

Shelf life extension with ultrasound

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Abstract

During cultivation, harvest and post-harvest procedures of fruits and vegetables contamination frequently occur. Nowadays, sanitation practice, to extend shelf-life, mostly based on using water and chemicals. In this study, we attempted to extend shelf-life using exclusively ultrasound. For freshness evaluation, non-destructive measurement methods were used, such as acoustic, impact and light reflectance measurements. With a designed experiment, we were able to calculate the most influential parameter of the ultrasound to the carrots samples, during storage. The results suggested that the treated samples were in better condition at the end of the storage, than the untreated ones, but no statistically proven significant difference was found between the different groups. The research has shown that the samples treated for 10 minutes, with 300W power and 40 kHz frequency ultrasound has the freshest look even after the predicted storage time. Further experiments are needed in order to statistically prove the assumed positive effect of ultrasonic treatment.

Keywords: Ultrasound, shelf-life, non-destructive measurements, carrot