

**RESPON FISILOGIS PEMATANGAN BUAH SAWO  
(*Manilkara achras* (Mill.) Fosberg) SETELAH PERLAKUAN  
PELAPISAN KITOSAN DAN SUHU RUANG SIMPAN**

**Oleh:**

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**INTISARI**

Buah sawo (*Manilkara achras* (Mill.) Fosberg) merupakan buah klimakterik yang mempunyai kulit tipis dan cepat matang. Penelitian tentang teknologi pasca panen buah sawo masih jarang dilakukan. Penundaan pematangan buah sawo dapat dilakukan dengan pelapisan kitosan dan penyimpanan pada suhu rendah. Tujuan penelitian ini adalah mengkaji pengaruh konsentrasi pelapisan kitosan dan suhu rendah terhadap sifat fisik, kimiawi dan molekular buah sawo serta menentukan perlakuan yang paling optimum untuk memperpanjang masa simpan. Rancangan penelitian yang digunakan adalah *Split Plot Design* pola faktorial dengan dua faktor, yaitu suhu penyimpanan terdiri dari tiga taraf (5°C, 15°C, 25°C) sebagai faktor utama dan konsentrasi kitosan yang terdiri dari empat taraf (0%, 2%, 3%, 4%) sebagai sub faktor. Setiap kombinasi perlakuan dengan lima ulangan. Data dianalisis menggunakan Analisis Varian (ANOVA) kemudian dilanjutkan dengan uji *Duncan's Multiple Range Test* (DMRT) pada taraf uji 5%. Buah dengan umur fisiologis sama dipanen dari satu pohon. Buah diberi perlakuan pelapisan kitosan dan disimpan pada temperatur yang berbeda, selanjutnya diamati sampai buah tidak layak dikonsumsi. Parameter yang diamati adalah tebal lapisan kitosan pada kulit buah, permeabilitas membran kitosan terhadap uap air dan O<sub>2</sub>, masa simpan, laju respirasi O<sub>2</sub>, laju evelosi CO<sub>2</sub>, kadar nutrisi, kekerasan buah, kandungan klorofil dan karotenoid, kadar pektin, auksin, etilen, aktivitas enzim ACC oksidase, RNA serta ekspresi gen *ACO1* penyandi ACC oksidase. Semakin tinggi konsentrasi kitosan sampai 3%, semakin tebal lapisan, semakin terhambat masuknya uap air dan oksigen ke dalam kulit buah. Laju respirasi, kadar auksin, etilen, aktivitas enzim, kadar RNA dan ekspresi gen *ACO1* penyandi ACC oksidase mengalami penurunan seiring dengan lamanya masa simpan. Perlakuan optimum untuk mempertahankan masa simpan buah sawo sampai 21 hari adalah perlakuan pelapisan kitosan 3% dan suhu simpan 5°C. Perlakuan berbagai konsentrasi pelapisan kitosan dan suhu rendah serta interaksinya mampu mempertahankan mutu sifat fisik, biokimiawi, dan molekular buah sawo.

**Kata kunci :** sawo (*Manilkara achras* (Mill.) Fosberg), kitosan, suhu, pematangan.

**PHYSIOLOGICAL RESPONSE OF SAPODILLA  
(*Manilkara achras* (Mill.) Fosberg) FRUIT RIPENING AFTER  
CHITOSAN COATING AND STORAGE ROOM  
TEMPERATURE TREATMENT**

By

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**ABSTRACT**

Sapodilla (*Manilkara achras* (Mill.) Fosberg) was a climacteric fruit that has thin skin and ripen rapidly. Research on post harvest technology of sapodilla fruit was still rare. The delay of ripening of sapodilla fruit can be done by coating chitosan and storage at low temperature. The aim of this research was to examine the effect of chitosan coating in certain concentration and low temperature on the physical, chemical, molecular characteristics of sapodilla and to determine the optimum treatment to prolong the shelf life. The design experiment was Split Plot Design factorial pattern with two factors, namely storage temperature consists of three levels (5°C, 15°C, 25°C) as the main factors and chitosan concentration consisting of four levels (0%, 2%, 3%, 4%) as sub factors. Each treatment combination was done with five replications. Data were analyzed using Analysis of Varians (Anova) then continued with Duncan's Multiple Range Test (DMRT) at 5% level of significance. Fruits with the same physiological age were harvested from the same tree. The fruits were treated with chitosan coating and stored at different temperatures, then the fruits were observed until they were profr for consumption. The observation parameters were the thickness of chitosan layer on fruits skin, the permeability of chitosan membrane to water vapor and O<sub>2</sub>, shelf life, respiration rate of O<sub>2</sub>, evelosi rate of CO<sub>2</sub>, nutrient content, fruit hardness, chlorophyl content and carotenoid, pectin, auxin, ethylene, enzyme activity of ACC oxidase, RNA and gene expression of *ACO1* encoding ACC oxidase. The concentration of chitosan around 3% and the thicker of chitosan layer, there were more inhibition to the entry of water vapor and oxygen into the fruit skin. Respiration rate, auxin content, ethylene, enzyme activity, RNA level and gene expression of *ACO1*, encoding ACC oxidase decreased with the length of shelf life. The optimum treatment to increase the shelf life of sapodilla until 21 days was 3% chitosan coating treatment and 5°C storage temperature. The treatment of various concentrations of chitosan coating and low temperature with their interaction were able to maintainthe quality of physical, biochemical, and molecular characteristics of sapodilla.

Key word: sapodilla (*Manilkara achras* (Mill.) Fosberg), chitosan, temperature, ripening.