

Bioactive compounds in ready-to-eat rocket leaves as affected by oxygen partial pressure and storage time: A kinetic modelling

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Abstract

Storage techniques, such as low temperature and modified atmosphere packaging, are efficient in keeping visual quality of ready-to-eat (RTE) products such as processed leafy vegetables throughout the supply chain, but studies on appearance often neglect the effect of different storage conditions on their nutritional properties. The effects of initial O₂ partial pressure (20, 10, 5 and 2.5 kPa O₂) in packages and storage time (14 d) on RTE rocket leaves on the bioactive compounds, phenolics, ascorbic acid, and antioxidant activity were determined. Kinetic models were applied to allow the assessment and prediction of the influence of initial partial pressure on nutritional composition. The results show that lowering package initial O₂ partial pressure from 20 kPa to 5–10 kPa reduced the respiration rate by 53 and 38%, respectively. However, antioxidant activity and ascorbic acid content showed most effects with an initial O₂ of 5 kPa. The kinetic parameters are relevant to help predict phytochemical changes during storage under different package O₂ partial pressures. To obtain an overall quality, the application of intermediate atmospheres would be beneficial.