

Characterisation of Arabica and Robusta Coffee Varieties According to their Trace Heavy Metals Content

G. PERTOLDI MARLETTA¹, G. PROCIDA¹, D. DE PALO², A. WEBER¹

¹University of Trieste, Italy

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

SUMMARY

Coffee is commercially available as one of the two varieties known as *Arabica* and *Robusta*. The coffee beverages are made from *Arabica* and *Robusta* roasted beans or blends of these two. The better quality coffees and usually the most expensive ones are considered to be arabicas. Therefore it is important to have analytical methods to differentiate between these two coffee varieties. The chemical composition of samples constitute a very interesting approach in order to distinguish the varieties. In this way several reports based on sterols content, analysis of the volatile components, infrared spectroscopic data, have been published.

The metal content of the coffee beans has been proved to be adequate to differentiate between the *Arabica* and *Robusta* varieties.

In this work a study of the metal content of green samples and espresso coffee has been carried out. Eight elements, Pb, Cd, Ni, Mn, Zn, Co, Cu and Cr have been analysed by graphite furnace atomic absorption spectrometry (GFAAS). These chemicals descriptors were used to characterise coffee samples from *Arabica* and *Robusta* varieties. The most important results were obtained for the elements Mn and Zn. The analysis of 37 green samples (21 *Arabica* and 16 *Robusta*) showed that Mn and Zn could be considered a very interesting elements for checking the origin of coffee. These results have been confirmed by the analysis of the corresponding espresso coffee samples; in the liquid material the levels of trace elements were generally much lower than in the green beans samples. The content of the toxic elements, Cd, Pb and Ni was low, being much less than or just about 0.5 ppm in almost all samples.