A CHEMICAL STUDY OF THE ALKALOIDS OF Corydalis rosea

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From the herb Corydalis rosea Leych. (rosy corydalis), family Paveraceae introduced into the botanical garden of the All-Union Scientific-Research Institute of Medicinal Plants and collected on August 29, 1969, in the flowering phase, we have obtained, using the dichloroethane method, the combined alkaloids, from which five compounds have been isolated by separation according to basicity.

From the strongly basic fraction we isolated protopine, which was identified by a direct comparison with an authentic sample.

The main component of the feebly basic fraction was a base with the composition $C_{20}H_{17}O_6N$, mp 237°C (from methanol), $[\alpha]_D^{20}$ −116° (c 1.2; chloroform), R_f 0.61 [alumina, activity grade III, benzene–ethyl acetate (9 : 1) system]. It contained two methylenedioxy groups (two two-proton singlets at 6.06 and 5.80 ppm in the NMR spectrum and absorption bands at 940 and 1035 cm^{-1} in the IR spectrum), the carbonyl of an α,β-unsaturated γ-lactone (IR spectrum: 1760 cm^{-1}), a $N-CH_3$ group (three-proton singlet in the NMR spectrum at 2.49 ppm), aromatic protons (doublets at 7.12 and 6.86 ppm with spin–spin coupling constants of 8 Hz due to protons adjacent to one another in the ortho position and singlets at 6.64 and 6.35 ppm due to protons having no hydrogen atoms in the ortho and meta positions). UV spectrum: λ_{max} (chloroform) 295, 322 nm (log ε 3.84, 3.71). The oxidation of this base with 10% nitric acid gave hydrastine, $C_{11}H_{13}O_3N$, mp 115-116°C (petroleum ether) and 6-formyl-2,3-methylenedioxybenzoic acid with mp 190-192°C. Thus, this alkaloid is *l*-adlumidine [1].

From the methanolic mother solution after the separation of the l-adlumidine we isolated an optically inactive substance with the composition $C_{20}H_{17}O_6N$, mp 184-186°C (methanol). Its IR, UV, and NMR spectra show that the alkaloid is the racemic form of adlumidine.

The fourth base has the composition $C_{21}H_{21}O_9N$, mp 179-180°C (from methanol), $[\alpha]_D^{20}$ −42° (c 1.8; chloroform), R_f 0.47 [alumina, activity grade III, benzene–ethyl acetate (9 : 1) system]. UV spectrum: λ_{max} (chloroform) 286, 322 nm (log ε 3.93, 3.99). The IR spectrum shows an absorption band at 1760 cm^{-1} (carbonyl of an α,β-unsaturated γ-lactone). The NMR spectrum of the alkaloid has a three-proton singlet at 2.54 ppm ($N-CH_3$), two two-proton singlets at 3.76 and 3.80 ppm (2 OCH_3), and a signal at 6.02 ppm (CH_2O_2). The fact that the methoxy groups are present in ring A and the methylenedioxy groups in ring D was deduced from the mass spectra. The facts given show that this alkaloid is *l*-adlumine [2].

From the methanolic mother solution after the separation of the *l*-adlumine we isolated a substance with the composition $C_{21}H_{21}O_6N$, mp 175°C, $[\alpha]_D^{20}$ 0°, the IR, UV, and NMR spectra of which were identical with those of *l*-adlumine. Consequently, this alkaloid is d*l*-adlumine [3].

LITERATURE CITED

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