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Lead and cadmium levels in raw cow's milk from an industrialised Croatian region determined by electrothermal atomic absorption spectrometry

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A simple and accurate method for lead and cadmium determination in raw cow's milk by electrothermal atomic absorption spectrometry (ET-AAS) is described. Milk from fifteen farms near Križ in Zagreb region was sampled from the collective sample directly into plastic bottles (to avoid contamination) four times during the March of 2000. The milk samples were digested in an MLS-1200 Mega Microwave digestion system with MDR Technology. Lead and cadmium were determined directly by ET-AAS in the solutions of digested samples. Statistical analyses were performed using statistical software SAS v. 8.0. Both the farm and the date as well as their interaction ($P < 0.0001$) had a statistically significant influence on Pb and Cd levels in cow's milk. Pb (0.27 ± 0.06 mg/kg DM) and Cd (0.037 ± 0.007 mg/g DM) contents were not correlated ($R = 0.11$) and were lower in all examined samples than the tolerance limit defined by Croatian regulations (Pb < 100 g/l and Cd < 10 g/l). Chemical and statistical analyses showed that differences between the farms were not due to feed. This implies that in order to avoid milk contamination by toxic trace elements great care of stable microclimate and all apparatuses and dishes in contact with milk should be taken.

Keywords:

lead; cadmium; raw cow's milk; electrothermal atomic absorption spectrometry

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