

## ABSTRACT

### **APPLICATIONS OF AMINOETHOXYVINYLGLYCINE AND POSTHARVEST TECHNOLOGY OF MANGOSTEEN (*Garcinia mangostana* L.)**

By

**ANNISA FITRI**

Mangosteen fruit (*Garcinia mangostana* L.) is known as "The Queen of Tropical Fruit" and has many vitamins and minerals. Short fruit shelf-life and rapid decline in fruit quality are problems faced by mangosteen, especially for export markets. A postharvest treatment with the application of anti-ethylene aminoethoxyvinylglycine (AVG), postharvest treatment packages (14% KD-112 + one layer of plastic wrapping, or 2.5% chitosan + one layer of plastic wrapping) and low temperature storage is needed in order to extend fruit shelf-life and slow down the quality decline of mangosteen fruits. This study was aimed at determining the single effect of the application of AVG as an anti-ethylene compound, fruit treatment package (a combination of 14% KD-112 or 2.5% chitosan with a layer of plastic wrapping), storage temperature, and its combinations, and finding the best treatment to lengthen the shelf-life and maintain the quality of mangosteen fruit. This research was conducted in the

Laboratory of Horticultural Postharvest, Department of Agrotechnology, Faculty of Agriculture, University of Lampung. This study used a Completely Randomized Design (CRD) with 3 replications arranged in factorial  $2 \times 3 \times 2$ , namely AVG anti-ethylene compounds (0 or control and 25 mg/l), postharvest treatment package (without or control, 14% KD-112 + one layer of plastic wrapping, and 2.5% chitosan + one layer of plastic wrapping), and storage temperature (room temperature 27-28 °C and low temperature 16-18 °C). Postharvest treatment was applied to stage II mangosteen (yellowish green fruit skin) and observation was stopped when the mangosteen fruit reached stage VI (dark purple fruit skin). The results showed that (1) the application of anti-ethylene aminoethoxyvinylglycine (AVG) did not significantly affect the shelf-life and quality of mangosteen fruit; (2) the package of fruit treatment was able to extend the shelf-life of the mangosteen fruit by 6-7 days longer and reduce mangosteen fruit weight loss by 5-7% lower than control, but did not affect the quality of mangosteen fruit; (3) the storage of mangosteen fruit at the low temperature of 16-18 °C could extend the fruit shelf-life by 9 days longer than the control, but did not affect the quality of mangosteen fruit; (4) the best treatment was the package treatment of a combination of 14% KD-112 or 2.5% chitosan with one layer of plastic wrapping, and low storage temperature 16-18 °C which was able to extend the fruit shelf-life by 14-15 days longer than the control, but did not affect the quality of mangosteen fruit.

**Keywords:** aminoethoxyvinylglycine, chitosan, KD-112, mangosteen, temperature

## ABSTRAK

### **APLIKASI AMINOETHOXYVINYLGLYCINE DAN TEKNOLOGI PASCAPANEN BUAH MANGGIS (*Garcinia mangostana* L.)**

Oleh

**ANNISA FITRI**

Buah manggis (*Garcinia mangostana* L.) dikenal sebagai “*The Queen of Tropical Fruit*” dan memiliki banyak kandungan vitamin dan mineral. Masa simpan buah yang singkat dan penurunan mutu buah yang cepat merupakan masalah yang dihadapi pada buah manggis terutama untuk pasar ekspor. Penanganan pascapanen dengan aplikasi anti-etilen *aminoethoxyvinylglycine* (AVG) dan dua paket perlakuan pascapanen (14% KD-112 + satu lapis *plastic wrapping*, atau 2,5% kitosan + satu lapis *plastic wrapping*) serta suhu rendah diperlukan agar dapat memperpanjang masa simpan dan memperlambat penurunan mutu buah manggis. Penelitian ini bertujuan untuk mengetahui efek tunggal aplikasi senyawa anti-etilen AVG, paket perlakuan buah (kombinasi antara 14% KD-112 atau 2,5% kitosan dengan satu lapis *plastic wrapping*), suhu simpan, dan kombinasinya, serta mendapatkan perlakuan terbaik terhadap masa simpan dan mutu buah manggis. Penelitian ini dilaksanakan di Laboratorium Pascapanen Hortikultura, Jurusan Agroteknologi, Fakultas Pertanian, Universitas Lampung. Penelitian ini

menggunakan Rancangan Acak Lengkap (RAL) dengan 3 ulangan yang disusun secara faktorial  $2 \times 3 \times 2$ , yaitu senyawa anti-etilen AVG (0 atau kontrol dan 25 mg/l), paket perlakuan pascapanen (tanpa atau kontrol, 14% KD-112 + satu lapis *plastic wrapping*, dan 2,5% kitosan + satu lapis *plastic wrapping*), dan suhu simpan (suhu ruang 27-28 °C dan suhu rendah 16-18 °C). Perlakuan pascapanen diterapkan pada buah manggis stadium II (kulit buah hijau kekuningan) dan pengamatan dihentikan jika buah manggis sudah mencapai stadium VI (kulit buah ungu gelap). Hasil penelitian menunjukkan bahwa (1) aplikasi anti-etilen *aminoethoxyvinylglycine* (AVG) tidak berpengaruh nyata terhadap masa simpan dan mutu buah manggis; (2) paket perlakuan buah mampu memperpanjang masa simpan buah manggis berturut-turut 6-7 hari lebih lama dan menurunkan susut bobot buah manggis 5-7% lebih rendah dibandingkan kontrol dan tidak berpengaruh terhadap mutu buah manggis; (3) penyimpanan buah manggis pada suhu simpan rendah 16-18 °C mampu memperpanjang masa simpan 9 hari lebih lama dibandingkan kontrol dan tidak berpengaruh terhadap mutu buah manggis; (4) perlakuan terbaik adalah perlakuan paket (kombinasi antara 14% KD-112 atau 2,5% kitosan dengan satu lapis *plastic wrapping*) dan suhu rendah 16-18 °C yang mampu memperpanjang masa simpan 14-15 hari lebih lama dibandingkan kontrol dan tidak berpengaruh terhadap mutu buah manggis.

**Kata Kunci :** *aminoethoxyvinylglycine*, KD-112, kitosan, manggis, suhu