THE ALKALOIDS OF THE TUBERS OF PETILIUM EDUARDI

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The tubers of P. Eduardi (A. Rgl) Vved., collected in the period of incipient fruit-bearing of the plant in the surroundings of Shargun, Surkhan-Darya Oblast, have given 1.28% of total alkaloids by chloroform extraction.

On separating the mixture of bases with respect to their solubilities in ether, chloroform, acetone, and alcohol, a crystalline alkaloid was obtained with the composition $C_{27}H_{43}O_3N$, mp 265-267°C, $[\alpha]_D$ −34.66°, R_f 0.809 [butanol–acetic acid–water (4:1:5)] [1].

The IR spectrum of the base had characteristic absorption bands at 3430 (OH), 1460, 2950 (C–CH_3), and 1710 (CO) cm^{-1}, and the UV spectrum had λ_{max} 290 mμ (log ε 1.7). The alkaloid was found to contain two hydroxy groups. The third atom of oxygen is present in the form of a carbonyl group, shown experimentally by the preparation of an oxime and by the IR spectrum.

When the properties of the alkaloid that we had isolated were compared with those of sipaimaine, imperialine [2-4] and raddeanine, described previously [5, 6] as substances showing optical activity and containing no carbonyl group, the assumption arose that they were identical. This was finally established by the results of a comparison of the IR spectra and of a direct determination of the melting point of a mixed sample.

Thus, the physicochemical properties, the composition, and the structural formula of raddeanine given by Sadykov and Aslanov [5, 6] do not correspond to the facts.

The acetone solution of the ethereal fraction of the total alkaloids after the isolation of imperialine deposited a crystalline alkaloid found to be identical with edpetilidine [7] by a mixed-melting-point determination and by a comparison of the IR spectra.

The mother liquor from the edpetilidine, after the removal of the acetone by distillation, gave an amorphous mixture of bases which was dissolved in sulfuric acid and treated with chloroform. The acid solution was made alkaline and extracted with chloroform. Fractional extraction of the alkaloids from solution with sulfuric acid gave 20 fractions. Each fraction was made alkaline and extracted with ether and chloroform.

The first six fractions, which were soluble in ether, gave edpetilidine, and the next four gave imperialine. The action of an alcoholic solution of hydrogen chloride on an acetone solution of the bases of the 11th and 12th fractions gave a hydrochloride with mp 250-252°C. The base from the hydrochloride was identified as peimisine [7, 8].

The chloroform was distilled off from the solution of the sulfate after treatment with ammonia to give a mixture of amorphous bases from which treatment with acetone yielded an alkaloid identical with the base having mp 247-251°C [7] from the epigeal part of P. Eduardi.

The chloroform fraction of the combined alkaloids was separated with respect to basicity into 20 fractions. On treatment with acetone, the first three fractions gave edpetiline [7, 9].

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