

PRACTICAL DEVELOPMENTS REGARDING DRYING PEACHES THROUGH HYBRID METHOD

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Lately, special attention has been paid to a healthy diet, especially the consumption of dried fruits. The market of dried fruits is already largely occupied by plums, apples, pears, apricots and grapes, a new and strategic product for the Republic of Moldova would be peaches. In terms of availability, peaches as a raw material occupy the third place in the Republic by area, yielding the places of fruit to plums and apples. As a dry product, peaches have no competition, it is a new and competitive product on the market. Both fresh and dehydrated peaches are known for their aroma, pleasant taste and health benefits.

Following the dehydration of peaches, the most suitable variety for processing is REDHAVEN, being a fruit of medium to large size, diameter between 60 – 70 mm, weight 130 – 170 g, skin of medium thickness adherent to the pulp, kernels slightly adherent to the product. In the research of the drying process, the peaches were dried by the method of forced convection at temperatures from 50 – 90 °C, at different slices thicknesses from 2 – 10 mm and at different air flow speeds, from 0.5 - 2,5 m/s; drying by the microwave application method where three powers of the magnetrons 600, 800, and 900 W were studied, with different regimes from 120 – 450 W; Finally, drying by the hybrid method was researched, where different convection parameters and different microwave regimes were combined; the experiments were performed at a prototype research facility, designed and developed within TUM.

As a result of in-depth research, the following results were obtained: it was proved that after using convection with temperatures from 50 - 90°C, the optimal drying temperature is 60°C, the thickness of about 3-4 mm and the flow rate of air around 2 m/s; when applying microwaves at regimes more intensive than 350 W the product is subject to burns, the optimal regime would be about 200-300 W, air speed of 2 m/s and product thickness around 3-4 mm; characteristic of the hybrid or researched method combining temperatures of 50 - 70°C, slice thickness around 3-4 mm, airflow speed 2 m/s and different microwave regimes 150 – 300 W, the optimal hybrid regime would be the use of peach slice thickness of about 3-4 mm, air flow speed of 2 m/s, air temperature around 60°C and magnetron power of about 250 W, in this case the drying time and reduced energy consumption will be obtained.

In conclusion, it is stated that the drying operation is one of the most energy-intensive methods of preserving food, one of the basic goals is to reduce these huge energy costs, so lately it is increasingly attracting more attention is paid to changing the energy input from a traditional one, such as convection to a non-traditional input, by combining known methods, which would lead to the emergence of new methods such as the hybrid method.

Keywords: *dehydration, convection, microwave, drying parameters.*

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