Title Calcinated calcium and mild heat treatment on storage quality and microbial populations of fresh-cut iceberg lettuce

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Abstract

The heated scallop shell powder, calcinated calcium (CC) alone or combination with mild heat treatment were investigated as potential sanitizers for maintaining storage quality and microbial safety of fresh-cut iceberg lettuce. Fresh iceberg lettuce leaves were cut into 3 × 3 cm slices and washed in normal tap water (TW), 50 μL·L^{-1} chlorinated water (pH 6.5), 1.5 g·L^{-1} CC, heat treatment (HT) in TW at 45°C, and CC dissolved in TW at 45° for 2 min separately. Samples were then packaged in 80 μm nylon/polyethylene bags and stored at 5°C. Results revealed that like 50 μL·L^{-1} chlorine, washing in CC at normal water temperature was effective in reducing microbial population in fresh-cut lettuce samples. Washing with CC combined with mild HT increased an electrical conductivity of fresh-cut lettuce tissue. Combined heat treatment with washing solutions reduced aerobic plate count on fresh-cut lettuce, only in initial period of storage. But, later on heat treatment induced injury of fresh-cut iceberg lettuce resulting to more microbial population compared to non HT. On the other hand, samples treated with CC had good quality with low off-odor at the end of storage. Thus, CC, an environment-friendly sanitizer can be an alternative to HT for washing of fresh-cut iceberg lettuce without affecting sensorial quality.

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