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Measurements of texture, sorption isotherms and drying/rehydration kinetics of dehydrofrozen-textured apple.

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Abstract

The aim of this research work was to compare the effect of different apple processing methods on textural properties at equal water content (100% db dry basis). Pre-dried samples were treated by instant controlled pressure drop (DIC), completely frozen and thawed. In order to reach a final water content level of 100% db, the samples were post dried or rehydrated. DIC and freezing increased drying and rehydration rates. A combination of DIC and freezing showed less important effects on sorption isotherms and drying/rehydration kinetics. Freezing had significant detrimental effect on firmness for high initial water content samples. This effect disappeared and firmness kept constant regardless of the initial water content once sample initial water content is lower than 115% db. Significant initial water content effect appeared after freezing/thawing for DIC untreated samples. However, by inserting DIC prior to freezing, the textural effect of final water content became insignificant after freezing/thawing.

Keywords: Air-drying; instant controlled pressure drop; dehydrofreezing; rehydration; sorption isotherms; texture.

1. Introduction

Freezing is an important process for the preservation of fruits and vegetables. It allows a good product quality with respect to nutritional value and flavor (Li and Sun, 2002). This treatment generally causes, in the case of perishable fruits and vegetables with high water content and

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