INTISARI

Tomat (*Solanum lycopersicum* L.) merupakan komoditas dengan tingkat produksi dan konsumsi yang tinggi tetapi memiliki umur simpan yang pendek. Tomat yang dipanen pada kondisi panas lapang akan lebih cepat mengalami penurunan kualitas sehingga diperlukan adanya pendinginan awal *hydrocooling*. Kombinasi *hydrocooling ozone* sebagai perlakuan perendaman tunggal secara teori dapat mempertahankan kualitas fisikokimia tomat. Penelitian dilakukan untuk mengetahui seberapa jauh efektivitas perlakuan *hydrocooling ozone* dan kombinasi perlakuan terbaik dalam menjaga mutu tomat selama penyimpanan suhu ruang (25±3°C).

Terdapat tiga faktor perendaman *hydrocooling ozone* yang digunakan yaitu suhu (7ºC, 10ºC, dan 13ºC), durasi (15, 30, dan 45 menit), dan tingkat kematangan tomat (*breaker*, *pink*, dan *light red*). Percobaan dirancang menggunakan matriks *orthogonal array* L_9 dengan 9 perlakuan dan 3 kontrol (tanpa perendaman) dengan 2 replikasi. Sampel bahan berupa tomat varietas *servo* dengan keseragaman ukuran ±30 gram/buah. Sampel tomat disimpan tanpa kemasan pada suhu ruang selama 12 hari. Respon fisikokimia yang diamati yaitu susut bobot, kekerasan, warna (L*, a*, a*/b*, hue), pH, TSS, TA, dan TSS:AR, diamati pada hari ke-0, 3, 6, 9, dan 12 setelah penyimpanan. Data kombinasi perendaman *hydrocooling ozone* terbaik dianalisis dan ditentukan dengan metode Taguchi-GRA (*Grey Relational Analysis*).

Hasil penelitian menunjukkan bahwa perlakuan *hydrocooling ozone* efektif dalam menghambat perubahan susut bobot, kekerasan, dan pH tomat *breaker*, *pink*, dan *light red*; menghambat perubahan a* tomat *breaker*; menghambat perubahan a*/b* tomat *breaker* dan *pink*; mempertahankan L* tomat *breaker*, *pink*, dan *light red*; serta mempertahankan *hue* tomat *breaker* dan *pink* selama 12 hari penyimpanan suhu ruang (25±3°C). Perlakuan terbaik yaitu P6 dengan kombinasi suhu 10°C, durasi 45 menit, dan kematangan *breaker*.

Kata kunci: tomat, *hydrocooling ozone*, fisikokimia, Taguchi-GRA

ABSTRACT

Tomato (*Solanum lycopersicum* L.) is a commodity with high production and consumption but has a short shelf life. Tomatoes harvested under hot field conditions will deteriorate faster, so hydrocooling is required. The combination of hydrocooling ozone treatment as a single immersion treatment can theoretically maintain the physicochemical quality of tomatoes. The research was conducted to determine the effectiveness of hydrocooling ozone treatment and the best treatment combination in maintaining tomato quality during room temperature storage (25±3°C).

There were three factors of hydrocooling ozone treatment used, namely temperature (7ºC, 10ºC, and 13ºC), duration (15, 30, and 45 minutes), and tomato ripeness level (breaker, pink, and light red). The experiment was designed using an orthogonal array L9 matrix with 9 treatments and 3 controls (no soaking) with 2 replications. The samples used were servo tomatoes with size uniformity of ±30 grams/fruit. Tomato samples were stored without packaging at room temperature for 12 days. The physicochemical responses observed were weight loss, hardness, color (L*, a*, a*/b*, hue), pH, TSS, TA, and TSS:AR, observed on days 0, 3, 6, 9, dan 12 after storage. The best hydrocooling ozone treatment combination data were analyzed and determined by the Taguchi-GRA (Grey Relational Analysis) method.

The results showed that hydrocooling ozone treatment was effective in inhibiting changes in weight loss, hardness, and pH of tomatoes with breaker, pink, and light red maturity; inhibiting changes in a* of breaker tomatoes; inhibiting changes in a*/b* of breaker and pink tomatoes; maintaining L* of breaker, pink, and light red tomatoes; and maintaining hue of breaker and pink tomatoes during 12 days of room temperature storage (25±3°C). The best treatment was P6 with combination of 10°C temperature, 45 minutes duration, and breaker maturity.

Keywords: tomato, hydrocooling ozone, physicochemical, Taguchi-GRA