

**Title** Microbial, nutritional and sensory quality of rocket leaves as affected by different sanitizers

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### Abstract

Leafy salad species are increasingly consumed in the human diet and there is increased concern about the levels of microbial organisms in these raw foods, and especially bacteria such as *Salmonella* that cause food poisoning. Various chemical sanitizers therefore are used to control microorganisms and fungi, but there is very little information on the effects of these chemicals on food composition. Wild rocket (*Diplotaxis tenuifolia* L. DC) leaves were washed using tap water, chlorine (100 mg L<sup>-1</sup>), ozonated water (10 mg L<sup>-1</sup>), lactic acid (Purac<sup>®</sup> 20 mL L<sup>-1</sup>), acidified sodium chlorite (Sanova<sup>®</sup> 250 mg L<sup>-1</sup>) and peroxyacetic acid (Tsunami<sup>®</sup> 300 mg L<sup>-1</sup>). The effects of sanitizers on the contents of Vitamin C, polyphenols and glucosinolates of rocket leaves were studied under air and low O<sub>2</sub> (1–3 kPa) + high CO<sub>2</sub> (11–13 kPa) for 15 days at 4 °C. All the sanitizers effectively reduced microbial growth on the day of processing, but only Purac, Tsunami and Sanova inhibited the microbial growth throughout the shelf life. The visual quality was acceptable for all treatments in air while it was poor under low O<sub>2</sub> + high CO<sub>2</sub>. In addition, Purac was particularly detrimental for sensory quality. Both chlorophyll *a* and chlorophyll *b* contents were reduced throughout storage but were independent of washing treatments and storage conditions. The content of vitamin C was maintained for up to 8 days of storage under air and low O<sub>2</sub> + high CO<sub>2</sub>, but Purac washes markedly reduced the vitamin C content. A clear decrease in ascorbic acid followed by an increase in dehydroascorbic acid was observed when samples were stored under low O<sub>2</sub> + high CO<sub>2</sub>. The content of flavonoids was not affected by the washing solutions on the processing day and remained almost constant throughout the storage in air. However, marked reductions were observed when samples were stored under low O<sub>2</sub> + high CO<sub>2</sub>. The glucosinolates were the most affected constituents of rocket leaves as the content was reduced from 4 to 33% when samples were stored in air while the decrease was between 60 and 100% in low O<sub>2</sub> + high CO<sub>2</sub>. These data revealed that Sanova and Tsunami could be alternative sanitizers to chlorine for rocket leaf washes due to good retention of sensory quality with no detrimental reduction of the antioxidant constituents.