

Scales as an indicator of mercury bioaccumulation in fish

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Summary

Mercury is a highly toxic element that bioaccumulates and biomagnifies, so that its harmful effects on living organisms increase over time. Fish are a valuable source of essential polyunsaturated fatty acids, A, D and B vitamins, and minerals such as iodine, phosphorus, selenium, magnesium and potassium. On the other hand, levels of substances accumulated by food fish which are hazardous to health, including Hg, should be monitored. Fish scales, which can be obtained non-invasively, may be a valuable biological material in monitoring mercury contamination of the aquatic environment. The aim of the study was to determine the total mercury content (THg) in the scales and skeletal muscles of two species of freshwater food fish – pike (*Esox lucius*), a predatory fish, and bream (*Abramis brama*), a benthic feeder of the family Cyprinidae. The mercury content in pike scales was found to be highly significantly ($p \leq 0.01$) higher – a 20-fold difference – than in bream scales. In the muscle tissue, the difference was nearly six-fold ($p \leq 0.01$). The results indicate that scales, especially those of predatory fish (pike), may be a promising indicator of environmental pollution with mercury and perhaps with other heavy metals as well. However, the scales will indicate only a general trend in the THg content in the body of fish.

KEY WORDS: biomagnification, pike, bream, mercury