ALKALOIDS OF Ammodendron karelinii

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UDC 547.944/945

In its botanical characteristics the plant Ammodendron karelinii Fisch. et Mey, is very close to the species Ammodendron conollyi [1]. The presence of alkaloids in it has been reported [2]. We [3] have previously studied the biosynthesis and interconversions of the alkaloids of A. karelinii, and in this communication we give the results of a chemical investigation of the alkaloids. By extraction with methanol, from 2 kg of the air-dried leaves of the plant A. karelinii (family Leguminosae) collected in the Bukhara oblast in the flowering period (May 15, 1974) we isolated 37 g of combined alkaloids. The combined bases were separated by successive extraction of an alkaline solution with petroleum ether, benzene, and chloroform. The main alkaloid of the plant – pachycarpine – was isolated in the form of the hydriodide (25 g) from the petroleum ether fraction and was identified by the melting point of pachycarpine monohydriodide, 233-234°C (from water). By separation on a column of alumina (activity grade II) the benzene fraction (8 g) of the combined alkaloids yielded pachycarpine (0.9 g), *l*-lupanine (0.2 g; perchlorate with mp 211-213°C from methanol), anagyrine [0.5 g; hydrochloride with mp 248°C from ethanol–acetone (1 : 1)], and methylcytisine (1.5 g) with mp 134°C (from petroleum ether). In addition to the known alkaloids, from the benzene fraction of the combined bases by preparative thin-layer chromatography we isolated a base $C_{15}H_{24}ON_2$, M^+ 248, in the form of an oil with R_f 0.81. The base was readily soluble in ethanol and chloroform and sparingly soluble in petroleum ether.

The chloroform fraction of the combined alkaloids (6 g) was also separated on a column of alumina. This yielded 0.1 g of cytisine with mp 153-154°C (from acetone) and 0.8 g of ammondendrine with mp 56-60°C. All the alkaloids isolated were identified by mixed melting points and by comparing their IR spectra with those of known samples.

When the mother liquor from the chloroform fraction of the combined alkaloids was separated chromatographically on alumina, a base with R_f 0.47, mp 139-140°C (from acetone) was isolated. This alkaloid was readily soluble in water and did not pass into organic solvents from an alkaline solution. The base was readily reduced by zinc dust in an acid medium to pachycarpine. The IR spectrum of the base with R_f 0.47 had absorption bands at 2800-2600 cm^{-1} (trans-quinolizidine) and 950 cm^{-1} ($\geq N \rightarrow O$) and, consequently, this alkaloid is pachycarpine N_{16}-oxide.

LITERATURE CITED

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V. I. Lenin State University. Translated from Khimiya Prirodnykh Soedinenii, No. 5, pp. 717-718, September-October, 1977. Original article submitted June 6, 1977.

0009-3130/77/1305-0604$07.50