PHOSPHOLIPIDS OF KENAF

M. Tolibaev, Kh. S. Mukhamedova, and S. T. Akramov

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Hibiscus cannabinus (kenaf hibiscus), family Malvaceae, is a valuable fiber plant which is widely cultivated in Uzbekistan (genus Hibiscus). There is information in the literature on the phospholipids of the oil of H. abelmoschus cultivated in India [1].

We have studied the phospholipids of the seeds of kenaf hibiscus of variety Kuban' 333 grown in an experimental plot of the central Asian branch of VIR (All-Union Scientific-Research Institute of Plant Breeding).

The combined phospholipids from the acetone-defatted seeds, obtained by Folch's method [2], consisted of a powder with a creamy tinge. The combined carbohydrates were purified by gel filtration through Molselekt G-25 in chloroform–methanol–water (90 : 10 : 1) [3]. The yield of total lipids purified from carbohydrates on the air-dry weight of the seeds was 1%. The phosphorus content of the combined lipids was 3.8% [4]. Their qualitative and quantitative compositions were determined by two-dimensional chromatography followed by the colorometric determination of the phosphorus in the spots [5, 4]. The following solvent systems were used: 1) chloroform–methanol–25% ammonia (14 : 6 : 1), and 2) butan-1-ol–acetic acid–water (65 : 20 : 20). Seven phosphorus-containing spots were detected with R_f (in the 2nd direction): 0.22 lysophosphatidylcholines (lyso-PChs); 0.34, phosphatidylcholines (PChs); 0.67, phosphatidylinositols (PIs); and 0.72, phosphatidylethanolamines (PEs); and also 0.75, X_1, 0.78, X_2, and 0.92, X_3 – unidentified PLs; they were distributed quantitatively in the following order (%): PChs 38.2; PIs 22.7; PEs 15.6; lyso-PChs 6.8; X_1 6.6; X_2 5.7; X_3 4.4.

The combined phospholipids were separated on a column of silica gel and the fractions eluted were then rechromatographed in a thin layer to give homogeneous fractions of PChs, PIs, and PEs.

Fatty acids and glycerol were found in the acid hydrolyzates of all the phospholipids, and also choline in the case of the PCHs, ethanolamine in the case of the PEs, and inositol in the case of the PIs. The water-soluble hydrolysis products were identified by TLS in the system described by Stanacey et al. [6].

The absorption bands in the IR spectra of the homogeneous fraction corresponded to literature information for the glycerophospholipids [7].

The amount of the main phosphorus-containing compound – phytin – in the seed meal was determined (4.5%).

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