

Efficacy of Alternative Sanitizers in Strawberries (*Fragaria ananassa* Duch) cv. Oso Grande

Renan Gomes Bastos^{1*}; Jaqueline de Lima Germano¹; Josidel Conceição Oliver¹; Sandra Maria Oliveira Morais Veiga¹; Luiz Carlos do Nascimento¹

¹Faculdade de Ciências Farmacêuticas, Universidade Federal de Alfenas.
*rgbastos_unifal@yahoo.com.br.

Introduction: The washing and sanitizing steps are considered particularly critical to the microbiological quality of fruit. At this stage it is important to check the sanitizer, which should present microbiological effectiveness. It can be seen in the literature a great interest in alternative disinfectants for controlling the microbiological quality of food, since the conventional treatment with sodium hypochlorite can lead to formation of toxic by-products. Because of this, feed researchers are seeking information about other sanitizers, such as ozone, ultrasound and citric acid.

Objective: This study aimed to verify the effectiveness of ozone, ultrasound and citric acid, as well as associations of ultrasound with the other two products, in the control of microbiological quality of strawberry. **Methods:** In tests, samples of strawberries were initially subjected to artificial contamination with a strain *Escherichia coli* ATCC 25922, and subsequently part of them were sanitized and the other part were set aside as a control. The reference treatments used were sodium hypochlorite 50 and 100 mg.L⁻¹, and associations of each with the ultrasound. Citric acid was used at concentrations of 1% and 2%. The ozone was applied to the samples of strawberry with 3 L flow of medical oxygen per minute and 0,3 kgF/cm² pressure. The initial and residual ozone concentrations were determined by iodometric method. The ultrasound was applied as the equipment available frequency (40 KHz). Each treatment had a duration equivalent to 15 minutes and was performed in triplicate. After this, the samples were drained. 50 g of these were taken to a vial containing 450 mL of sterile saline and homogenized by shaker IKA®KS 260 basic, 300 rpm, 5 minutes. The successive dilutions of the samples were made. The microbiological analyzes were performed by counting of coliforms at 45°C in the control and post-sanitizing samples, using the chromogenic substrate Simplate®BioControl (AOAC® Official Methods 2005.03). **Results:** Similar to the sodium hypochlorite used at 100 ppm, reference treatment that showed microbial decreased to 100%, the three most effective treatments for maintaining the microbiological quality of the fruit were the 2% citric acid, the 2% citric acid, associated with ultrasound, and ozone. Although the 2% citric acid was very effective in reducing microbial treatment, it was the more prejudicial for the physical characteristics of the fruit. The ultrasound showed the most unsatisfactory results (99,2% of microbial decreased). **Conclusion:** Among the three best treatments, the 2% citric acid, associated with ultrasound, and the ozone showed higher efficacy microbicide and the smallest changes of the physical attributes of the strawberry, therefore the best alternative choices for the sanitization. However, further studies of these sanitizers should be made, in order to optimize the process and keep all the ideal qualities of the food to the consumer.

Keywords: Sanitizers, strawberry, quality, treatments, microbiological.