RELATIONSHIPS AMONG PHYSICAL ATTRIBUTES, CHEMICAL CONTENT, AND VOLATILE ORGANIC COMPOUND IN STRAWBERRY FRUIT (*Fragaria* × *ananassa* var. Summer Tiara)

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ABSTRACT

Strawberry (*Fragaria* × *ananassa*) is a very well-known non-climacteric fruit amid berries. It is a rich source of bioactive compounds that are thought to have health-promoting and disease-preventing benefits. Many studies have identified color, texture, aroma, and the contentment between sweetness and sourness as significant factors in determining the overall quality of strawberry fruit. However, until now, there is no specific study on the correlation and regression model among quality attributes of everbearing strawberry (*Fragaria* × *ananassa* var. Summer Tiara). This research aims to determine the relationship between strawberries' physical, chemical, and volatile content.

The experiment was conducted using many strawberries with random degrees of ripeness. One of the physical attributes, color, is measured using chromameter with CIELAB approaches which contain lightness (L*), redness (a*), and yellowness (b*), another color component such as chroma (C*) and hue angle (h°) was calculated by equation. Meanwhile, firmness is quantified using a rheometer. A high-performance liquid chromatography (HPLC) is run for sugar and organic acid analysis. The strawberry's volatile organic compound (VOC) is detected by a gas chromatography-mass spectrometry (GC-MS) analytical method. Pearson correlation statistical test was carried out together with curve fitting to find the most suitable graph line for the regression models among attributes.

Among the physical attribute, h° had the highest correlation, while a* and L* owned a moderate correlation with firmness. Furthermore, sugar content had a closest moderate correlation with firmness while citric, total acid, and sugar-acid ratios correlated closer with b* than other physical attributes. During the maturity stage, the total detected VOC was increased, followed by the accumulation of esters in the overripe fruit. In general, both the physical attributes showed correlations with chemical content and VOC, and by its regression model, the value of each quality could be described.

Keywords: everbearing strawberry; quality relationship; Summer Tiara; texture; volatile compound

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