

ABSTRACT

APPLICATION OF 1-METHYLCYCLOPROPENE AND POSTHARVEST TECHNOLOGI OF MANGOSTEEN FRUIT (*Garcinia mangostana* L.)

By

Fitria

Mangosteen fruit (*Garcinia mangostana* L.) is a climacteric fruit with a short shelf-life and rapid decline in fruit quality. Mangosteen is classified as an export fruit, so proper postharvest handling is needed to extend its fruit shelf-life and slow changes in fruit quality. Fruit postharvest handling that can be applied to mangosteen includes the application of anti-ethylene 1-methylcyclopropene (1-MCP) and postharvest treatment packages (14% KD-112 + one layer of plastic wrapping, and 2.5% chitosan + one layer of plastic wrapping) and low temperatures, which are expected to extend the shelf-life and slow down the decline in the quality of mangosteen fruit. This study was aimed at determining the effects of the application of anti-ethylene 1-MCP compound, fruit treatment packages (a combination of 14% KD-112 or 2.5% chitosan with one layer of plastic wrapping), storage temperatures, and their combinations, and get the best treatment to increase the shelf-life and maintain the quality of the 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 3 x 3 x 2, i.e. MCP (0, 1 and 3 g MCP powder/30 ml water), 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 of 27-28 °C and low temperature of 16-18 °C). Postharvest treatment was applied to stage II mangosteen (yellowish green fruit skin) and observation was terminated when the mangosteen fruit reached stage VI (dark purple fruit skin). The results showed that (1) the application of anti-ethylene 1-methylcyclopropene (1-MCP) had no significant effect on fruit shelf-life and did not affect the mangosteen fruit quality; (2) fruit treatment package could extend the shelf-life of mangosteen fruit by 11 days longer and reduce the weight loss of mangosteen fruit by 4-5% lower than control but did not affect the mangosteen fruit quality; (3) the storage of mangosteen at a low storage temperature of 16-18 °C could extend the fruit shelf-life by 10 days longer than the control but did not affect the mangosteen fruit quality; (4) The best treatment for the export of mangosteen fruit was the combination of 1-MCP of 1 g MCP powder/30 ml water, treatment package, and low storage temperatures which was able to prolong the fruit shelf-life by 22 (M1P1T1) and 24 days (M1P2T1) longer than controls but did not affect the mangosteen fruit quality;

Keywords: mangosteen, 1-methylcyclopropene, KD-112, chitosan, temperature

ABSTRAK

APLIKASI 1-METHYLCYCLOPROPENE DAN TEKNOLOGI PASCAPANEN BUAH MANGGIS (*Garcinia mangostana* L.)

Oleh

FITRIA

Buah manggis (*Garcinia mangostana* L.) merupakan buah klimakterik dengan masa simpan singkat dan penurunan mutu buah yang cepat. Buah manggis tergolong ke dalam buah ekspor, sehingga diperlukan penanganan pascapanen yang tepat untuk memperpanjang masa simpan dan memperlambat perubahan mutu buah. Penanganan yang dapat diterapkan dalam pascapanen manggis di antaranya dengan aplikasi anti-etilen 1-methylcyclopropene (1-MCP) dan paket perlakuan pascapanen (14% KD-112 + satu lapis *plastic wrapping*, dan 2,5% kitosan + satu lapis *plastic wrapping*) serta suhu rendah, yang diharapkan dapat memperpanjang masa simpan dan memperlambat penurunan mutu buah manggis. Penelitian ini bertujuan untuk mengetahui efek aplikasi senyawa anti-etilen 1-MCP, 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 untuk meningkatkan masa simpan dan mempertahankan 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 3 x 3 x 2, yaitu 1-MCP (0, 1, dan 3 g serbuk MCP/30 ml air), 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 1-*methylcyclopropene* (1-MCP) tidak berpengaruh nyata terhadap masa simpan dan tidak mempengaruhi mutu buah manggis; (2) paket perlakuan buah mampu memperpanjang masa simpan buah manggis 11 hari lebih lama dan menurunkan susut bobot buah manggis 4-5% lebih rendah dibandingkan kontrol dan tidak mempengaruhi mutu buah manggis; (3) Penyimpanan buah manggis pada suhu simpan rendah 16-18 °C mampu memperpanjang masa simpan 10 hari lebih lama dibandingkan kontrol dan tidak mempengaruhi mutu buah manggis ;(4) Perlakuan terbaik ialah kombinasi antara 1-MCP (1 g/30 ml air), paket perlakuan, dan penyimpanan pada suhu rendah yang mampu memperpanjang masa simpan 22 (M1P1T1) dan 24 hari (M1P2T1) lebih lama dibandingkan kontrol dan tidak mempengaruhi mutu buah manggis.

Kata Kunci: manggis, 1-*methylcyclopropene*, KD-112, kitosan, suhu