



OPTIMIZATION OF HOT-AIR AND MICROWAVE DRYING PROCESS PARAMETERS FOR EVALUATION OF PHENOLICS AND ANTIOXIDANT ACTIVITY IN SLICED WHITE BUTTON MUSHROOM (*Agaricus bisporus*) USING RESPONSE SURFACE METHODOLOGY

Derya Atalay¹✉, Hande Selen Erge¹

¹ Bolu Abant Izzet Baysal University, Faculty of Engineering, Food Engineering Department, Campus of Golkoy 14030 Bolu, Turkey

✉ deryaatalay@ibu.edu.tr

<https://doi.org/10.34302/crpjfst/2021.13.1.3>

Article history:

Received:

18 May 2020

Accepted:

15 February 2021

Keywords:

Antioxidant Activity;

Drying;

Microwave;

Phenolic Compounds;

White Button Mushroom.

ABSTRACT

This study was conducted to investigate hot-air and microwave dryings on phenolics and antioxidant activity of dried white button mushroom slices (*Agaricus bisporus*) using the response surface methodology. It was also aimed to determine optimized drying conditions. In hot-air drying, total phenolics content reduced with corresponding increase in drying temperature and slice thickness, whereas in microwave drying, the total phenolics content increased with microwave power. Although the effect of drying temperature on antioxidant activity is not significant, there is a decrease in antioxidant activity as the slice thickness of the samples increases. Microwave power had also a significant linear effect on antioxidant activity of dried samples ($p < 0.01$). Both increases and decreases in individual phenolic compounds were detected with the change of drying conditions and sample thickness. A quadratic model was well fitted to all responses. As a result of numerical optimization, optimum conditions for hot-air drier and microwave oven were suggested as 50 °C and 600 Watt having mushroom slices of 2 mm thickness, respectively. Our results show that the quality of dried mushroom depends on the drying method and conditions. Also, microwave drying is suitable method for drying of mushroom slices within a shorter time compared with hot-air drying.
