

Texture and pectin composition changes of dehydrofreeze-thawed strawberry slices: Influence of different dehydration pre-treatments.

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Strawberry is an important commercial fruit with great processing potential. When considering how to maintain the original quality of fruit, freezing is the method of choice, but its chemical and physical actions are detrimental to fruit structure integrity. Pre-freeze dehydration treatments can help to reduce the phenomenon of loss of shape and texture reduction of fruits at thawing, even in such a delicate tissue as strawberry. Not only is texture of fruits linked to turgor of the cell, but also to strength of individual cell walls and strength of the adhesion between cells. A correlation between pectic components of cell walls and tissue texture has been found, the major contributor to intercellular adhesion being the chelator soluble fraction and the protopectins. The aim of this study was to define, through both texture and pectin composition analysis, the structure/texture relationships in freeze-thawed strawberry slices.

Partial (60%) removal of water before freezing of 10 mm strawberry slices was by air dehydration or by 60 min osmotic dehydration in sucrose (60% wt/wt) plus air dehydration: not pre-dehydrated fruit were used as control. Not pre-dehydrated strawberry showed the lowest texture values at thawing, together with the greatest loss of protopectins. No differences before and after freezing in texture were observed for either of the pre-dehydrated strawberry. Yet strawberry air dehydrated without osmosis had the biggest changes of dimethylsulphoxide-soluble and oxalate soluble pectin fractions. Considering both texture and pectin composition strawberry air-dehydrated after osmosis are the least affected by freezing, confirming the stabilizing effect of added sucrose on pectins.