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Andrzej Krzykowski, Dariusz Dziki, Stanisław Rudy, Urszula Gawlik-Dziki, Renata Polak, Beata Biernacka

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Andrzej Krzykowski, Dariusz Dziki*, Stanisław Rudy, Urszula Gawlik-Dziki, Renata Polak, Beata Biernacka

Department of Thermal Technology and Food Process Engineering, University of Life Sciences, Doświadczalna Str. 44, 20-280, Lublin, Poland

*corresponding author: dariusz.dziki@up.lublin.pl

Abstract

This study shows the effects of blanching, citric acid addition, and drying temperature on the freeze-drying kinetics, L-ascorbic acid content, colour, and antioxidant activity of freeze-dried pepper. The process was performed at 20°C, 40°C, and 60°C and with a constant pressure in a drying chamber at 63 Pa. The samples of pepper were pulped before drying. Blanching of pepper reduced the drying time to approximately 30%. The shortest drying time (about 290 min) was found for blanched pepper that was freeze-dried at 60°C, whereas the samples of pepper freeze-dried at 20°C and without blanching required the longest drying time (about 900 min). The kinetics of freeze-drying of pepper pulp are best described by using the Page model. The addition of citric acid increased the redness and yellowness of dried pepper, whereas an increase in drying temperature caused a decrease in the total phenolics content, antioxidant activity, and colour coordinates of all samples. The highest L-ascorbic acid content was found in unblanched pepper and when the temperature of drying did not exceed 40°C. Water