Pemodelan Laju Respirasi dan Perubahan Sifat Fisik Cabai Rawit Merah (*Capsicum frutescens* L.) selama Penyimpanan pada Berbagai Suhu

INTISARI

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Cabai rawit merah merupakan komoditas hortikultura yang bersifat mudah rusak karena memiliki kadar air yang tinggi. Salah satu cara untuk memperpanjang umur simpan cabai rawit merah adalah dengan penyimpanan suhu rendah. Penelitian ini dilakukan untuk mengkaji pengaruh suhu penyimpanan terhadap laju respirasi dan perubahan sifat fisik, seperti susut bobot, kekerasan, dan warna serta mengevaluasi laju respirasi cabai rawit dengan pemodelan kinetika kimia dan enzimatis.

Cabai rawit merah disimpan dalam *chamber* tertutup yang dilengkapi dengan sensor gas O_2 dan CO_2 pada suhu 28℃, 23℃, 14℃, dan 7℃ selama 8 hari. Hasil pengukuran konsentrasi O_2 dan CO_2 digunakan untuk melihat laju respirasi dan pemodelan laju respirasi. Sifat fisik cabai rawit merah juga diuji, meliputi uji susut bobot, kekerasan, dan warna.

Hasil penelitian menunjukkan bahwa suhu penyimpanan cabai rawit merah mempengaruhi laju respirasi dan sifat fisik cabai rawit merah (susut bobot, kekerasan, *lightness*, *hue*, *chroma*, dan perubahan warna). Laju respirasi cabai rawit merah dapat mengikuti pemodelan respirasi dengan model kinetika kimia. Suhu penyimpanan berpengaruh terhadap sifat fisik cabai rawit merah seperti susut bobot, kekerasan, *lightness, hue*, dan perubahan warna. Suhu penyimpanan 28℃ memberikan hasil laju respirasi, susut bobot, hue, dan perubahan warna tertinggi serta menghasilkan nilai kekerasan dan *lightness* terendah.

Kata kunci: cabai rawit merah, respirasi, sifat fisik, suhu.

Modeling the Respiration Rate and Changes in Physical Properties of Red Cayenne Pepper (*Capsicum frutescens* L.) during Storage at Various Temperatures

ABSTRACT

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Red chili pepper is a horticultural commodity that is easily damaged because it has a high water content. One way to extend the shelf life of red chili is by low temperature storage. This study aims to examine the effect of storage temperature on respiration rate and changes in physical properties, such as weight loss, hardness, and color, and to evaluate the respiration rate of cayenne pepper by modeling chemical and enzymatic kinetics.

Red cayenne pepper was stored in a closed chamber equipped with O2 and CO2 gas sensors at temperatures of 28 °C, 23 °C, 14 °C, and 7 °C for 8 days. The results of measurements of O2 and CO2 concentrations were used to see the respiration rate and to model the respiration rate. The physical properties of red cayenne pepper were also tested, including weight loss, hardness, and color tests.

The results showed that the storage temperature of red cayenne pepper affected the respiration rate and physical properties (weight loss, hardness, lightness, hue, chroma, and color change) of red cayenne pepper. Storage temperature affects the rate of respiration. The respiration rate of red cayenne pepper can following the respiration modeling with chemical kinetics models. Storage temperature affects the physical properties of red chili, such as weight loss, hardness, lightness, hue, and color change. The storage temperature of 28°C gave the highest respiration rate, weight loss, hue, and color change results and the lowest hardness and lightness values.

Keywords: red chili pepper, respiration, physical characteristic, temperature