

Title Impact of different disinfection treatments on the quality retention of minimally processed garlic (*Allium sativum* L.)

Author Telma Veríssimo, Luísa Gil and Luís M. Cunhal

Citation Abstracts Book, 6th International Postharvest symposium, 8-12 April 2009, Antalya, Turkey. 256 pages.

Keyword Garlic; minimally; shelf life

Abstract

Minimal processing of raw fruits and vegetables aims to provide a product with similar features to the fresh product, without losing its nutritional qualities, and with enough shelf life to allow for its distribution, retailing and consumption. In recent years, consumers are increasingly concerned about the choice of food. Consumption of minimally processed vegetables has increased as it brings benefits and convenience to consumers. But despite these advantages, minimally processed commodities have the limitation of rapid quality damage deterioration and short shelf life due to tissue damage caused by processing. The effect of different disinfection treatments, as alternatives to chloride, was investigated on the quality retention of minimally processed garlic stored at different temperatures. Garlic cloves were peeled, washed in tap water at 0 °C and cut into small cubes: app. 0.7x0.7x0.7 cm, submitted to one of the following treatments: i) hypochlorite (OCl⁻), ii) hydrogen peroxide (H₂O₂), iii) lactic acid, iv) calcium lactate, and v) ultraviolet radiation (UV-C), and centrifuged to remove excess water, when needed. The samples were stored at 4, 8 and 12°C, up to five days. Several parameters were determined for these conditions: respiration rates (R_{O₂} and R_{CO₂}), pH, dry matter (%), total soluble solids (°Brix), and colour (CIE-Lab). Of the different disinfection treatments under evaluation, the application of hydrogen peroxide (H₂O₂), proved to be the most advantageous, mainly by the arrest of the observed increase of respiration rates over storage time, indicating a diminution of overall metabolic processes and hence extending quality retention. Moreover this treatment yielded the brightest samples throughout the experiment, thus, with added appeal for the consumers. Further studies have proved that freshly diced garlic cloves, sanitized by dipping in a 5% solution of H₂O₂, for 2 minutes, and stored at 4°C, under ambient air, could adequately retain their quality up to 11 days.