

Volatile Composition of Arabica and Robusta Varieties for Coffee Characterisation and Classification Using a Stepwise Discriminant Approach

**G. PROCIDA¹, B. CAMPISI¹, D. DE PALO², A. CALABRETTI¹,
L. GABRIELLI FAVRETTO¹**

¹University of Trieste, Italy

²Chemical Laboratory for Product Analysis of the Chamber of Commerce of Trieste, Italy

SUMMARY

Two data sets involving 39 green and roasted coffee samples from different origins were considered for the differentiation and classification of Arabicas and Robustas according to the volatile fraction.

The volatile compounds were analysed by hyphenated technique consisting of a dynamic headspace directly coupled with gas chromatography-mass spectrometer system (DHS-GC-MS). Dynamic headspace sampling coupled with “cold trap” technique, enables the acquisition of an aroma profile similar to human olfactory perception. The particular technique employed in this study allowed the identification of 75 substances in the analysed green coffee samples, whereas in the roasted samples more than 80 compounds were identified.

To analyse the importance of volatile components in describing differences between the two varieties a multivariate approach, based on linear discriminant analysis, was applied. The purpose of the study was to characterise differences according to the volatile fraction before and after the roasting process. A comparison between two linear discriminant functions (LDF's), estimated with and without a stepwise variable selection, is presented here. Moreover, a cross-validation procedure, the Leave-One-Out method, was applied to test the prediction capacity of the model.