EFFECT OF AIR FLOW ON THE TEMPERATURE OF VEGETABLE RAW MATERIAL DURING DRYING PROCESS IN THE MASS EXCHANGED MODULE

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The vegetable raw material drying process is carried out in mass exchanged modules where the mass exchanged surface is smaller than the evaporation surface and it is made of vapor tight material. Reducing of external mass exchanged surface creates the conditions under which the rate of moisture evaporation in the product exceeds the rate of vapor removal from capacity, it causes sharp intensification of the drying process and the porous structure formation.

One of the main indices of the quality of the dried product is the conservation of biologically active substances. The value of the loss of these substances is determined by chemical reactions which occur in the product during drying. The rate of these reactions increases with increasing of material temperature. Under convective drying the air flow temperature and material temperature during drying process are nearly equal, it restricts the possibility of intensifying the process by increasing the air flow temperature. It should be noted that the rate of chemical reactions depends not only on the temperature value, but also on its action time. Therefore, in some drying plants temperature effect on the material is reduced by introducing oscillating modes it means short staying of the material in the zone of high temperature with following its movement into the zone of low temperature. However, implementation of these processes is restricted by technical complexity and low versatility concerning the type of raw material which is dried.

The effect of air flow parameters on the temperature of vegetable raw material during the drying process under convective heat supply to the mass exchanged module was considered in the research paper. The analysis of the complex "temperature – time of action – temperature" was done on the base of the research results, the correlation between the average integral temperature and temperature was shown. Correlation between air flow velocity and average integral temperature was not identified.

Keywords: drying, vegetable raw material, mass exchanged module, average integral temperature.