

A STUDY OF THE ALKALOIDS OF *Cynoglossum pictum*

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UDC 547.944/945

Cynoglossum pictum Ait. — a biennial herbaceous plant — is used in folk medicine as a substitute for common hound's-tongue (*C. officinale*). We have found no results of a study of this plant in the literature available to us.

The material for investigation was collected on June 24, 1970 in the fruit-bearing stage (southern shore of the Crimea in the region of the Baidar gates). The alkaloid content was determined by the gravimetric method [1]. It amounted to 0.36% in the epigeal part and 0.05% in the roots, calculated on the absolutely dry plant material. The amount of N-oxide forms of the alkaloids found by L. Ya. Areshkina's method [2] was 66% (of the total alkaloids) and 0.37% (on the weight of the absolutely dry plant material) in the epigeal part of the plants.

In the hypogeal parts, using thin-layer chromatography (TLC) [3] on alumina in systems 1) chloroform-methanol (9:1) and 2) benzene-ether-methanol (10:5:2), four alkaloids were detected, and in the roots two, with R_f 0.86 and 0.04 (1) and 0.37 and 0.03 (2).

The combined alkaloids, isolated from the epigeal parts with preliminary reduction by zinc dust, were separated on a column (d 2 cm, h of the layer 43 cm) of alumina. Elution was performed with chloroform and mixtures of chloroform and methanol with gradually increasing proportions of methanol of from 100:1 to 1:1. The eluate was collected in 5-ml fractions and analyzed by the TLC method.

In this way, five individual bases with R_f 0.75, 0.57, 0.33, 0.11, and 0.03 (1) were isolated.

From the alkaloids with R_f 0.57 we obtained a crystalline picrate with mp 98-100°C. From the absence of a depression of the meltingpoint of a mixture and the coincidence of the IR spectra, this alkaloid was identified as cynoglossophine-heliosupine.

The base with R_f 0.33 yielded a crystalline picrolonate, which was shown in the same way to be identical with echinatine picrolonate.

The alkaloids with R_f 0.11 and 0.03, after reduction with zinc dust, were identical with cynoglossophine-heliosupine and echinatine, respectively. Hence these alkaloids were present in the N-oxide forms.

Consequently, five alkaloids have been isolated from *Cynoglossum pictum* Ait. for the first time, and four of these have been identified as cynoglossophine-heliosupine and echinatine, and their N-oxides.

LITERATURE CITED

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Leningrad Chemical and Pharmaceutical Institute. Translated from *Khimiya Prirodnikh Soedinenii*, No. 5, pp. 676-677, September-October, 1971. Original article submitted June 2, 1971.

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