Title Efficacy of steamer jet-injection as alternative to chlorine in fresh-cut lettuce

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Abstract

Short-time steam processing was used as an alternative to chlorine (100 mg L^{-1}) in sanitising fresh-cut lettuce. Quality (pH, water content, colour, potential browning, browning-related enzymes and texture), safety (mesophilic counts) and antioxidant markers (ascorbic and carotenoids) were monitored in lettuce stored for 10 days at 4 °C. The steam treatment produced a shocking effect on lettuce metabolism, showing a significant ($p < 0.05$) reduction in respiration (from day 3 to 7) and a partial inactivation of browning-related enzymes. Both effects were reflected in a significant reduction of browning. From a safety point of view, steam treatment kept the mesophilic load as low as chlorine treatment, and significantly lowers than the water control. However, antioxidant content, especially ascorbic acid but also carotenoids in a lower degree, showed a reduction compared with chlorine-treated samples. Despite the lower visual browning in steam-treated samples, the sensory panel scored similar values of acceptability and fresh appearance for both samples similarity.