

**Title** Volatile flavour compounds and sensory properties of minimally processed durian (*Durio zibethinus* cv. D24) fruit during storage at 4 °C

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### Abstract

Flavour volatile compounds and sensory attributes in minimally processed durian (*Durio zibethinus* cv. D24) fruit stored at 4 °C for 42 days were examined. The volatile compounds were extracted by solid-phase microextraction (SPME) and analysed by gas chromatography–time of flight mass spectrometry (GC–TOFMS). Forty compounds were identified, among which sulfur compounds, esters, and alcohols were found to be the major constituents. During storage of minimally processed durian at 4 °C, decreases in levels of the majority of ester compounds were observed after 14 days of storage. All ester compounds decreased significantly ( $P \leq 0.05$ ) after 1 week of storage except for ethyl acetate that decreased after 2 weeks. Ethanethiol, 1-propanethiol, and both isomers of 3,5-dimethyl 1,2,4-trithiolane decreased significantly after 7 days of storage. Total sulfur content of fruit remained unchanged after 42 days of storage. Benzyl alcohol was produced after 4 weeks of storage and increased thereafter. Principal component analysis (PCA) applied to the data differentiated the fruit over the storage period based on 22 compounds exhibiting significant changes between samples and explained 86% of the total variance with two principal components. Quantitative descriptive analysis (QDA) was carried out using sixteen descriptors to describe the surface colour, odour, flavour and texture of fruit during storage. Fruit could be stored for 21 days, after which the green aroma became too intense and rendered the fruit unacceptable. Sulfur notes decreased gradually throughout storage while off odours developed on day 21 and increased to an unacceptable level on day 28 of storage. Sweet and fruity aroma correlated strongly with some ester and aldehyde compounds, while correlations between perceived sulphur aromas and sulphur compounds were poor. A green note and off-odours correlated well with benzyl alcohol and 1-hexanol.