XVII[th] World Congress of the International Commission of Agricultural and Biosystems Engineering (CIGR)

Hosted by the Canadian Society for Bioengineering (CSBE/SCGAB)
Québec City, Canada June 13-17, 2010

DETERMINATION OF METALS IN ORGANIC PULP AND JUICES BY FLUORESCENCE X-RAY

GISELE ANNE CAMARGO[1]

[1] G. A. Camargo, Institute of Food Technology, FRUTHOTEC-ITAL, Brazil, camargo@ital.sp.gov.br

CSBE100631 – Presented at Section VI: Postharvest Technology and Process Engineering Conference

ABSTRACT Fruit juices are an important source of minerals. Potassium and calcium are present in large quantities in citrus and apple juices. They also have significant amounts of magnesium and phosphorus in the case of citrus fruit. Juices can also be a source of minor elements such as iron, copper, zinc and manganese. In some cases, metals in juices are just due to contamination during the preparation of the product. Heavy metals are among substances that can cause problems of human poisoning by ingestion of contaminated food. Given the importance of minerals to human health, and the pace of industrial production of juices and fruit pulps, the need to develop rapid methods for the quantification of these nutrients in foods is highlighted. This paper presents the development of a methodology for determination of minerals in organic and non-organic juices and fruit pulps, by using fluorescence spectrometry X-ray energy dispersive. Two methods of sample preparation, as well as statistical tests on the results for each of these methods were evaluated. In order to study the nutritional quality, the results of the mineral composition of organic and non-organic foods were compared. The fluorescence spectrometer x-ray proved to be efficient to evaluate the mineral composition of juices and pulps. The equipment demonstrated greater sensitivity to potassium and calcium than for iron and magnesium.

Keywords: Juice, pulp, organic, metals