

Title Multivariate analysis of fresh-cut carambola slices stored under different temperatures
Author Gustavo H.A. Teixeira, José F. Durigan, Antônio S. Ferraudo, Ricardo E. Alves and Timothy J. O'Hare
Citation Postharvest Biology and Technology, Volume 63, Issue 1, January 2012, Pages 91-97
Keywords *Averrhoa carambola* L.; Hierarchical cluster analysis; Principal component analysis; Polyphenol oxidase; Polygalacturonase; Browning

Abstract

Quality of fresh-cut carambola (*Averrhoa carambola* L.) is related to many chemical and biochemical variables especially those involved with softening and browning, both influenced by storage temperature. To study these effects, a multivariate analysis was used to evaluate slices packaged in vacuum-sealed polyolefin bags, and stored at 2.5 °C, 5 °C and 10 °C, for up to 16 d. The quality of slices at each temperature was correlated with the duration of storage, O₂ and CO₂ concentration in the package, physical chemical constituents, and activity of enzymes involved in softening (PG) and browning (PPO) metabolism. Three quality groups were identified by hierarchical cluster analysis, and the classification of the components within each of these groups was obtained from a principal component analysis (PCA). The characterization of samples by PCA clearly distinguished acceptable and non-acceptable slices. According to PCA, acceptable slices presented higher ascorbic acid content, greater hue angles ($^{\circ}h$) and final lightness (L-5) in the first principal component (PC1). On the other hand, non-acceptable slices presented higher total pectin content, PPO activity in the PC1. Non-acceptable slices also presented higher soluble pectin content, increased pectin solubilisation and higher CO₂ concentration in the second principal component (PC2) whereas acceptable slices showed lower total sugar content. The hierarchical cluster and PCA analyses were useful for discriminating the quality of slices stored at different temperatures.