

7- $\beta$ -glucoside), mp 219–220°C,  $[\alpha]_D^{20}$  –42° (in methanol), a glycoside from the branches of Calycanthus occidentalis [7]. Eleutheroside B<sub>1</sub> differs from calycanthoside only by its specific rotation and is therefore its anomer.

Eleutheroside C, mp 140°C,  $[\alpha]_D^{20}$  +186° (in water), has been identified as methyl  $\alpha$ -D-galactoside by means of its analytical data, specific rotation, chromatographic behavior ( $R_f$  value and coloration of the spots), and its IR spectrum. Ethyl  $\alpha$ -D-galactoside has previously been isolated from the seeds of lupins and has been called galactite [8].

Eleutherosides D and E, differing slightly in their  $R_f$  values, are completely identical with respect to melting point, analytical data, and IR and UV spectra. Thin-layer chromatography of the genins formed by the hydrolysis of eleutherosides D and E have shown that they are identical. It is likely that eleutheroside D consists of a more soluble crystalline form of eleutheroside E; it is not excluded that the two compounds differ only in configuration.

Thus, a methanolic extract of the roots of Eleutherococcus senticosus contains representatives of very different classes of natural compounds and this evidently explains the breadth of the pharmacological action of an extract of Eleutherococcus root.

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#### AN INVESTIGATION OF THE ALKALOIDS OF UNGERNIA TRISPHERA, NARCISSUS TAZETTA, N. KRISTALLI, and N. FOLLI

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In a study of the alkaloids of the genus Ungernia (family Amaryllidaceae), we have investigated the leaves of U. trisphaera collected in the early vegetation period in the Kaakha Region of the Turkmen SSR, and three species of Narcissus, also belonging to this family.

From the leaves of U. trisphaera, in addition to the licorine and hippeastrine obtained previously [1], we have isolated tazettine, pancratine, hordenine [2, 4], and two substances of nonalkaloid nature. One of them has been identified as acetamide [2], and the second (mp 67–68°C), an optically inactive substance with the composition C<sub>31</sub>H<sub>64</sub>, proved to be n-hentriacontane [3]. This is the first detection of the latter in plants of the family Amaryllidaceae. These substances were separated by making use of their different solubilities in organic solvent.

Then we investigated the plant N. tazetta, gathered in the basin of the River Shargun in the Surkhandar Oblast by the botanist S. Khamidkhodzhaev. Licorine and pancratine were isolated from the leaves and bulbs of N. tazetta in addition to the tazettine [5] previously found by Späth [5].

After the dying off of the epigeal part, the bulbs of N. kristalli taken from the Botanical Gardens of AS UzSSR contained 0.27% of total alkaloids. Chromatography on a column of alumina [with elution by means of benzene and a mixture of benzene and ethyl acetate (1:1)] gave five alkaloids (table). The bulbs of N. folli were found to contain 0.45% of alkaloids (33% of the total consisted of licorine). Of course, the leaves that had died off of the species of Narcissus that we investigated contained no alkaloids.

Plant	Date of collection	Plant organ	Total, %	Alkaloids and other substances isolated	Content of substances, % of the dry weight of the plant
U. trisphaera	10 May 1963	leaves	0.85	Licorine hippeastrine tazettine pancratine hordenine acetamide n-hentriacontane	0.2 0.091 0.01 0.0005 0.0001 0.02 0.08
N. tazetta	4 Apr. 1964	"	0.23	licorine tazettine pancratine	0.13 0.011 0.001
N. tazetta	4 Apr. 1964	bulbs	1.0	licorine tazettine pancratine	0.52 0.11 0.001
N. kristalli	25 Aug. 1965	"	0.27	d-narwedine dl-narwedine licorine tazettine	0.1 0.009 0.032 0.011
N. folli	25 Aug. 1965	"	0.45	galanthamine licorine tazettine	0.007 0.15 0.08

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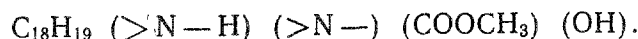
#### THE STRUCTURE OF VINCARIDINE

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When the total alkaloids of *Vinca erecta* were separated further on alumina [1], a new base, vincaridine, was isolated (0.007% of the weight of the dry plant) with  $R_f$  0.78 [butan-1-ol-acetic acid-water (100:5:100) system] and  $R_f$  0.17 [in a thin layer of alumina in the ethyl acetate-methanol (9:1) system].

Vincaridine has the composition  $C_{20}H_{24}N_2O_3$ , mp 216-217°C (methanol),  $[\alpha]_D - 58^\circ$  (c 0.73; chloroform) and forms a hydrochloride with mp 186-187°C. The IR spectrum of the base shows bands of N-H stretching vibrations ( $3390\text{ cm}^{-1}$ ), of an ester group ( $1730\text{ cm}^{-1}$ ), and of a disubstituted benzene ring ( $760\text{ cm}^{-1}$ ). The UV spectrum is characteristic for indoline bases and has two maxima:  $\lambda_{\max}$  234, 288 m $\mu$  (log  $\epsilon$  3.96, 3.54). The spectral data and the elemental analysis show that vincaridine corresponds to the following analytical formula:



Acetylation of the base led to an acetylated product with mp 206-207°. The IR spectrum of the latter lacked the band of an NH group ( $3390\text{ cm}^{-1}$ ) and contained the band of an amide carbonyl group ( $1630\text{ cm}^{-1}$ ). The IR spectrum of acetylvincaridine exhibited a band due to the absorption of a hydroxy group ( $3260\text{ cm}^{-1}$ ).

In a study of the mass spectrum of vincaridine, we found peaks at 340 m/e (molecular ion), 323 m/e (M - OH), and 264 m/e (M - OH - COOCH<sub>3</sub>). In addition to these, there were peaks at 130, 144, 169, 182, and 251 m/e formed from the indole moiety of the molecule and a peak at 206 m/e formed from the nonindole moiety. The results of a