CADMIUM, LEAD, ARSENIC AND MERCURY IN FOOD SOLD ON THE LOCAL MARKET IN THE REPUBLIC OF SERBIA

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Abstract

Food, especially cereals and vegetables, water and air are the major source of exposure to toxic metals like cadmium (Cd), lead (Pb), arsenic (As) and mercury (Hg). Their accumulation in the human body can lead to harmful effects over time. The EFSA panel on contaminants in the food chain (CONTAM) established a tolerable weekly intake (TWI) for Cd, Pb, As and Hg of 2.5, 25, 15 and 4 μg kg^{-1} body weight, respectively.

The concentrations of Cd, Pb, As and Hg were determined in different food groups (Grain, mill and bakery products, pasta and pasta products; Soybean; Coffee bean; Sugar; Candy products; Seasonings – Table 1). The samples were analysed by inductively coupled plasma – optical emission spectrometry (ICP-OES). The concentrations of Cd, Pb, As and Hg in the food were compared to the maximum levels set by the European Union and the Serbian legislation.

Cd concentrations in the grain, mill and bakery products, pasta and pasta products ranged from <0.01 to 0.038 mg kg^{-1}, Pb concentrations ranged from <0.01 to 0.092 mg kg^{-1}, and As concentrations ranged from <0.01 to 0.283 mg kg^{-1}. Cd concentrations in the seasonings ranged from <0.01 to 0.036 mg kg^{-1}, Pb concentrations ranged from <0.01 to 0.094 mg kg^{-1}, and As concentrations ranged from <0.01 to 0.212 mg kg^{-1}. As concentrations in the sugar ranged from <0.01 to 0.470 mg kg^{-1}. Cd, Pb and As concentrations were less than 0.010 mg kg^{-1} in all samples of soybean, coffee bean, and candy products. In addition, Cd and Pb concentrations were also less than 0.010 mg kg^{-1} in all sugar samples. Hg concentrations were less than 0.010 mg kg^{-1} in all analysed samples. The maximum level of Cd was found in a frozen puff pastry sample (0.038 mg kg^{-1}), the maximum level of Pb was found in a savoury condiment sample (0.094 mg kg^{-1}) and the maximum level of As was found in a sugar sample (0.470 mg kg^{-1}). In all analyzed samples, Cd, Pb, As and Hg concentrations are lower than maximum levels set by the European Union and Serbian legislation.

Keywords: *cadmium, lead, arsenic, mercury, food.*

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