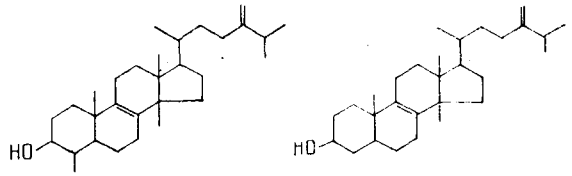
fragments of all these methylated sterols. This enabled us to identify compound (I) as 4,14-dimethylergosta-8,24(28)-diene-3-ol, and compound (II) as 14-methylergostadiene-3β-ol.



I II

These sterols have been described only in strains of yeast with a disturbed 14α-demethylated function [6] and have not been identified in mutants belonging to other genetic classes.

Thus, methylated sterols have been identified for the first time in yeasts in which no disturbance of the function of the enzyme 14α-demethylase has been detected.

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ALKALOIDS OF THE ROOTS OF Vinca major INTRODUCED INTO GEORGIA

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UDC 547.944.945

Continuing a chemical study of Vinca major L. introduced into Georgia, we have investigated the hypogeal organs of the plant for the presence of alkaloids [1, 2].

The roots (1.3 kg) of the plant collected in the phase of secondary autumn flowering (experimental field of the Institute of Pharmacochemistry of the Georgian Academy of Sciences, October, 1985) were extracted with acidified methanol. After the methanol had been distilled off, the acid extracts were made alkaline with a 25% solution of ammonia to pH 9-10, and the alkaloids were extracted with chloroform. The yield of purified alkaloids amounted to 0.385%, calculated on the air-dried raw material.

By separating the total material with respect to basicity with citrate–phosphate buffers having pH 7, 6, 5, 4, 3, and 2.2, four bases were isolated. The individual alkaloids were identified from the results of a comparison of their physicochemical constants and spectral characteristics with literature information and by determining mixed melting points with authentic samples of alkaloids.

Treatment with acetone of the fraction obtained from the buffer with pH 6 yielded a crystalline base (I) with mp 227-229°C (methanol), which was identified as vincamajoreine [4].

When subjected to column chromatography on alumina (neutral, activity grade II, 1:30) with elution by ethyl ether, the fraction from the buffer with pH 3 yielded (in fractions 1-3) the crystalline alkaloid (II) – vincamajine [3].

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Base (III) with mp 222-225°C, identified as reserpinine [5], was isolated by treating the fraction from the buffer with pH 2.2 with methanol. An exhaustive chloroform extract was chromatographed on a column of alumina (neutral, activity grade II, 1:30). Elution was performed with ethyl ether, ethyl ether–chloroform, chloroform, chloroform–methanol, and methanol.

Fractions 6-11 eluted by ethyl ether yielded a crystalline base (IV) with mp 185-186°C (methanol). Base (IV) was identified as majdine [6].

The alkaloids vincamajoreine, vincamajine, reserpine, and majdine have been isolated previously from the herbage of Vinca major L. introduced into Georgia [1, 2].

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INFLUENCE OF MAGNESIUM IONS ON COTTON PLANT PYROPHOSPHATASE

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UDC 633.511:577.15

Pyrophosphatase reactions take place at a considerable rate if ions of bivalent metals are present in the system [1, 2]. We have previously reported the detection and separation of two forms of cotton plant pyrophosphatase [3]. We have now studied the influence of Mg^{2+} ions on the hydrolytic capacity of the alkaline pyrophosphatase.

The results have shown that magnesium ions are activators of the enzyme in all the concentrations considered and the activation effect is proportional to the amount of $MgCl_2$ in the medium (Fig. 1a). The optimum concentration of $MgCl_2$ was 5 mM, regardless of the concentration of the substrate. At higher concentrations of the metal in the incubation mixture the activity of the enzyme fell and the curve of the dependence of the rate of the reaction assumed a linear nature.

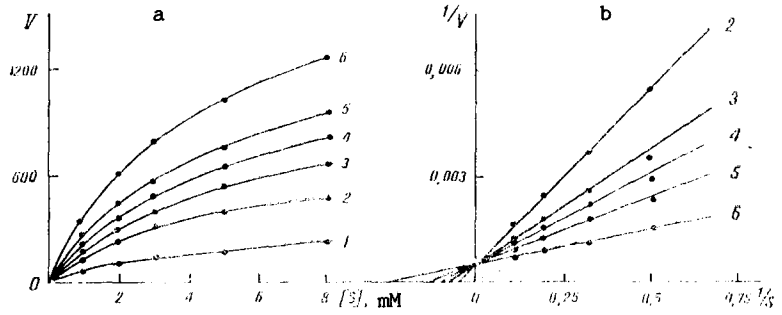

Fig. 1. Action of Mg^{2+} ions on pyrophosphatase activity: a) dependence of the rate of the reaction on the concentrations of substrate and metal; b) the same in the Lineweaver–Burk coordinates; 1) without Me; 2) 0.5 mM; 3) 1 mM; 4) 2 mM; 5) 3 mM; 6) 5 mM.

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