

Toxic Metals and Metalloids in Dietetic Products

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Aim. To determine the concentrations of cadmium, lead, mercury, and metalloid arsenic in the samples of some dietetic products marketed in Croatia, and to compare the values obtained with maximum allowed amounts (MAA) according to the law.

Methods. Metal and metalloid concentrations were measured in 30 dietetic products from the group of industrial food supplements and food additives. The measurements were performed by the method of atomic absorption spectrometry. The concentrations of cadmium, lead, mercury, and arsenic were compared with the maximum allowed amounts for these substances in corn and corn products, and their estimated daily intake with the recommendations of the World Health Organization.

Results. Two out of 30 samples contained cadmium, 5 samples contained lead, and as many as 16 samples contained mercury in concentrations exceeding maximum allowed amounts. The concentration of arsenic was below maximum allowed amount in all samples. In total, the concentrations of metals exceeding maximum allowed amount were found in 17 out of 30 samples. Extremely high contamination with heavy metals was detected in a sample based on zinc oxide, in which the concentration of cadmium (0.418 mg/kg) was four times higher than the maximum allowed amount, and of lead (6.074 mg/kg) 15 times higher than the maximum allowed amount. The highest concentration of mercury (1.117 mg/kg), 35-fold maximum allowed amount, was found in a ginseng-based sample.

Conclusions. Cadmium, lead, mercury, and arsenic were present in some dietetic products in concentrations exceeding maximum allowed amounts. Dietetic products control should match respective legal provisions of the European Union requirements, and requires continual monitoring.

Key words: arsenic; cadmium; Croatia; lead; legislation, food; mercury; spectrophotometry, atomic absorption