

## TECHNOLOGY AND PARAMETERS OF REDUCING THE DRYING PERIOD BY PRELIMINARY PROCESSING OF VEGETABLES

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**Abstract.** *Storage of organoleptic indicators and a reduction in the duration of the drying period to 1-1.5 drums is achieved by drying sabazvots with infrared waves to reduce the drying period when drying them in a convective drying device.*

**Keywords:** *extremely high frequency, infrared waves, freezing, initial processing, organoleptic.*

Today, the development of the technology for the production of environmentally pure natural food products is characterized by an exceptional value. To eliminate these issues, the technology of processing fruits and vegetables is given the priority goal of reducing the cost of products on domestic and foreign markets by expanding its assortment. I agree that it is advisable to use primary and secondary products, which are separated by cleaning the peel of fruits and vegetables by archib, in various industrial production enterprises.

The storage and processing of agricultural products is one of the pressing issues today. By drying fruits and vegetables by peeling them from the peel (arching) to evaporate the amount of moisture in the product for drying, high quality products are obtained to consumers by producing a wide range of products from primary and secondary raw materials.

The negative bias in heat treatment of vegetables before drying is a change in the partial native state of dry substances (sugar, mineral substances, acids, etc.). But this is in very small quantities.

Through initial processing, IQ can reduce the loss of vitamins, enzymes, and the taste can be preserved. Currently, the fact that the extremely high thermal sensitivity properties of vitamins are not taken into account in existing drying technologies, that is, the change in the native state of up to 50-60% of useful substances negatively affects the quality of the product. By applying the initial processing of IQ, this indicator can be lowered by 25-30 percent.

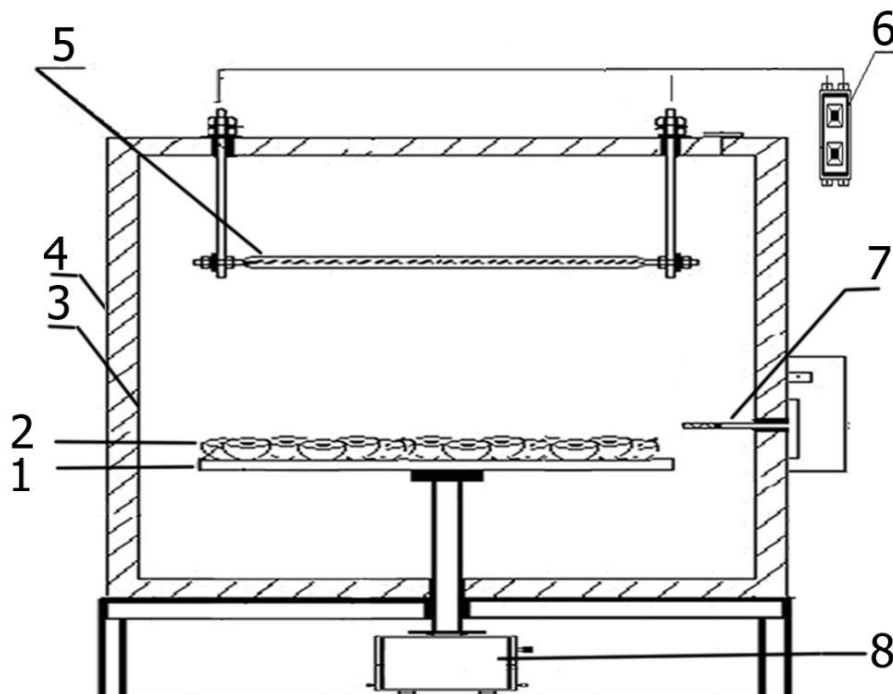
Studies show that if the IR is subjected to preliminary heat treatment, the blanshirovka will not be left without extirpation. In the first stage of drying, a volumetric and deep infrared heater produces sufficiently high temperatures (80-90 °C) inside the product particles. This temperature has a refractive effect on water-retaining cells.

Figure 2.2.1 shows the installation of vegetables in the electromagnetic field of the infrared region, intended for initial operation. Labor Room 1 screws in a vertical plane 3 is made in 2 views of the insulated body with a moving screen.

Poddon 1; 2-raw material being dried; 3-alumina falga; 4-body; 5-IQ-lamp; 6-launch device; 7-thermodatchic; 8-scale; regulator poddon location controller;

The body temperature of thermal energy emitters is controlled by changing the voltage. The temperature generated by infrared radiation in the product was measured using a chromel-Copel thermoelectric converter 7 and recorded with a KSP-4 type electron registrant potentiometer

(accuracy of 0.25). Vegetable Drying Kinetics studied the constructive drying method in setting its own design and production, the parameters of which are presented in Table 2.2.1. The basis for the choice of pre-heat treatment is based on research carried out in the field of canning and Vegetable-Drying industries. Research and development of thermoreoration methods for dehydration of vegetables is also important in terms of improving the quality of dried products and saving energy during production.



**Figure 1. Initial processing research device for raw materials**

The previous treatment developed by convective drying technology involves convective processes (with the use of drying agent - steam) at the stage of constant drying speed and IR power at the stage of decreasing drying speed.

**Table 1**

**Initial processing parameters**

Process parameters	Types of preliminary processing		
	IK	SVCH	IK+SVCH
Heat source power	1 kVt	1 kVt	1-1 kVt
Heat flux density	25-30 kVt/m <sup>2</sup>	25-30 kVt/m <sup>2</sup>	25-30 kVt/m <sup>2</sup>
Duration of the initial processing process	90 s (45x60x45)	90 s (45x60x45)	45 s / 45 s (45x60x45)

The work was carried out on a specially designed device, which included an IR lamp with a capacity of 500 W (2 units), a thermometer. The research complex involves separate preliminary processing with high-power infrared (shortwave) beams for 90 Seconds to change the parameters and methods of convective drying.

Sugar content is determined by high-quality liquid chromatography according to GOST 53883-2010, ascorbic acid determination according to GOST 53693-2009, moisture content of the material and water activity according to tkti, NamMTI Building 5 laboratories GOST 28561-90.

The density of heat flow on the surface was measured using the IPP-2 unit of measurement according to GOST 25380-92.

R & D was conducted in 2018-2019. In accordance with the program of innovative research to scientifically support the development of the agro-industrial complex of Uzbekistan in 2015-2018, the plans of the Namangan Institute of engineering and technology and the scientific research institute. As noted above, a convective drying apparatus was selected for sample drying, in which an initial processing process with IR and etching (extremely high frequency) electromagnetic waves was applied before drying.

In the experiments carried out, Onions were first processed in an electromagnetic field with an IQ range, as a result of drying (in the drying cabinet), a reduction in the process by 15 minutes and a reduction in energy consumption was achieved.

IQ is high in vitamin C in samples of dried potatoes, carrots and head onions with preliminary processing.

Each type of raw material: potatoes, carrots and onions are illuminated by the preparation strategy for drying; methods of implementation of Operations, mode and devices, quality control in the implementation is provided. Special attention has been paid to vegetable cleaning, preliminary IQ-processing and sulfitation.

The significant thickness of the boiling layer (from 10 to 60 mm), vibrating in irradiation of the product, as a result of the use of room temperature air, the intensive displacement of the product particles, all of which goes into the IR-irradiation area many times and alternating, but the air cools the particles in series, therefore the achievable effect is not so great. To prevent the product from becoming whole, the use of heated air is necessary so that convective-radiative delivery of heat to the vibrating boiling layer is carried out.

It is advisable to give examples later that prove the acceptability of using infrared drying.

Scientists, as early as the 50s of the last century, drew attention to the ability of drying by IR-irradiator, firstly, it allows dehydration in the thickness of the product, and this is done at such a low temperature that the quality is maintained when drying the processed product, and secondly, dehydration is carried out in such a way that even rupture of

These two factors are of great importance in maintaining basic substances (carotene, vitamins, etc.) and appearance (chlorophyll, pigments, etc.). In the deformation of cells (cracking, fragmentation, punching and other defects) (observed in the process of convective drying), the active composition of the product is most often broken down.

The data obtained by IR-drying from the analysis of samples of potatoes, carrots and head onions testifies to the fact that in general, macro- and microelements, carotene and amino acids, including irreplaceable substances, are well preserved.

In addition, the product obtained with infrared drying technology also has a number of other advantages: it keeps its color, aroma full, quickly restores its volume when water is added (in 7-10 minutes), they are well stored all year round.

The results of the microbiological analysis of the effect on total fertilization from plant raw materials obtained by IR-drying show that they significantly shrink (500-1000 times).

For example, relatively high indicators of the product obtained in convective or natural drying were achieved through the establishment of optimal interaction of a number of factors, the thermoradiational characteristic of IR-radiation as well as the mode of processing by plant raw materials, IR-irradiation are the main ones.

The real technology of drying vegetables is given. In addition to preparing raw materials, it included drying it using energy consisting of an electromagnetic field in the IQ range. The structure of the semi-industrial device, the function of its parts and the order of use are given.

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