

## **RESEARCH ON THE CONSERVATION OF AGRO-INDUSTRIAL WASTE THROUGH CONVECTIVE DRYING PROCESS**

Mihai-Marius Băetu\*, ORCID: 0000-0001-5343-5401

Gabriel Teliban, ORCID: 0000-0002-9221-9012

Antoanela Patraş, ORCID: 0000-0002-4054-4884

*“Ion Ionescu de la Brad” Iasi University of Life Sciences, 3 M. Sadoveanu Alley, Iaşi, România*

\*Email: mbaetu@uaiasi.ro

Wastes obtained from the processing of agri-food products have a short shelf life, so they need to be preserved for further processing. One solution for the conservation of agro-industrial waste is for it to be subjected to the drying process. This solution has the advantage that dry products take up less storage space, due to water removal. In this study, a series of industrial wastes resulting from the processing of vegetable products were dried after being taken from the technological flow of the profile units in Romania (Research-Development Station for Viticulture and Vinification Iaşi - SCDVV Iaşi, SC. ContecFoods SRL, Tecuci). The resulting waste comes from the following technological stages: grape pressing (SCDVV Iaşi), sorting, washing, cleaning, peeling, heat treatment of onions, eggplants, peppers, beets, carrots, cabbage (SC. ContecFoods SRL, Tecuci)

The marc obtained in the grape pressing process was subjected to natural drying in a shed up to a humidity of 18-20%, and then dried to constant humidity in a convective dryer that uses hot air as a drying agent. The humidity obtained after convective drying was on average 8-9% for all marc samples (five species). The drying process lasted between 8 and 14 hours, at 45°C, depending on the humidity of the analyzed samples, since the initial moisture was 18-20%. The vegetable wastes collected from the technological flow were subjected to the convective drying operation with the help of hot air, reaching a minimum constant humidity (from 85-90% to 10-14%, depending on the variety). In order to dry them evenly, the samples were chopped into 5-10 mm particles to increase the contact surface and placed in a uniform layer of about 3 cm on the dryer trays. Convective drying took place at a temperature of 45°C and an air speed of 0.75 m/s. The samples were dried to constant mass.

Convective drying was performed with the help of forced convective drying installations, with discontinuous operation, using hot air as a thermal agent. The dried samples of pomace and vegetables were then finely ground with a hammer mill in the first stage, obtaining particles with a size between 0.3 and 2 mm. In order to finely grind the product, the crushing-screening operation was performed using a grinder mill and a sieve with a sieve mesh diameter of 1 mm. The crushing-screening operation was made by 2 times, in order to increase the yield of fine product.

The dried samples are stored, by variety, in paper bags in a dry environment. The drying process lasted between 8 and 72 hours, at 45°C, depending on the initial humidity of the samples.

**Keywords:** *conditioning, convective drying, grape marc, stability, vegetable wastes*

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