

Title Study on Thermosonication and Ultraviolet Radiation Processes as an Alternative to Blanching for Some Fruits and Vegetables

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Abstract

The impacts of ultraviolet-C radiation, blanching by heat, and combination of heat/ultrasounds (thermosonication) were studied for *Listeria innocua* (inoculated) in red bell peppers, total mesophiles in strawberries and total coliforms in watercress, in the temperature range 50–65 °C. Quality attributes such as colour and firmness were studied for all products, and total anthocyanins content was additionally determined for strawberries. Results showed that ultraviolet-C radiation was the least effective treatment in terms of microbial load reduction and was equivalent to a simple water washing. Log reductions were 1.05 ± 0.52 for *L. innocua*, 0.53 ± 0.25 for total coliforms and 0.26 ± 0.18 for total mesophiles. This treatment had the lowest impact on the quality parameters analysed. Thermosonication treatment was similar to heat blanching for all microorganism/product tested, excepted for total coliforms in watercress at 65 °C, in which thermosonication had a higher effect ($p < 0.05$). Heat blanching at 65 °C allowed 7.43 ± 0.12 log-cycles reduction, while loads were diminished by 8.24 ± 0.13 log-cycles if thermosonication at the same temperature was applied. Thermosonication also allowed better quality retention, when compared to heat blanching at the same temperatures. The impact of thermosonication on microbial load reductions was statistically significant and thermosonicated samples retained quality attributes better than heat blanched ones at the same temperatures ($p < 0.05$). Hence, it can be concluded that thermosonication is a promising process and may be a favourable alternative to the conventional thermal treatments.

<http://www.springerlink.com/content/q874t80707h82370/fulltext.pdf>