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TRITERPENE GLYCOSIDES OF *Androsace septentrionalis*

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We have reported previously [1] that eleven glycosides have been detected in *Androsace septentrionalis*, four of which are quantitatively predominant. By column chromatography on silica gel in the chloroform-methanol-water (61:32:7) system we have isolated androseptoside F with mp 197-200°C, $[\alpha]_D^{17} -60^\circ$ (c 1.0; methanol), making up 15% combined dominant glycosides.

After glycoside F had been hydrolyzed with 2.5% sulfuric acid, in the neutralized hydrolysate we detected — by paper chromatography and by GLC of the acetates of aldononitrile derivatives — glucose, arabinose, and rhamnose in a ratio of 1:2:1. The melting point of the aglycone obtained and its specific rotation and IR spectrum coincided with those for primulogenin A [mp 248-250°C, $[\alpha]_D^{20} +55^\circ$ (c 1.0; chloroform)].

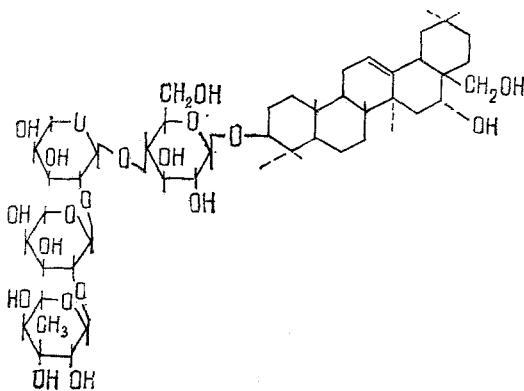
To determine the positions of attachment of the manosaccharides to one another, partial hydrolysis was performed with 1% sulfuric acid for an hour. The hydrolysis products were chromatographed on a column in the system mentioned above, which yielded three progenins coinciding in melting points, specific rotations, and R_f values on thin-layer chromatograms with androseptosides B, D, and D₁ [2, 3].

As a result of the methylation of androseptoside F followed by methanolysis of the permethylate and thin-layer chromatography [benzene-acetone (2:1)] and methyl 2,3,4-tri-O-methyl- α -rhamnopyranoside, methyl 2,3,6-tri-O-methyl-D-glucopyranoside, and methyl 3,4-di-O-methyl- α -arabinopyranoside. The periodate oxidation of the glycoside under investigation followed by acid hydrolysis of the oxidized product and paper chromatography yield not one monosaccharide, which confirms the results of methylation.

The position of attachment of the carbohydrate chain to the aglycone was established by analogy with other glycosides of the β -amyrin series, and the configurations of the glycosidic centers according to Klyne's rule.

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Thus, the structure of androseptoside F can be represented by the following formula:



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ALKALOIDS OF *Veratrum lobelianum*

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Veratrum lobelianum Bernh. (family *Liliaceae*) is widely distributed on Georgian territory [1]. According to literature information, the plants growing in other regions of the Soviet Union are rich in alkaloids [2]. On studying the dynamics of the accumulation of the combined alkaloids according to the vegetation phases of plants, collected in the region of the village of Bakuriani (Georgian SSR), we obtained the following results:

Plant organ	Vegetation period	Height of the plant, cm	Alkaloid content, %
Epigeal part	Beginning of vegetation	10-15	1.50
Hypogea part	"		2.38
Epigeal part	Active vegetation	70-80	0.16
Hypogea part	"		2.48
Epigeal part	End of vegetation	100 and above	Traces
Hypogea part	"		2.32

From the combined alkaloids obtained by treating the roots and rhizomes of *Veratrum lobelianum* with chloroform, we obtained, in the form of its sulfate, substance (I) with mp 298-300°C (ethanol). By subsequent boiling with a 5% solution of KOH in ethanol and recrystallization from methanol, we obtained a base $C_{27}H_{39}NO_3$, with mp 245-247°C (methanol), $[\alpha]_D^{20} -150^\circ$ (c 2.0; ethanol) [3]. Its IR spectrum showed absorption bands at (cm^{-1}) 3300, 3200 ($-\text{OH}$; =NH); 1715 ($=\text{CO}$); 1635 (conjugated double bond). Its amount in the roots in the active vegetation phase was 0.5%.

By comparing the results of analysis with those given in the literature, it may be considered that alkaloid (I) is jervine [4].

On extraction of the meal with ethanol, from an ethereal fraction we isolated a crystalline substance (II) — $C_{33}H_{49}NO_8$, with mp 283-285°C, $[\alpha]_D^{20} -145^\circ$ (c 2.0; chloroform) [5, 6]. The IR spectrum of (II) was similar to that of jervine: (cm^{-1}) 3500, 3300 ($-\text{OH}$, =NH); 1700

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