

## LITERATURE CITED

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THE PHOSPHOLIPIDS OF THE COTTON PLANT  
OF VARIETY "TASHKENT -3"

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The present paper gives the results of a study of the phospholipids present in the seed kernels of the wilt-resistant cotton plant of variety "Tashkent-3." The total phospholipids obtained by Folch's method [1] from the acetone-defatted seed kernels contained 30-50% of carbohydrates, depending on the conditions of extraction and treatment. After precipitation with acetone, we purified the crude total fraction in  $\text{CHCl}_3 - \text{CH}_3\text{OH} - \text{H}_2\text{O}$  (90:10:1) by gel filtration on Molselekt G-25 [2]. The completeness of purification was checked by thin-layer chromatography. The sugars were eluted from the column with methanol, and after acid hydrolysis they were analyzed by paper chromatography.

The carbohydrates consisted of disaccharides containing galactose and glucose residues. The yield of total phospholipids after purification from carbohydrates was 1.5% of the weight of the air-dry kernels. However, in addition to phosphorus-containing components, the total phospholipids also contained substances of sterol nature and neutral lipids, which were eluted from the silica gel with acetone. The yield of pure total lipids was 1.3%. Their phosphorus content was 3.2%. On two-dimensional chromatography in the systems 1)  $\text{CHCl}_3 - \text{CH}_3\text{OH} - 25\% \text{NH}_3$  (65:40:10) and 2)  $\text{CHCl}_3 - \text{CH}_3\text{OH} - \text{H}_2\text{O}$  (65:35:5), seven phosphorus-containing spots appeared with  $R_f$ : 0.05 lysophosphatidylcholines (LPChs); 0.1 unidentified,  $X_1$ ; 0.35 phosphatidylinositols (PIs); 0.4 phosphatidylcholines (PChs); 0.6 phosphatidylethanolamines (PEs); 0.9 unidentified,  $X_2$ ; and 0.9 unidentified,  $X_3$  (the  $R_f$  values are given in system 2). Then the total phospholipids were separated into ethanol-soluble and ethanol-insoluble fractions by precipitation in ethanol (10-fold volume). The ethanol-soluble fraction amounted to 73% and the ethanol-insoluble fraction to 27%. Two-dimensional chromatograms of both fractions were different from those of the combined phospholipids both qualitatively and quantitatively: The ethanol-soluble fraction lacked the component  $X_1$  and the ethanol-insoluble fraction lacked the LPChs. The quantitative separation of the individual components in the combined phospholipids and also in the ethanol-soluble and ethanol-insoluble fractions, was determined by their P contents [4] (Table 1).

Thus, the main phosphorus-containing substances of the total phospholipids are phosphatidylcholines, phosphatidylinositols, and phosphatidylethanolamines, and these were isolated in the pure state by column chromatography of the ethanol-soluble and ethanol-insoluble fractions of the total material on silica gel with subsequent rechromatography in a thin layer.

TABLE 1. Composition of the Total Phospholipids, %

Composition	$x_1$	LPChs	PIs	PChs	PEs	$x_2$	$x_3$
Total phospholipids	2.0	5.7	17.1	55.1	12.4	5.7	2.0
Ethanol-soluble fraction	—	4.6	4.6	51.8	29.7	6.9	2.4
Ethanol-insoluble fraction	3.0	—	39.3	14.4	19.6	15.9	7.8

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### FLAVONOIDS OF *Senecio subdentatus*. III

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We have isolated two flavonol glycosides from the herb *Senecio subdentatus* L. D. B.

Compound 1,  $C_{28}H_{32}O_{17}$ , mp 210-212°C,  $R_f$  0.31 (BAW, 4:1:2); 0.56 (15% acetic acid),  $[\alpha]_D^{20} - 85^\circ$  (c 0.5; DMFA),  $\lambda_{max}$  355, 255 nm (log  $\epsilon$  4.15, 4.28). On hydrolysis with 5% sulfuric acid, it was split into isorhamnetin (yield 52%), galactose, and glucose.

Compound 2,  $C_{27}H_{30}O_7$ , mp, 215-217°C,  $[R_f$  0.29/0.55,  $[\alpha]_D^{20} - 92^\circ$  (c 0.3; DMFA),  $\lambda_{max}$  360, 257 nm (log  $\epsilon$  4.13, 4.31); was hydrolyzed to quercetin (yield 49%), galactose and glucose.

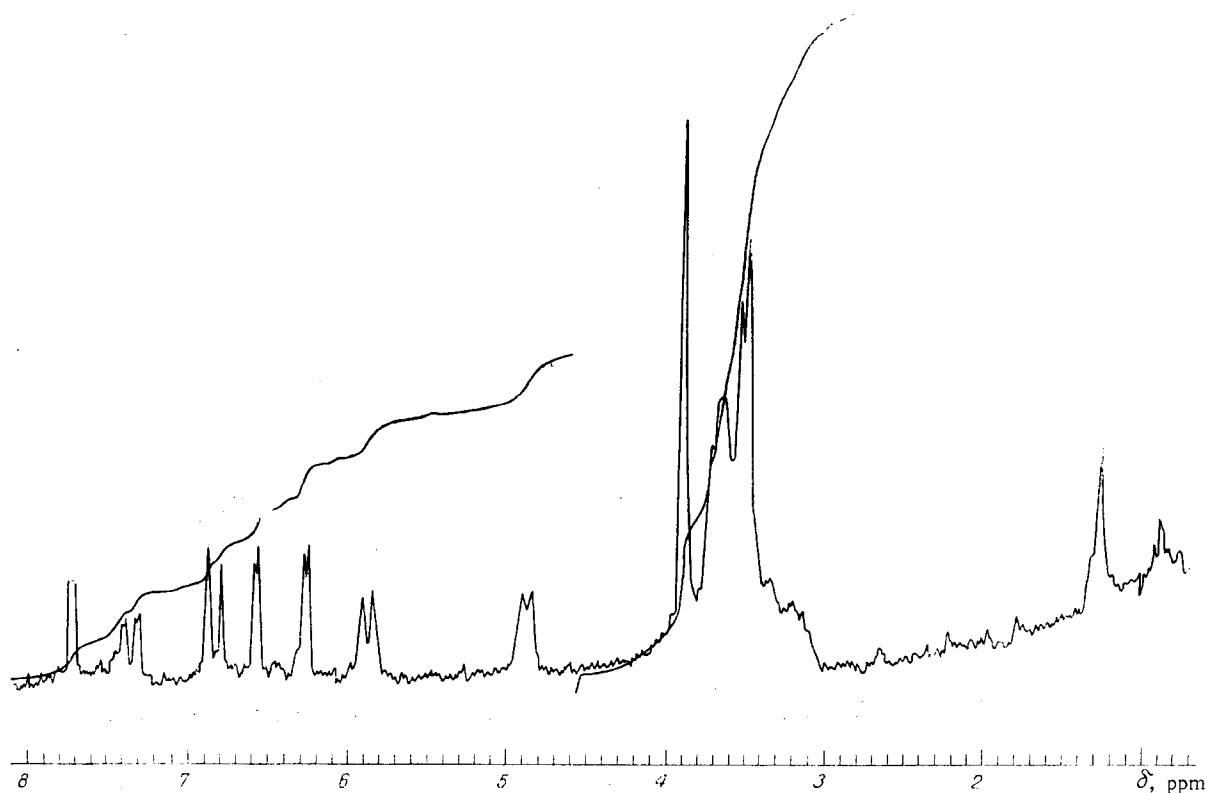


Fig. 1. NMR spectrum of the TMS ether in  $CCl_4$ .

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