

Title Controlled atmosphere preserves quality and phytonutrients in wild rocket (*Diplotaxis tenuifolia*)
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Citation Postharvest Biology and Technology Volume 40, Issue 1, April 2006, Pages 26-33
Keyword Antioxidant capacity; *Brassicaceae*; Flavonoids; Fresh-cut; Minimally processed; Phenolics; Storage;
 Vitamin C

Abstract

Leaves of wild rocket (*Diplotaxis tenuifolia* (L.) DC.) are increasingly eaten alone or as part of mixed salads. This species contains a wide range of health-promoting phytonutrients including vitamin C and flavonoids. The effect of controlled atmosphere (CA) containing low oxygen and high carbon dioxide on the sensory and microbiological quality, flavonoids, vitamin C (ascorbic acid + dehydroascorbic acid; AA + DHAA) and antioxidant capacity evaluated by ABTS, DPPH and FRAP assays was studied. Rocket leaves stored in air were compared with those kept in 5 kPa O₂ + 5 kPa CO₂, 5 kPa O₂ + 10 kPa CO₂ and enriched air with 10 kPa CO₂ for up to 14 days at 4 °C. After 10 days, the sensory and microbiological quality of samples stored in air were not commercially acceptable. On the contrary, CA of 5 kPa O₂ + 10 kPa CO₂ maintained visual quality and controlled aerobic mesophilic and psychrotropic microorganisms as well as coliforms. The total flavonoid content of wild rocket was approximately 100 mg 100 g⁻¹ fresh weight and remained constant during storage or even increased at the end of the shelf-life in CA, but it was degraded in those samples kept in air. In addition, AA was transformed into DHAA during storage, and the total content of vitamin C was higher in CA-stored samples than those kept in air. A decrease in the total antioxidant capacity was observed during storage and it was particularly marked in samples stored in air. A positive correlation was demonstrated between antioxidant capacity and vitamin C content, whereas a poor correlation was observed with total phenolics. Our data indicate that wild rocket leaves has potential as a good dietary source of phytonutrients when stored under optimal conditions.