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DEOXYDIPTOCARPAMINE FROM *Dipthychocarpus strictus*

S. F. Aripova

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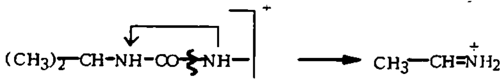
The isolation from the plant *Dipthychocarpus strictus* (fam. Cruciferae) of a series of sulfur-containing alkaloids of the urea type has been reported previously [1, 2]. Continuing the study of the total alkaloids of the seeds of this plant gathered in the environs of Alimtau, by chromatography on a column of silica gel with successive elution by hexane, benzene, benzene—chloroform (1:1), and chloroform, and the rechromatography of individual fractions, we have isolated diptocarpilidine [3], deoxydiptocarpidine [4], deoxydiptocarpaine [5], diptamine [6], and a new alkaloid, (1), with mp 108-109°C, composition $C_{11}H_{24}N_2OS$, R_f 0.95 (benzene—methanol (9:1) system).

Deoxydiptocarpamine is an optically inactive substance with a molecular mass of 186 that is stable under the action of acids and alkalis. Its IR spectrum shows absorption bands of active hydrogen (3350, 3330 cm^{-1}) and of an amide carbonyl (1630 cm^{-1}). Its IR spectrum and that of diptocarpamine (2) [7] are close to one another. A difference consists in the absence from the spectrum of (1) of an intense band (1045-1030 cm^{-1}) corresponding to a sulfoxide group.

The mass spectrum of (1) is characterized by the presence of the clear peak of the molecular ion with *m/z* 232 and of fragments with *m/z* 217 $(M - 15)^+$ and 185 $(M - 47)^+$ The maximum peak in the spectrum is that of the ion with *m/z* 185 and corresponds to the loss by M^+ of a $S—CH_3$ fragment, which is characteristic for compounds having terminal methylthio groups in their structure. The presence of peaks of ions of a homologous series with *m/z* 171, 157, 143, 129, 115, 101, differing successively from one another by 14 a.m.u., showed that the structure of the alkaloid included a *n*-hexyl chain with a terminal methylthio group (*m/z* 185).

Much information was given by a consideration of the peaks of ions in the low-mass region. Thus, one of the intense peaks of ions, with *m/z* 58 which has been observed in the spectrum of diptocarpamine, corresponds in terms of mass to the elimination of a $[(CH_3)_2\text{-}CH\text{-}HN]^+$ fragment. The presence in the spectrum of the peak of an ion with *m/z* 44 having the elementary composition C_2H_6N shows the occurrence of a rearrangement process with the participation of an isopropyl group as the result of α- and C—N-bond cleavages:

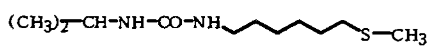


$$\left[(CH_3)_2\text{—}CH\text{-}NH\text{-}CO\text{-}NH\text{—}\right]^{+} \longrightarrow CH_3\text{—}CH{=}\overset{+}{N}H_2$$

The presence of an isopropyl group is also shown by the PMR spectrum of the alkaloid where, in the strong-field region, there is a signal at 1.08 ppm (6H, d, J = 7 Hz) from the protons of a gem-dimethyl group, and a one-proton multiplet at 3.75 ppm (CH). A signal at 2.06 ppm (3H, s) has been assigned to the protons of a methylthio group.

The spectral characteristics of (1) and of diptocarpamine [7] show that the compounds have similar structures and differ in molecular mass by 16 a.m.u. This permitted the assumption that (1) is apparently a deoxy derivative of diptocarpamine.

Thus (1) is deoxydiptocarpamine and has the structure of N-isopropyl-N′-[6-(methylthio)hexyl]urea (1)



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