

Title Respiration rate response of four baby leaf *Brassica* species to cutting at harvest and fresh-cut washing

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Abstract

The influence of the first and second cutting at harvest on the physiological response of four baby leaf *Brassica* species was studied. The species were salad rocket (*Eruca vesicaria*), wild rocket (*Diplotaxis tenuifolia*), mizuna (*Brassica rapa* L. ssp. *nipposinica*) and watercress (*Nasturtium officinale*) stored at 1, 4, 8 and 12 °C. In addition, the microbial and metabolic behaviours of baby leaves were evaluated after different washing treatments including water, ozonated water (10 mg L⁻¹ total dose), ozonated water activated with ultraviolet C light (UV-C) and heat shock wash (50 °C, 1 min). Temperature had a significant effect on both respiration rate and post-cutting life. The production of CO₂ increased between 2- and 4-fold when temperature increased from 1 to 12 °C. Minor differences in leaf respiration rate between the first and second leaf cutting were observed for salad rocket and wild rocket, while leaves from the second cutting of mizuna and watercress leaves had a higher respiration rate than from the first cutting. Ozone, and ozone combined with UV-C, were the most efficient washing treatments in reducing total mesophilic counts, while heat shock treatment did not affect them. Additionally, naturally occurring *Listeria* spp. were controlled well in wild rocket and mizuna (<1 log cfu g⁻¹) when the ozone treatments were applied. On the other hand, respiration rates of the *Brassica* species were not substantially affected by the washing treatments when stored at 4 °C. Maximum CO₂ production was observed immediately after washing but decreased during the first 24 h of storage. Baby leaves washed with cold water consistently showed a lower respiration rate than the other washing treatments. Heat shock was the washing treatment that most influenced the increase in the respiration rate of baby leaves during storage at 8 °C.