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Effect of Time and Temperature on Moisture Content, Shrinkage, and Rehydration of Dried Onion

S. Abasi[1], S. M. Mousavi[1], M. Mohebi[2] and S. Kiani[1]*

1- Department of Chemical Engineering, Engineering Faculty, Ferdowsi University of Mashhad, Iran.
2- Department of Food Science and Technology, Agricultural Faculty, Ferdowsi University of Mashhad, Iran.

Abstract
In this paper, the experimental data of the onion drying process by a batch cabinet dryer is investigated. Obtained experimental data including moisture content, shrinkage, and rehydration via random factorial scheme are analyzed. Comparison of data average is carried out with the help of the multi amplitude test of Duncan. Statistical analysis of experimental data shows that time, temperature, and their combined effect have a reasonable impact on the moisture content and rehydration value of dried samples. However, a combined effect of time and temperature on the shrinkage value is not meaningful (P>0.05). The results also show that increasing time and temperature leads to a decrease in the moisture content of the samples, but it increases the value of rehydration and the shrinkage of samples.

Keywords: *Drying,Onion, Moisture content, Rehydration, Shrinkage*

1- Introduction

Nowadays, the amount of agricultural waste is estimated to be about 30-35%, part of which is due to lack of relevant industries. One of the most important methods for food maintenance is drying or the dehydration process. In addition to the conservational effect on the product, drying reduces its weight and volume significantly and therefore decreases its transportation and storage costs.

Producing dried products such as pistachio, grapes, barberries, and saffron and many others are still common with traditional methods. Problems concerned with these methods are the long drying time, chance of microbial contamination of foods due to moisture, the undesirable quality of final products, an so on. By applying industrial drying methods, not only is food quality preserved, but also production time decreases considerably.

∗ Corresponding author: mmousavi@um.ac.ir