

REGULARITIES OF MOISTURE EXCHANGE DURING CONVECTION DRYING

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Work purpose.

Various raw materials require certain conditions for the preparation of the material and the drying process. During drying, in addition to general dehydration, the transformation of natural components occurs. These components depend on the nature interaction of moisture with the solid frame raw material and are a function of the chemical composition, density of parenchyma tissues, thermophysical properties, etc.

The work focuses on starchy raw materials, in particular root of sweet potatoes, which are gaining popularity far beyond the countries of the tropical and subtropical climate, including our country. The content of dry matter in the root crops is from 20 to 30 %, with 60...70 % of starch. Roots of sweet potatoes are used fresh in the preparation dishes, and also used in the industry to allocate the target components of a variety and obtain a variety forms of food products, including dried: cereals, chips, flour.

Results.

The results of theoretical and experimental studies determined the optimum conditions and parameters of heat-water treatment of sweet potatoes. These parameters provide a qualitative change in the internal equilibrium of the colloidal system and favorably affect the hydration of starch grains and coagulation of proteins.

Energy-efficient two-stage drying modes have been developed, in which the temperature of air in the first stage of the process is 80...100 °C, in the second – 55...70 °C, the material temperature during dewatering 50...60 °C reduction of drying time, reduction of heat losses to 15 %, production of dried products with high organoleptic characteristics. The nature of the plotted graphic dependencies shows that the removal of moisture from the root crops of sweet potatoes passes with a decreasing rate throughout the dehydration. Based on the results obtained, a block diagram of the technological process root crops processing is proposed. Formation and control of qualitative indicators is carried out at each stage, ensuring compliance with the regime parameters and environmental cleanliness of the entire technological process.

Conclusions.

Innovation of the research results is confirmed by the patent of Ukraine for the invention. The results are actual and have a prospect for domestic producers given the growing popularity of sweet potatoes in Ukraine.