triplet in the 3.92 ppm region (1 H, J = 10 Hz) — lactone proton.

The dehydrogenation of artepaulin at 280-310°C over Se for 30 h yielded 7-ethyl-1-methylnaphthalene, which was identified through its picrate with the composition $C_{19}H_{17}O_7N_3$, mp 94-96°C (ethanol).

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*Deceased.

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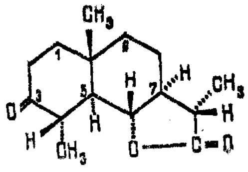
The catalytic hydrogenation of α-santonin in the presence of 10% Pd/C gave γ-tetrahydrosantonin, which was isomerized by $HClO_4$ into α-tetrahydrosantonin [1, 2], identical in its physicochemical constants, spectral characteristics, and according to a mixed melting point, with artepaulin. Consequently, artepaulin has the structure and configuration of 3-oxo-5,7α(H),4,6,11β(H)-eudesman-6,12-olide (I).



I

The ^{13}C NMR spectrum (Bruker WP-80, 20.1 MHz, $CDCl_3$, 0 — TMS) of artepaulin obtained under the conditions of complete and partial decoupling (off-resonance) from protons confirmed the structure (I) proposed for it.

When the column was eluted with ether, a crystalline substance (II), $C_{15}H_{18}O_3$, mp 169-171°C (ethanol), M^+ 246, was isolated. (II) was identified by IR, NMR, and mass spectroscopy and a mixed melting point as α-santonin [3, 4].

Trials in the All-Union Scientific-Research Institute of Chemical Plant Protecting Agents showed that α-santonin inhibits the development of late blight of tomato.

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BIOMIMETIC SYNTHESIS OF β-DUVA-3,8,13-TRIENE-1,5-DIOL BY THE PHOTOSENSITIZED OXIDATION OF ISOCEMBROL

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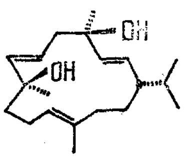
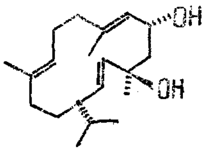
UDC 547.595.9

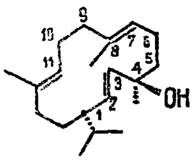
β-Duva-3,8,13-triene-1,5-diol (1S,4R,8S-cembra-2E,6E,11E-triene-4,8-diol (I) was isolated by Rowland [1] from the leaves of the tobacco plant *Nicotiana tabacum* L. The stereochemistry of this compound was determined by Enzell [2] and as the last stage of its biosynthesis the allylic isomerization of another cembrane derivative present in tobacco leaves, the diol (II), was suggested [2].



I



II



III

We have established that the diol (I) can be obtained by photooxidation from a simpler precursor also present in tobacco leaves — isocembrol (III) [3].

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