

Antimicrobial effects of ascorbic acid and calcium lactate in freshcut jackfruit (*Artocarpus heterophyllus* Lam.)

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Abstract

Microorganisms causing food spoilage and human diseases have been causing huge economic losses due to production losses, health care costs and foregone markets. Antimicrobial treatment is extensively used in the food industry, with chlorine being a common decontaminating agent but its adverse health effects and ineffectiveness in some applications are major concerns. This study explored the use of ascorbic acid and calcium lactate as natural antimicrobials in freshcut jackfruit. To gain understanding of the extent of microbial contamination of freshcut jackfruit under commercial conditions, microbial load was first determined following standard plating methods and was found to be higher from traditional wet market than from supermarket by about 0.7-1.0 log CFU.ml⁻¹. Ascorbic acid as 1.5% solution and calcium lactate as 2.5% solution were applied as 2-min immersion. Two-min wash in 150 ppm chlorine solution or distilled water and no wash served as control treatments. The product samples were then packed in sterile resealable 50 µm-thick polyethylene bag and stored at 7-10°C for 5 d. Results revealed that calcium lactate remarkably reduced aerobic bacteria, coliform, and yeast and mold counts both after 3 h from treatment and after 5 d storage by about 85-99.6% relative to that of no wash. These effects were similar to chlorine effect, except that chlorine did not affect coliform load after 5 d storage. Ascorbic acid was as effective as calcium lactate and chlorine after 3 h from treatment but had no marked effect after 5 d storage. Color, soluble solids, and sensory quality did not significantly differ among treatments. As a result, the general acceptability of treated and untreated products was comparable and indicated that the products remained highly acceptable after 5 d of storage.