

According to the UV and PMR spectra, methoxy groups were present in position 3', 6, and 8. The presence of OCH<sub>3</sub> in position 3' was confirmed by the considerable (25%) Overhauser effect [2] for the signal of the proton at C<sub>2</sub>' and its absence for the signals of the other protons.

Thus, substance (III) has the structure of 4,5,7-trihydroxy-3',6,8-trimethoxyflavone. It is new, and we have called it menthokubanone.

This is the first time nevadensin and hymenoxin have been isolated from the genus *Mentha*.

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#### CATECHINS AND PROANTHOCYANIDINS OF *Alhagi pseudoalhagi*

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We have studied the catechins and proanthocyanicins of camelthorn (*Alhagi pseudoalhagi* (MV) Desv.) [1-4].

From the epigeal part of *A. pseudoalhagi* using column chromatography on KSK and "Sil-pearl" silica gel with moist diethyl ether, ethyl acetate, and ethyl acetate-methanol in various ratios with increasing concentrations of methanol we have isolated, in addition to flavonol glycosides, four substances of catechin nature and one proanthocyanidin.

Substance (I) with mp 172-173°C (water),  $\lambda_{\max}$  280 nm (ethanol),  $[\alpha]_D^{20} +16.9^\circ$  [acetone-water (1:1)] was chromatographically identical with (+)-catechin isolated from *Calligonum minimum* Lipski [5], and a mixture with it gave no depression of the melting point. A determination of ortho-OH groups [6] showed the presence of 11.8%, the theoretical figures for (+)-catechin being 11.7%.

Substance (II) melts at 168-170°C with decomposition. Optically inactive,  $\lambda_{\max}$  271 nm (ethanol). The amount of OH groups found was 17%. From its chromatographic behavior and a mixed melting point, it was identified as (±)-gallocatechin which has been isolated from *Polygonum coriarium* Grig. [7].

Substance (III) has mp 217-218°C (water),  $\lambda_{\max}$  270 nm (ethanol),  $[\alpha]_D^{20} -39.2^\circ$  (c 1.29; methanol). The amount of nuclear phenolic groups found was 16.8%. The identity of (III) as (−)-epigallocatechin was also established by a chromatographic comparison and a mixed melting point with the (−)-epigallocatechin isolated from *P. coriarium* Grig. [7].

Substance (IV), giving a positive reaction with the vanillin reagent, could not be isolated in the crystalline form because of its high lability. When it was heated with a 1 N solution of HCl, an anthocyanidin — delphinidin — was formed, as was established by comparative chromatography in the presence of authentic samples of anthocyanidins isolated from the flowers of the cottonplant and kenaf [8, 9]. Substance (IV) is apparently leucodelphinidin.

The proanthocyanidin consists of a light cream-colored amorphous powder with an astringent odor, readily soluble in water, ethanol, methanol, and n-butanol, less readily in ethyl acetate, and insoluble in benzene, chloroform, and hexane, readily oxidizing in the air. On paper chromatography in the butan-1-ol-acetic acid-water(40:12:28) system it appeared in the form of a band with R<sub>f</sub> 0.00-0.24. Acid hydrolysis with 2 N HCl solution led to the formation of delphinidin. (−)-[epigallocatechin, (+)-gallocatechin, and (+)-catechin, were detected in the products of the reductive hydrolysis of proanthocyanidin under the action of SO<sub>2</sub>.

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On the basis of the results of acid and reductive hydrolysis it may be assumed that (+)-catechin, (±)-gallocatechin, (−)-epicatechin, and leucodelphinidin participate in the formation of the proanthocyanidine molecules.

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#### PHENOLIC COMPOUNDS OF *Androsace septentrionalis*

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In addition to triterpene glycosides, more than 15 phenolic compounds have been detected by chromatography on FN-3 paper in the solvent systems 15% and 60% CH<sub>3</sub>COOH and BAW (4:1:2) in *Androsace septentrionalis* [~ northern rock jasmine], and on the basis of their chromatographic mobilities, chromogenic reactions, and fluorescence in UV light they have been assigned to the flavonols, flavonol glycosides, phenolcarboxylic acids, and coumarins.

After the precipitation of the triterpene glycosides [1], the methanolic-acetone solution was evaporated in vacuum, the residue was dissolved in water, and the solution was extracted repeatedly and successively with chloroform, diethyl ether, and ethyl acetate. The extracts were concentrated, and the dry residues were studied. On the basis of the results of acid hydrolysis of the ethyl acetate and ether fractions, it was concluded that the dominating flavonoids are quercetin glycosides.

The phenolic compounds were isolated by chromatography on columns with Kapron [nylon-6] powder. When the ethereal fraction was separated with the aid of discrete-gradient elution with mixture of chloroform and ethanol, substances (I)-(III) were isolated, and when the ethyl acetate fraction was separated by the use of mixtures of water and ethanol with increasing concentrations of ethanol, substances (I), (II), and (IV) were obtained.

On the basis of physicochemical properties, qualitative reactions, and IR and UV spectra with diagnostic reagents [2], substance (I) was identified as quercetin, (II) as kaempferol, (III) as 3,4-dihydroxycinnamic (caffeic) acid; and (IV) as rutin.

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