

THE STRUCTURE OF CODONOPSININE

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Continuing an investigation of the epigeal part of *Codonopsis clematidea* (clematis asiabell) from the mother liquors from codonopsine (I), we have isolated a new base with the composition $C_{13}H_{19}O_3N$, mol. wt. 237 (mass spectrometry), mp 169–170° C (methanol), $[\alpha]_D^{20} -8.8^\circ$ (c 0.1; methanol), R_f 0.23 [on a thin layer of silica gel–gypsum in ethyl acetate–methanol (9:1) system], and we have called it codonopsinine.

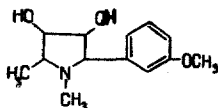
The IR spectrum of the alkaloid has absorption bands at (cm^{-1}): 812, 705 (disubstituted benzene nucleus) and 3375 (active hydrogen). UV spectrum, $\lambda_{max}^{C_2H_5OH}$, $m\mu$: 228, 277, and 284 (inflection) ($\log \epsilon$ 4.14, 3.22, and 3.14, respectively). The IR and UV spectra of codonopsinine are similar to those for codonopsine.

The NMR spectrum of the base taken on a JNM-4H-100/100 MHz spectrometer in deuteriochloroform show signals from the protons of a N—CH₃ group (singlet, τ , 7.92), a CH—CH₃ group (doublet, τ 8.85), and an OCH₃ group (singlet, τ 6.46). A comparison of the NMR spectra of this base and of codonopsine showed that codonopsinine contains only one methoxyl group in the aromatic moiety.

The mass-spectrometric fragmentation of codonopsinine is similar to that of codonopsine [2]. The spectrum has peaks of ions with m/e 237 (M^+), 177, 176, and 162, which differ from the corresponding peaks of codonopsine by 30 m/e .

The oxidation of codonopsinine with potassium permanganate in acetone yielded an acid with mp 110° C, which was identified by a mixed-melting-point test as *m*-methoxybenzoic acid.

On the basis of what has been said above, it is possible to propose for codonopsinine the structure 3,4-dihydroxy-5-(*m*-methoxyphenyl)-1,2-dimethyl-pyrrolidine:



REFERENCES

1. S. F. Matkhalikova, V. M. Malikov, and S. Yu. Yunusov, KhPS [Chemistry of Natural Compounds], 5, 30, 1969.
2. S. F. Matkhalikova, V. M. Malikov, and S. Yu. Yunusov, KhPS [Chemistry of Natural Compounds], 5, 606, 1969 (in this issue.)

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