

A STUDY OF THE CARBOHYDRATE COMPOSITION OF THE WASTES
FROM THE PRODUCTION OF FOOD PROTEIN FROM COTTONSEED MEAL

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The all-sided comprehensive study of the cotton plant, which is the main agricultural crop of the republics of Central Asia is of great importance. In view of the preparation of food protein from factory cottonseed meal (Kokand Oils and Fats Combine), it appeared of interest to investigate the carbohydrates of the wastes from the production of protein (the sera formed in the precipitation of the protein).

The serum (1 liter, extract from 100 g of meal) obtained after the precipitation and separation of the protein and phytin [1] was concentrated to 100 ml. The water-soluble polysaccharides (WSPs) were precipitated with a threefold volume of ethanol and were freed from protein impurities by reprecipitation from 5% dichloroacetic acid with ethanol. The WSPs were washed free from acid with ethanol and were dried in a vacuum dessicator over P_2O_5 . Yield 0.2% of the weight of the air-dry raw material.

The mother solution after the precipitation of the WSPs was concentrated to a syrup and its content of mono- and oligosaccharides (MOSs) was determined. Their yield was 0.8-1.0%.

The WSPs consisted of an amorphous white powder with a creamy tinge containing no nitrogen and forming an aqueous solution which gave no coloration with iodine. To determine their qualitative carbohydrate composition, the WSPs (0.1 g) were subjected to complete hydrolysis (2 N H_2SO_4 at $100^\circ C$, 8 h). By paper chromatography [PC, butan-1-ol-pyridine-water (6:4:3)] and GLC (in the form of polyol acetates) arabinose, galactose, xylose, and rhamnose were found in the hydrolyxate in a ratio of 18:11:1:1.5. Fructose, glucose, and oligosaccharides with chromatographic mobilities relative to cellobiose of 1.1, 0.4, 0.3, 0.2, and 0.09 were detected in the MOSs of the fraction by PC. The first two oligosaccharides were identified with authentic specimens and by GLC as sucrose and raffinose. The amount of the latter obtained by the method of Englis et al. [2] was 0.8% of the weight of the raw material. The other oligosaccharides were present in insignificant amounts, but they contained glucose, fructose, and galactose.

The MOSs and WSPs were isolated from the serum by known methods. The main component was raffinose and the serum can therefore be used as an additional source of raffinose.

LITERATURE CITED

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