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ASSESSMENT OF HEAVY METALS IN COWS MILK IN RODNEI MOUNTAINS AREA, ROMANIA

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Abstract

The aim of this study was to determine the content of the main essential trace (Co, Cr, Cu, Mn, Se and Zn) and toxic (As, Cd, Hg and Pb) elements in milk by inductively coupled plasma-mass spectrometry (ICP-MS) and cold vapor atomic fluorescence spectrometer (CV-AFS) following priority microwave-assisted digestion with HNO₃-H₂O₂. The milk samples were collected from local small-scale producers of different parts of Rodnei Mountains, Eastern Carpathians, Romania. Mean concentrations in µg/L ww were 1.02 (As), 1.09 (Cd), 1.06 (Hg), 6.57 (Pb), 3.54 (Co), 4.56 (Cr), 47.5 (Cu), 23.4 (Mn), 22.3 (Se) and 2985 (Zn). The studied essential trace elements were found to have good and healthy contribution to daily nutrition of consumers in accordance to Recommended Dietary Allowance (RDA). The levels of toxic trace elements (As, Cd, Hg and Pb) were found in very low and concentrations and did not represent any risk to consumers. In addition, some element concentrations of raw milk showed a seasonal pattern: Cu and Zn had higher level in the summer, while As and Mn were more abundant in the winter.

Key words: Carpathians, essential trace elements, milk, toxic elements

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