PROTEIN CONTENT OF COTTON PECTIN

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The amount of protein substances in food-grade cotton pectin is important in the production of pectin from the valves of cotton husks. The technology of the production of food-grade cotton pectin presupposes a cycle of eliminating accompanying ballast substances from the cotton valves, especially the protein components [1]. The amount of the latter has not been studied at the chemical level. The aim of our work was to determine the nature of the protein substances and their qualitative and quantitative ratio. The protein components were isolated from the pectin by Sevag's method [2], which showed the presence of albumins, globulins, and aromatic acids. Extraction was carried out with a 0.2 N solution of sodium hydroxide for 30 min at a ratio of solution to pectin of 10:1, and the proteins were precipitated with a 10% solution of trichloroacetic acid. The yield was 3%.

To determine their amino acid composition, the proteins were hydrolyzed with 6 N hydrochloric acid in vacuum-sealed tubes at 110°C for 24 h [3]. After the tubes had been opened and the remaining acid had been distilled off, the hydrolyzate was analyzed on an LKB 4101 amino acid analyzer (Sweden). For a control we used the hydrolysis products obtained by the same method from bovine albumin. The results of the analysis are given in Table 1. No cysteine or arginine was detected in the protein isolated from cotton valve pectin, while the amount of aspartic acid was high (62.7 and 74.9 nmole).

TABLE 1. Amino Acid Compositions of the Proteins of Cotton Pectin and of Bovine Albumin (nmole*)

Amino acid	Cotton pectin protein	Bovine albumin
Aspartic acid	62,7	53,4
Threonine	14,7	32,9
Serine	16.2	26,2
Glutamic acid	29,1	85,3
Proline	23.4	30,3
Cysteine	—	29,1
Glycine	24,6	16,2
Alanine	20,0	44,2
Valine	17,4	33,5
Methionine	4,9	4,1
Isoleucine	9,8	12.2
Leucine	20,3	62,1
Tyrosine	7,6	19,0
Phenylalanine	12,0	28,6
Histidine	15,5	15,0
Lysine	15,6	67,4
Arginine	—	22,4

*Basis of the calculation not given – Publisher.

Thus, the protein component that we have characterized in a cotton pectin powder has no essential influence on its properties.

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LITERATURE CITED

1. Kh. T. Salomov, L. D. Fomina, and Kh. A. Arifkhodzhaev, Republican Scientific and Technical Conference on The Scientific and Practical Aspects of the Complex Utilization of the Cotton Plant as a Raw Material for the Food Industry: Abstracts of Lectures [in Russian], Tashkent (1990), pp. 138-139.
2. M. G. Sevag, Biochem. J., 273, 419 (1934).
3. G. A. Kochetov, Practical Handbook on Enzymology [in Russian], Moscow (1980).