

A STUDY OF INCARVILLEA OLGAE

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The plant Incarvillea olgae Rgl. (family Bignoniaceae) was collected by E. E. Korotkova and S. Khamidkhodzhaev in the basins of the rivers Pyandzh and Obikhingou.

There is no information in the literature on alkaloid-bearing properties of representatives of the genus Incarvillea. There are only statements on the action of extracts of the plant I. olgae on the cardiovascular system [1].

From the leaves, contaminated with the stems and flowers, we isolated 0.5% of a mixture of bases and 1% of benzoic acid. By separating the mixture of alkaloids on alumina, and also with respect to the basicity of the components, we obtained a base with the composition $C_{10}H_{11}O_2N$, which darkened at 205°-207° C and melted with decomposition at 218°-220° C, $[\alpha]_D^{27} -30.1^\circ$ (c 0.994; methanol); $[\alpha]_D^{22} -32.7^\circ$ (c 1.253; ethanol). The IR and UV spectra of the base were identical with the corresponding spectra of d-plantagonine, which is found in Plantago indica [2, 3] and Pedicularis olgae [4, 5], and is likewise an amino acid.

However, this base differs from d-plantagonine by the sign of its rotation, i.e., it is l-plantagonine which has not been described in the literature. When equimolecular amounts of the base and d-plantagonine [5] were mixed, the racemic base with mp 226°-227° C (decomp.) was formed, which crystallized from a mixture of acetone and methanol.

The leaves contaminated with fine stems collected in the early vegetation period contained 0.03% of total alkaloids and about 1.7% of benzoic acid. Plantagonine was isolated from the mixture of bases.

0.3% of total alkaloids was found in the roots of the same collection of material; there was no benzoic acid. The separation of the mixture of alkaloids with respect to their basicities gave plantagonine and a base in the form of a picrate with the composition $C_{10}H_{11}ON \cdot C_6H_3O_7N_3$ with mp 152°-153° C (from ethyl acetate). The properties of the latter agreed with those of indicaine picrate [2, 3].

It is known that indicaine is an amino aldehyde derivative of plantagonine [3, 5]. Consequently, we oxidized the base obtained from the picrate with ammoniacal silver oxide, and isolated plantagonine, which was identified by its IR spectrum and melting point.

REFERENCES

1. G. A. Zabozaeva, DAN TadzhSSR, 10, 51, 1954.
2. A. Danilova and R. Konovalova, ZhOKh, 22, 2237, 1952.
3. A. V. Danilova, ZhOKh, no. 26, 2069, 1956.
4. Kh. Ubaev, P. Kh. Yuldashev, and S. Yu. Yunusov, Uzb. khim. zh., 3, 33, 1963.
5. K. L. Lutfullin, P. Kh. Yuldashev, and S. Yu. Yunusov, KhPS [Chemistry of Natural Compounds], 365, 1965.

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