

## XYLITOL FROM PLANT RAW MATERIAL

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UDC 547.917:541.128

Various raw materials are used to obtain xylitol, and, in southern regions, traditionally, cotton husks [1].

In order to expand the variety of raw material suitable for processing into xylitol and to study the influence of soil and climatic conditions, we have investigated maize cobs (Vir-156, Kaz-126), guza-paya [cotton stems] (F-108, S-1727, 108F), and grape vines (Damskii pal'chik, Pobeda, Rozovyi taifen).

To eliminate undesirable impurities, the comminuted raw material was treated with 10% H<sub>2</sub>SO<sub>4</sub> for 2 h at a ratio of initial raw material to solvent of 1:10. Incomplete hydrolysis was performed with 2 H<sub>2</sub>SO<sub>4</sub> at 110°C for 3 h.

Reducing substances (RSs) were determined by Bertrand's method, and individual monosaccharides by paper chromatography [2] using Filtrak FN-3, 11, 14 paper in the solvent system butanol—acetic acid—water (4:1:5). The substances were detected by spraying first with KIO<sub>4</sub> and then with a mixture of benzidine, acetone, and hydrochloric acid in a ratio of 10:2:1.

The results of analysis showed the suitability of the selected raw materials for the production of xylitol. Below we give the levels of monosaccharides in the xylose hydrolysates (g per 100 g):

Raw material	Yield of RSs, % on the dry raw material	Xylose	Arabinose	Galactose	Glucose
Maize cobs	38	73.0	6.0	3.1	6.8
Guza-paya	20.1	57.8	7.2	3.3	5.2
Grape vines	29.4	57.0	8.1	3.7	6.5

Reduction of the purified hydrolysate was carried out in an autoclave with vigorous stirring in an atmosphere of hydrogen in the presence of a multicomponent alloy catalyst. Hydrogenation conditions: pressure of hydrogen 4 MPa, temperature 100°C, time 90 min.

The yield of crystalline xylitol was 70% of the dry matter in the hydrogenated hydrolysate for the maize cobs, 65% for the guza-paya, and 60% for the grape vines.

The quality of the xylitol obtained satisfied the requirements of TU [Technical Specification] 64-10-04-89; its mp was 93.4°C and its RS content not more than 0.08%.

In view of the availability of the raw material used, the cost of the product obtained was considerably below the factory cost.

## REFERENCES

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