

Title Discrimination of storage shelf-life for mandarin by electronic nose technique
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Abstract

Over the past years, electronic nose technology opened the possibility to exploit information on aroma attribute to assess fruit ripening stage during storage. The objective in this study was to evaluate the capacity of electronic nose in monitoring the change in volatile production of mandarin during different storage treatments, and storage shelf-life of mandarin was evaluated by measuring the change in volatile production of mandarin using electronic nose device (PEN 2). By comparing, storage shelf-life of mandarin was better distinguished using Linear Discriminant Analysis (LDA) than Principal Component Analysis (PCA). PCA and LDA analysis were efficient to classify mandarin with the same storage time in its respective groups; but the methods are not efficient to separate the mandarins by different storage times. The correlation between the measured and predicted values of fruit quality attribute (such as soluble solid content, acidity and compression force) shows poor to reasonable prediction performance by means of electronic nose signals. The results prove that sensors 2, 7 and 9 in the electronic nose PEN 2 for mandarin have a higher influence in the current pattern file. Hence, nearly a subset of few sensors can be chosen to explain all the variance. This result could be used in further studies to optimize the number of sensors and find better performance.