

## Effect of Pretreatment on Quality Parameters of Natural Convection Mixed-Mode Solar Dried Potato

**Authors :** Kshanaprava Dhalsamant, Punyadarshini P. Tripathy, Shanker L. Shrivastava

**Abstract :** With present high global population, the need for rising food usage by minimizing food wastage and investment is highly necessary to achieve food security. The purpose of this study is to enlighten the effect of pre-drying treatment on rehydration, color, texture, nanohardness, microstructure and surface morphology of solar dried potato samples dried in the mixed-mode solar dryer. Locally bought potatoes were cleaned and cut into cylindrical pieces and pretreated with sodium metabisulfite (0.5%) for 10 min before placing them in natural convection solar dryer designed and developed in Indian Institute of Technology Kharagpur, India. Advanced quality characteristics were studied using Atomic Force Microscope (AFM), Scanning Electron Microscopy (SEM) and nanoindentation method, along with color, texture and water activity. The rehydration indices of solar dried potatoes were significantly biased by pretreatment followed by rehydration temperature. A lower redness index ( $a^*$ ) with a higher value of yellowness index ( $b^*$ ), chroma ( $C^*$ ) and hue angle ( $h^*$ ) were obtained for pretreated samples. Also, the average nanohardness ( $H$ ) of untreated samples exhibited substantial lower value (18.46%) compared to pretreated samples. Additionally, a creep displacement of 43.27 nm during 20 s dwell time under constant load of 200

**Keywords :** pretreatment, nanohardness, microstructure, surface morphology

**Conference Title :** ICFSN 2018 : International Conference on Food Security and Nutrition

**Conference Location :** Mumbai, India

**Conference Dates :** February 22-23, 2018