

FUROCOUMARINS OF THE FRUIT OF HIPPOMARATHRUM CASPIUM

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The present paper gives the results of a study of the furocoumarin compounds [1] from the fruit of this plant which we collected on the seashore dunes close to Sumgait (AzerbSSR) at the end of August 1964.

The chloroform extraction (by the steeping method) [2] of 580 g of fruit gave 133.7 g of resin (23.0% of the air-dry weight of the material). The resin was chromatographed on a column of alumina (1:11). The substances were eluted from the column successively with petroleum ether (fractions 1-17), petroleum ether-chloroform, 4:1 (fractions 18-74), chloroform (fractions 75-84), and ethanol (fractions 85-97). The volume of each fraction was 200 ml.

Fractions 1-5 yielded a mixture of essential and fatty oils. Fractions 6-29 contained isoimperatorin, yield 0.62%. Fractions 30-67 gave imperatorin with a yield of 0.17%, bergapten, and xanthotoxin. Fractions 68-74 consisted of a mixture of three substances which was rechromatographed on a column of alumina (1:100) with petroleum ether-chloroform (7:3) as eluant. Bergapten (total yield 0.40%), xanthotoxin (total yield 1.45%), and isopimpinellin with a yield of 0.13% were isolated.

These substances were shown to be identical with known furocoumarins by their IR and UV spectra, their elemental composition, their R_f values on paper chromatography with reference samples, and by the absence of depressions of the melting points of mixtures with corresponding samples of furocoumarins that we isolated from the fruit of the *Hippomarathrum microcarpum* [2]. In addition, the identity of the imperatorin was confirmed by the production from it of alloimperatorin [3] and xanthotoxol [4].

It was established by paper chromatography that fractions 75-97 contained traces of umbelliferone.

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COUMARINS OF THE SEEDS OF CORONILLA SCORPIOIDES

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The isolation from the seeds of *Coronilla scorpioides* (L) Koch. (scorpion coronilla) of the cardenolides corotoxinogenin, frugoside, glucocorotoxinogenin, a glycoside (IV), and coronillobioside, which are steroid compounds of the trans-A/B series, has been reported previously [1].

The present paper gives the results of a study of the coumarin compounds of this species of *Coronilla*.

Six substances of coumarinic nature were detected by paper chromatography of alcoholic extracts of the seeds in the chloroform-formamide system: A (R_f 0.95), B (R_f 0.82), C (R_f 0.71), D (R_f 0.61), E (R_f 0.28), and F (R_f 0.15).

The coumarins were isolated by the method given. The seeds were extracted with 70% alcohol and the organic layer was evaporated off under vacuum. Substance B deposited from the aqueous residue. Treatment of the aqueous