



THE INFLUENCE OF ENVIRONMENTAL CONTAMINATION ON HEAVY METALS AND ORGANOCHLORINE COMPOUNDS LEVELS IN MILK

Mirela Miclean^{1*}, Oana Cadar¹, Cecilia Roman¹, Claudiu Tănăsolia¹,
Lucrina Ștefănescu², Codruța Ileana Stezar², Ioan Ștefan Groza³

¹INCDO-INOE 2000, Research Institute for Analytical Instrumentation, 67 Donath Street, 400293 Cluj-Napoca, Romania

²Babeș-Bolyai University, Faculty of Environmental Sciences and Engineering, Research Centre for Disaster Management, 30 Fantanele Street, 400294 Cluj-Napoca, Romania

³University of Agricultural Sciences and Veterinary Medicine, Faculty of Veterinary Medicine, 3-5 Manastur Street, 400372 Cluj-Napoca, Romania

Abstract

Due to the growing of environmental pollution with heavy metals and organochlorine compounds it is necessary to determine the levels of these contaminants in milk due to the possible risk on human population. This paper reports the concentrations of heavy metals (Cd, Co, Cr, Cu, Ni, Pb and Zn) and organochlorine compounds (polychlorinated biphenyls and organochlorine pesticides) in raw, pasteurized milk and infant formula samples collected in Cluj-Napoca, NW Romania. The analytical methods consist of liquid-liquid extraction and capillary gas chromatography with electron-capture detection (GC-ECD) for determination of organochlorine compounds and microwave acid digestion followed by inductively coupled plasma mass spectrometry (ICP-MS) for determination of heavy metals. The obtained results showed that the lowest mean concentrations were determined in infant formula samples. The organochlorine compounds obtained at the highest mean concentrations were α -HCH, 4,4'-DDE and PCB28.

Key words: heavy metals, milk, organochlorine pesticides, polychlorinated biphenyls

Received: November, 2010; *Revised final:* January, 2011; *Accepted:* January, 2011

* Author to whom all correspondence should be addressed: e-mail: mirelamiclean@yahoo.com; Phone: + 40 264 420590; Fax: + 40 264 420667