THE AMOUNT OF HEAVY METALS IN FISH MEAT AND BONES

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Summary. In order to maintain the ecological quality of food products, such as fish, it's necessary to monitor and evaluate the amount of heavy metals (HM) with the means of recent analysis methods. The amount of HM contamination in fish depends on totality of the factors: geographical location of water compound, its depth, distance from highways, the intensity of rural activities in the area, HM concentration in the water, their concentration in hydrobionts, water temperature, hardness, pH. The ability of HM to cause cancer and mutation depends on their concentration, mutual relations, the immunal characteristics of organism. World Health Organisation, Food and Agriculture Organisation, United Commission of Food Codex suggests that seven elements - Hg, Cd, Pb, As, Cu, Zn, Fe, Sn need to be monitored and the following other - Sb, Ni, Cr, Al, F, J – may be monitored.

The aim of this work was to determine the amount of heavy metals Pb, Cd, Ni, Cu, Zn, Cr, Fe, Mn, V, U, Cs in fish meat and bones. The research was done in Federal Institute of Consumer Health Protection and Veterinary Medicine in Germany using ICP-MS. 20 fish samples from different water compounds of Lithuania were analysed. During the research it was found that 63% of fish meat samples were contaminated with concentration of Pb, which lies within the limits of maximum allowed levels of Lithuanian Hygiene Norms, although one sample was contaminated with 3.125 mg/kg Pb, which is 8 times above the norm of MAL. The concentration of Pb and Cd in 20% of fish meat samples is above the allowable ES HV standard. The concentration of other HM - Cd, Ni, Cu, Zn, Cr, Fe, Mn, V, U, Cs in fish meat was not above the allowable levels of Lithuanian Hygiene Norms. The concentration of HM in fish bones is higher than in fish meat, except from Cr, V, U, Cs, where the concentration in bones and meat is similar. The concentration of HM in fish bones is not above the allowable standards for fodder additives, made from fishby products and other sea creatures.

The amounts of HM found in fish meat and bones during this research are close to or equals MAL of Lithuanian Hygiene Norms and in some cases the contamination is above the MAL. Therefore one can conclude that regular monitoring of HM amounts in fish is absolutely necessary.

Keywords: fish, contamination, heavy metals, spectroscopy.