

ANALISIS RESPIRASI BUAH STROBERI (*Fragaria x Ananassa* var. Kellybright) PRODUK HIDROPONIK SELAMA PENYIMPANAN DI LINGKUNGAN TROPIS MENGGUNAKAN MODEL PERSAMAAN MICHAELIS-MENTEN

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INTISARI

Stroberi merupakan produk hortikultura mediterania yang memiliki nilai ekonomi tinggi dan telah banyak dibudidayakan di daerah beriklim tropis, seperti Indonesia. Salah satu karakteristik produk hortikultura adalah masih melakukan reaksi metabolisme berupa respirasi sesudah dipanen. Respirasi merupakan salah satu indikator kemunduran produk dan indikator krusial dalam pengembangan teknologi penyimpanan atmosfer termodifikasi. Oleh karena itu karakteristik kualitas dan laju respirasi serta model persamaan matematis respirasi pada buah stroberi (*Fragaria x ananassa*) selama penyimpanan di lingkungan tropis perlu untuk diketahui.

Analisis statistika digunakan untuk mengetahui pengaruh perlakuan terhadap perubahan tekstur, warna, kadar air, vitamin C, total asam tertitrasi, total padatan terlarut, kadar antosianin, laju respirasi oksigen dan karbondioksida. Penelitian ini menggunakan desain rancangan acak lengkap dengan variasi suhu ruang lingkungan tropis (27 ± 2 °C), suhu *showcase* yang biasa digunakan oleh pedagang (15 ± 2 °C) dan suhu rendah optimal untuk stroberi (4 ± 2 °C). Pengukuran laju respirasi menggunakan sistem tertutup. Laju respirasi dihitung dengan menggunakan persamaan Michaelis-Menten dan pengaruh suhu dihitung menggunakan persamaan Arrhenius.

Hasil menunjukkan bahwa secara keseluruhan model persamaan Michaelis-Menten yang paling sesuai untuk penentuan laju respirasi oksigen dalam tipe kompetitif. Perubahan warna yang terjadi adalah semakin lama penyimpanan warna berubah menjadi warna merah tua. Pada tekstur, kadar air, dan total asam tertitrasi semakin lama penyimpanan cenderung mengalami penurunan. Pada vitamin C, perubahan yang terjadi yaitu mengalami penurunan lalu mengalami peningkatan. Sedangkan untuk total padatan terlarut dan antosianin selama penyimpanan mengalami peningkatan.

Kata Kunci : Arrhenius, Michaelis-Menten, Respirasi, Stroberi

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ANALYSIS OF RESPIRATION OF STRAWBERRY (*Fragaria x Ananassa* var. Kellybright) HYDROPONIC PRODUCTS DURING STORAGE IN TROPICAL ENVIRONMENT USING MICHAELIS-MENTEN'S EQUATION MODEL

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ABSTRACT

Strawberry is a horticultural product that has high economic value and has been widely cultivated in tropical climates, such as Indonesia. One characteristic of horticultural products is that they still carry out metabolic reactions in the form of respiration after being harvested. Respiration is one indicator of a crucial setback of products and indicators in the development of modified atmospheric storage technology. Therefore, the characteristics of quality and respiration rate and the model of respiration mathematical equations on strawberries (*Fragaria x ananassa*) during storage in tropical environments need to be known.

Statistical analysis is used to determine the effect of treatment on changes in texture, color, water content, vitamin C, total titrated acid, total dissolved solids, anthocyanin levels, oxygen respiration rate and carbon dioxide. This study uses a completely randomized design with variations in the temperature of the tropical environment ($27\pm 2^{\circ}\text{C}$), showcase temperatures commonly used by traders ($15\pm 2^{\circ}\text{C}$) and optimal low temperatures for strawberries ($4\pm 2^{\circ}\text{C}$). Respiratory rate measurement using a closed system. Respiration rate is calculated using the Michaelis-Menten equation and the effect of temperature is calculated using the Arrhenius equation.

The results show that the overall model of the Michaelis-Menten equation that is most suitable for the determination of oxygen respiration rates is the competitive type. The color change that occurs is the longer the color storage changes to dark red. In texture, moisture content, and total titrated acid the longer storage tends to decrease. In vitamin C, the changes that occur are experiencing a decline and then increase. While for total dissolved solids and anthocyanins during storage has increased.

Keywords: Arrhenius, Michaelis-Menten, Respiration, Strawberry

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