

Effectiveness of Sodium Hypochlorite, Peroxyacetic Acid and Peroxycitric Acid in Reducing Microorganisms on the Surface of Fresh Whole Litchi Fruit and Its Arils

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ABSTRACT

The effectiveness of three sanitizers, sodium hypochlorite (NaOCl), peroxyacetic acid (PAA) and peroxycitric acid (PCA) in decreasing the total number of bacteria and yeast-molds on the peel of whole litchi fruit and its arils of three cultivars, cv. Honghuay, Gimjeng and Jugkapat were studied. First, the optimal concentration and treatment time of PAA and PCA were determined for whole litchi fruit (concentrations: 75, 100, 150 or 200 mg/L; treatment times: 1, 3 or 5 min) and for the arils (concentrations: 50 or 75 mg/L; treatment times: 1 or 3 min). Treatments were compared with undipped and dipped controls in tap water. The best treatments of PAA and PCA for sanitizing three cultivars of whole litchi fruit were 100 mg/L for 5 min and 200 mg/L for 3 min, respectively. For the arils, the best treatments of PAA and PCA for three cultivars were 50 mg/L for 1 min and 50 mg/L for 3 min, respectively. The effectiveness of PAA and PCA were then compared with NaOCl at a commercial recommendation levels (concentrations: 200 and 50 mg/L; treatment times: 3 min). The results showed that PAA was the most efficient in reducing microorganisms on whole litchi fruit and arils when compared with NaOCl and PCA. Therefore, PAA could be a potential alternative to NaOCl or chlorine as sanitizer for whole litchi fruit and its arils.

Key words: Sodium hypochlorite, Peroxyacetic acid, Peroxycitric acid, Litchi

INTRODUCTION

Litchi (*Litchi chinensis* Sonn.) is a subtropical Asian fruit with a natural red color, sweet acidic taste and aroma. The fruit has a high commercial value in the international market. The major factors reducing the storage life and marketability of fruit are microbial decay and browning of outer covering pericarp within 2-3 days after harvest at 20°C (Holcroft and Mitcham, 1996 ; Jieng, 2003). Thus, litchi