

## **ABSTRACT**

### **THE EFFECT OF INDOLE ACETIC ACID (IAA) ADDITION INTO CHITOSAN COATING ON THE FRUIT QUALITY AND SHELF-LIFE OF GUAVA 'CRYSTAL'**

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Guava (*Psidium guajava* L) is a climacteric fruit with a relatively short shelf-life period that ranges from 2-7 days under ambient conditions. This limit is the time available for marketing and transport distance from the place of production. After harvesting, guava still in the process of metabolism by using food supply and caused a quick ripening and losing nutrition. Guava has a short shelf-life due to its high respiration. It will also be vulnerable to damage easily which can be seen from the changing of its texture and development of brown on surface of the fruit skin and caused a decrease in the fruit quality of guava to be market. Damage the guava fruit 'Crystal' can be solved in several ways, one of them is by soaking the fruit in a solution or by coating the fruit with chitosan, so the rate of respiration and transpiration can be slowed.

The material used for soaking the fruit was a plant growth regulators of indole acetic acid (IAA). By soaking guava 'Crystal' in a solution of IAA, the hormone is expected to infiltrate into the fruit slowly and evenly. A longer soaking can be accomplished by adding IAA to the coating material of chitosan. By applying IAA to the chitosan coating solution, the IAA will slowly infiltrate into the fruit during storage, so it can maintain quality and prolong the shelf-life of guava 'Crystal'.

The research was aimed at (1) studying the effects of the addition of IAA into chitosan coating on the fruit quality and shelf-life of guava 'Crystal', and (2) obtaining the best concentration of IAA added into the chitosan coating to maintain the quality fruit and prolong the shelf-life of guava 'Crystal' fruit.

The research was conducted in the Laboratory of Horticulture, Faculty of Agriculture, University of Lampung during January–February 2012 and Polymer Testing Laboratory, Bandung, West Java. The research used a completely randomized design, with treatments was arranged in a factorial 3 x 3. The first factors were fruits without any treatment but water ( $k_0$ ), without chitosan but in

acetic acid 0,5% ( $k_1$ ), and 2,5% chitosan ( $k_2$ ). The second factors were the concentrations of IAA in three levels: 0 ( $a_0$ ), 5 ( $a_1$ ), and 10  $\mu$ M ( $a_2$ ). For the control, three guava were directly observed at the first day of application. The observed variables were shelf-life, fruit weight, fruit firmness, soluble solid ( $^{\circ}$  Brix), and free acid content.

The results showed that (1) the addition of IAAs at concentration of 2,5% chitosan coating were not significantly able to prolong the shelf life and to maintain the fruit quality of guava 'Crystal' compared to the other treatments, (2) IAA application did not prolong the shelf-life, and IAA application did not decrease the quality of the fruit, and (3) 0,5% acetic acid as a solvent in 2,5% chitosan did not cause a bad affect, but soaking in 0,5% acetic acid as a main solution adversely was affected the fruit quality and shelf-life of guava 'Crystal'.

Key words: guava, Crystal, browning, IAA, chitosan