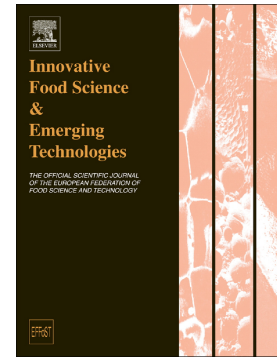


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Ethanol and ultrasound pre-treatments to improve infrared drying of potato slices

Meliza Lindsay Rojas¹; Pedro E. D. Augusto^{2,*}

Department of Agri-food Industry, Food and Nutrition (LAN), Luiz de Queiroz College of Agriculture (ESALQ), University of São Paulo (USP), Piracicaba, SP, Brazil

*Corresponding author: Avenida Pádua Dias, 11, Piracicaba, SP 13418-900, Brazil.

¹ mrojas@usp.br; ² pedro.ed.augusto@usp.br

Abstract

Ethanol and ultrasound (US) were applied as pre-treatments to improve the infrared (IR) drying of potato slices. Pre-treatments included Control samples (Without any pre-treatment), samples immersed in ethanol (Ethanol treated) and treated with US using ethanol (Ethanol + US) and water medium (Water + US). Effects on microstructure, drying, rehydration, and viscoelasticity were studied. Microstructure analyses suggested that ethanol affected the potato cell wall. The Water + US pre-treatment impacted the starch granules dispersion inside cells. However, higher modifications were observed when Ethanol + US was applied. Compared to the Control, all pre-treatments decreased the drying time, while Ethanol + US provided the highest reduction. In contrast, a slight decrease in rehydration properties was observed. The dried and rehydrated samples presented similar viscoelasticity among them but differed significantly with the *in-natura* (fresh potato) samples. Possible mechanisms were discussed. The results open new perspectives about an innovative method to improve drying.

Key words: drying; rehydration; microstructure; viscoelastic properties; texture

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