Combined Effect of Calcium Chloride and Peroxyacetic Acid on Quality and Shelf Life of Minimally Processed Longan Fruit

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ABSTRACT

Efficacies of calcium chloride solution (CaCl₂, 0.25-1.0%), a texture-improving agent, and peroxyacetic acid (PAA) solution, a microbial population reducing sanitizer, on the peel and aril of two whole longan fruit cultivars, “Daw” and “Beawkeaw,” were investigated. A solution of 0.5% CaCl₂ increased aril firmness by 29.4 and 18.2% for cv. Daw and Beawkeaw, respectively, and did not cause any undesirable bitter taste. A dip of whole longan or peeled aril in 100 or 50 mg/L PAA solution for 3 min, respectively, efficiently reduced microbial load (total bacteria, yeast and mold) in comparison to unwashed controls. Longan aril were processed and stored in clear clamshell containers at 4±1°C for 8 days. The aril firmness, L* value and TA content decreased but weight loss, pH level, reducing sugar, total bacteria and yeast-mold count increased while the TSS and total sugar content only slightly changed throughout the storage period. The immersion of longan aril in PAA and CaCl₂ solutions resulted in the decrease in pH, TSS, total sugar and reducing sugar contents while firmness, weight loss and L* value increased. The treatment had no effect on TA content but could delay microbial growth when compared with the control. The shelf lives of longan aril at 4±1°C of the control and the treatments were 3 and 5 days for cv. Daw and 3 and 4 days for cv. Beawkeaw, respectively.

Keywords: Minimally processed longan fruit, Peroxyacetic acid, Calcium chloride

INTRODUCTION

Longan (Dimocarpus longan Lour.) is grown commercially in Thailand with increasing acreage because it can be produced, both during the traditional season and the off-season with use of chemicals. The major factors reducing the storage