

Selected chemical and physico-chemical properties of ultrasound-assisted osmodehydrated kiwifruit

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Ultrasounds are air vibrations and they generate a rapid series of compression and expansion, having an increasing effect on mass diffusion when combined with osmotic dehydration process (OD).

The aim of this work was to investigate the effect of ultrasound (US) pretreatment on the texture, color, chlorophyll content, water activity and thermal properties in terms of freezable water content of osmotic dehydrated kiwifruit. Kiwifruits slices (10 mm thick) were subjected to ultrasonic waves in the bath at a frequency of 35 kHz for 10, 20 and 30 minutes. The osmotic dehydration was carried out by immersion of the samples in 61.5% sucrose solution equilibrated at 25°C for pre-established contact period of 0, 10, 20 and 30 min.

The results showed that ultrasound pre-treatment by itself caused a lowering of the kiwifruit firmness in comparison with untreated sample. However 120 minutes after OD treatment the increase of the firmness parameter occurred, which was associated with a greater loss of water during the osmotic dehydration. Moreover there was noticed almost unchanged chlorophyll content in kiwifruit treated with ultrasound compared to fresh sample. During all OD processes the loss of chlorophyll content was observed, however lower for the US pre-treated samples. These data were in agreement with the colour changes observed in kiwifruit samples. Similarly, with increasing time of OD process a decrease of water activity and freezable water content in kiwifruit tissue was observed. In conclusion it can be said that the application of US pre-treatment has a positive effect on different kiwifruit characteristics, particularly in colour and chlorophyll retention.

Keywords: ultrasound, osmotic dehydration, kiwifruit, colour

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