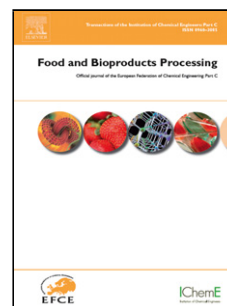


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Effects of calcium lactate and ascorbic acid on osmotic dehydration kinetics and metabolic profile of apples

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Highlights

- Dehydration kinetics of apple cylinders was affected by the different solutes used
- Calcium and ascorbic acid affected solutes diffusivities due to structural changes
- Endogenous metabolism was reduced by calcium lactate in the osmotic solution
- Ascorbic acid promoted a stress response increasing the tissue's metabolic activity

Abstract

The influence of the addition of calcium lactate (CaLac) and ascorbic acid (AA) to sucrose (Suc) osmotic solutions on osmotic dehydration kinetics and endogenous metabolic heat production of apple tissue was evaluated. Our research goal was to characterize mass transfer and endogenous metabolic phenomena of the tissue to obtain minimally processed apples. The presence of CaLac and AA in solution affected the mass transfer of water and solutes, which was attributed to the changes in the cellular structure and thus to spaces available for solute transport. The metabolic heat production in samples treated in sucrose solutions was slightly lower than in untreated samples, and it was further reduced with CaLac addition. However, samples impregnated with AA exhibited a higher heat production due to a metabolic response of the tissue to AA treatment. When combined with CaLac, the heat production decreased to a level lower than untreated samples, except for those

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