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A STUDY OF THE CHEMICAL COMPOSITION OF SAUSSUREA FROLOVII

II. Taraxasterol

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In a further study of saussurol [1] it was established that its acetate undergoes partial isomerization during chromatography on alumina (pH 7.5-8, activity grade I). Gradient elution of the column with benzene—ether gave 1-lupenyl acetate, from which 1-lupenol was obtained. Further elution led to the formation of a mixture of 1-lupenyl acetate and then the initial acetate. In view of this behavior of saussurol acetate, the constants given in the preceding communication [1] were incorrect.

The method developed later for purifying saussurol by crystallization of the residue from a petroleum ether extract of the plant from 95% ethanol with subsequent chromatography on alumina (pH 7.5-8, activity grade I) made it possible to isolate saussurol with mp 220-222° C (from ethanol), $[\alpha]_D^{20}$ +96 ± 2° (c 1.15). Its acetate has mp 243-245° C (from chloroform—methanol), $[\alpha]_D^{20}$ +103 ± 1° (c 1.14). These constants are very close to those for taraxasterol [2, 3]. Since in the IR spectrum of saussurol there are absorption bands at 890 and 3060 cm^{-1}, which are characteristic for a $=C=CH_2$ group, the hydrocarbon saussurene [1] and then saussurol acetate were ozonized in carbon tetrachloride at -25° C by the passage of a current of ozonized oxygen (5%) for 90 min. After the usual working up, the formaldehyde was identified as the di-β-naphthylmethane derivative [4] with a yield of 28% of the theoretical. Chromatography of the water-insoluble residue on silica gel [elution with benzene—ether (9 : 1)] gave 30-nor-20-taraxastenone [2].

The IR spectrum of this compound lacked absorption bands due to a $>C=CH_2$ group and exhibited a strong band at 1704-1706 cm^{-1} (carbonyl group in a six-membered ring) [5]. Similarly, ozonolysis of saussurol acetate led to the formation of formaldehyde with a 34% yield and the corresponding nor-ketone with mp 262-264° C (from ethyl acetate), $[\alpha]_D^{20}$ +64 ± 3° (c 1.20). IR spectrum: 1250 and 1730 cm^{-1} (acetate), 1706-1707 cm^{-1} (ketone) [5].

Found, %: C 79.6, 79.7; H 10.7, 10.8. Calculated for $C_{31}H_{50}O_3$, %: C 79.1; H 10.7.

Oxime (amorphous):

Found, %: N 2.9, 2.8. Calculated for $C_{31}H_{51}O_3N$, %: N 2.9.

On the basis of the above data it may be concluded that saussurol is identical with taraxasterol.

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A STUDY OF THE SAPONINS OF HEDERA COLCHICA

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We have studied the saponins of the leaves of Hedera colchica C. Koch. (Colchis ivy), family Araliaceae, collected in the regions of southern Georgia.

From this point we have isolated the total (about 15% on the air-dry raw material) triterpene saponins and in these we have established by thin-layer chromatography, in silica gel in systems with different pH values [1], the presence of three glycosides—A, B, and C—with similar Rf values. The main component is the most polar saponin C.