Abstract:

The high perishability of fresh-cut products requires the use of preservation techniques along the distribution chain. Refrigeration and modified atmosphere packaging (MAP) are important postharvest techniques in the extension of produce shelf life. Shredded Galega kale (Brassica oleracea var. acephala) is a fresh-cut vegetable of special interest in the Portuguese market. Potential benefits and risks of low O_2 and high CO_2 concentrations in fresh shredded Galega kale should be addressed before the commercial application of MAP. Respiration rate, sensory attributes, and colour alterations, in addition to water, chlorophyll, and ascorbic acid contents were monitored in shredded Galega kale during storage at 20°C under different atmospheres. Low O_2 tolerance (1, 2, 3 or 21% v/v O_2 without CO_2) was tested and it was concluded that quality retention improved with reduced O2 concentration and no induction of anaerobic respiration was detected. High CO_2 tolerance (0, 10, 15, or 20% v/v CO_2 plus 21% v/v O_2) was also tested. Storage under high CO_2 concentration extended the product shelf life and no symptoms of CO_2 injury were detected. Finally, combinations of low O_2 and high CO_2 (1 or 2% v/v O_2 plus 15 or 20% v/v CO_2 and air as control) were analysed. No differences were observed among the different concentrations tested in this range. An atmosphere of 1-2% v/v O_2 plus 15-20% v/v CO_2 will extend the shelf life of shredded Galega kale at 20 °C to 4 days, compared to 2 days in air storage.