URSOLIC ACID IN CERTAIN PLANTS

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In the investigation of certain plants growing in the Leningrad region (see below) we have detected a triterpene widely distributed in the plant world, ursolic acid with the composition $C_{30}H_{48}O_3$, which we identified by its melting point, the results of elemental analysis, IR spectra, and a mixed melting point with an authentic sample. The ursolic acid from Empetrum nigrum L. and Thymus serpyllum L. has been described previously [1, 2].

We isolated ursolic acid by the usual method [2]. The chloroform extract was evaporated to small bulk and treated with 5% caustic potash. The alkaline extract was acidified and the acids liberated were extracted with ether. The solvent was evaporated and the dry residue was crystallized from ethyl alcohol.

| plant | | Part of the plant |
|---|---|-------------------|
| Campanula rotundifolia L. Knautia arvensis (L.) Coult. | } | Epigeal |
| Sambucus racemosa L. Siringa yulgaris L. | Ì | Roots |
| Lonicera tatarica L. | } | |
| Epilobium angustifolium L. | | Epigeal Leaves |
| Cassandra calyculata Don. | , | Leaves |
| Antennaria dioica (L.) Gaerth. Empetrum nigrum L. | (| Epigeal |
| Thymus serpyllum L. | } | Epigeai |

REFERENCES

- 1. Elsevier's Encyclop. of Org. Chem., 14, 566, 1940.
- 2. C. H. Brieskorn, K. H. Eberhardt and M. Briner, Archiv. der Pharm., 286/10, 501, 1953.

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THE GLYCOSIDES OF ELEUTHEROCOCCUS SENTICOSUS

II. The Structure of Eleutherosides A, B₁, C, and D

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In a preceding communication [1], a method was described for obtaining from the roots of Eleutherococcus senticosus Max a physiologically active glycosidic fraction from which a number of glycosides provisionally called "eleutherosides" were isolated in the individual state.

As previously shown [2], eleutheroside E is identical with acanthoside D, which is a diglucoside of (-)-syringare-sinol [3].

Eleutheroside A, mp 295°C, $[\alpha]_D^{20}$ -35° (in pyridine) has been identified as daucosterol from its melting point and analytical, spectroscopic, and chromatographic data. Daucosterol has previously been isolated from ginseng [4] and acanthopanax [5].

Eleutheroside B₁, mp 218°C, $[\alpha]_D^{20} + 80^\circ$ (in methanol), can easily be obtained from fractions enriched in a mixture of eleutherosides B and B₁ by fractional crystallization or by chromatography on silica gel previously impregnated with aqueous ammonia (pH 9.0) using gradient elution with the solvent system chloroform saturated with aqueous ammonia (pH 8.5-9.0), ethanol (100: $0 \rightarrow 50$: 50). The acid hydrolysis of eleutheroside B₁ yielded glucose and a genin $C_{11}H_{10}O_5$.

The genin of eleutheroside B_1 was identified as isofraxidin (7-hydroxy-6, 8-dimethoxycoumarin), which has been isolated from the roots of <u>Fraxinus excelcior</u> [6] and was then obtained by the hydrolysis of calycanthoside (isofraxidin