

## Abstract

Respiration rate, sensory attributes, colour alterations, and water, chlorophyll and ascorbic acid contents were monitored during storage of shredded Galega kale (*Brassica oleracea* var. *acephala* DC.) at 20 °C to define an adequate range of O<sub>2</sub> and CO<sub>2</sub> partial pressures for product preservation. Different low O<sub>2</sub> and high CO<sub>2</sub> atmospheres were tested. First, tolerance to low O<sub>2</sub> partial pressures (1, 2, 3 or 21 kPa O<sub>2</sub> with balance N<sub>2</sub>) was tested. Quality retention was improved as O<sub>2</sub> partial pressure was reduced and there was no induction of anaerobic respiration. Then, tolerance to high CO<sub>2</sub> partial pressures (0, 10, 15 or 20 kPa CO<sub>2</sub> plus 21 kPa O<sub>2</sub> and balance N<sub>2</sub>) was tested. The high CO<sub>2</sub> partial pressures extended the shelf life of the shredded kale and no symptoms of CO<sub>2</sub> injury were detected. Finally, combinations of low O<sub>2</sub> and high CO<sub>2</sub> (1 or 2 kPa O<sub>2</sub> plus 15 or 20 kPa CO<sub>2</sub>, with balance N<sub>2</sub>, and an air control) were analysed. No differences were observed among the different gas combinations. An atmosphere of 1–2 kPa O<sub>2</sub> plus 15–20 kPa CO<sub>2</sub> and balance N<sub>2</sub> extends the shelf life of shredded Galega kale to 4–5 days at 20 °C, compared with 2–3 days in air storage. Predictive models of chlorophyll *a* and *b* degradation as a function of time and gas composition were developed.