



MULTIVARIATE STATISTICAL ANALYSIS OF COLOR, TOTAL PHENOLICS CONTENT, AND ANTIOXIDANT CAPACITY OF ROSELLE BEVERAGES

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Introduction. *Hibiscus sabdariffa* L. is a plant native to Africa, grows in tropical areas such as Sudan, Taiwan, Thailand and Mexico (1). It has recently gained importance in market of soft drinks and commercial preparations in Mexico. Extracts of *H. sabdariffa* are marketed as supplements, because of the perception of their potential health benefits (1, 2). Through breeding programs, have been obtained varieties with different pigmentation degrees.

The aim of this work was to study roselle beverages with different degrees of pigmentation, analyzing color, total phenolics, anthocyanin content and antioxidant capacity through multivariate statistical analysis.

Methods. Calyxes of four contrasting pigment roselle varieties were used: Negra, Sudan, Rosa and Blanca. Dried calyxes were lyophilized and pulverized. Roselle beverages were prepared by the method proposed by Sáyago-Ayerdi *et al*, (2). Color analysis (3), total phenolics (2), total anthocyanins (1), and *in vitro* antioxidant capacity (2) was developed by spectrophotometry. For statistics principal component analysis (PCA) and factorial discriminant analysis (FDA) were used.

Results. Twelve cases (four varieties, three replicates) were used to develop a model in order to differentiate among varieties. In this study two components together accounting for 95.90% of the variability in the original data were extracted (Fig. 1). PCA results were validated by FDA. Beverages obtained from different varieties, were classified considering color values and biochemical parameters. Discriminant functions were used to classify derived observations, and the two highest scores allowed fitting the model, as well as for any new observation. Scatter plot showed a quite good varietal separation among samples. Highlighting that the functions obtained allowed the samples were classified into three groups (white, pink and dark).

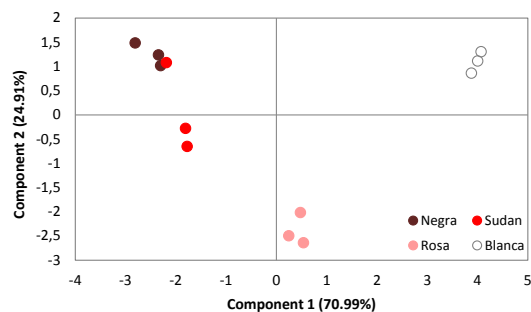


Fig.1 Plot of principal component loadings, first component versus second, for the classification of Mexican roselle.

Conclusions. Multivariate analysis classified properly roselle beverages. This analysis demonstrated evidence of differences through biochemical compounds of the varieties with different degrees of pigmentation. These results could be useful for classification of varieties according to their characteristics and future use of these techniques in food industry.

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