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## **EFFECTS OF THE ENVIRONMENTAL STRESS ON TWO FISH POPULATIONS REVEALED BY STATISTICAL AND SPECTRAL ANALYSIS**

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### **Abstract**

The aquatic species are permanently subjected to various stresses through the ecosystem and the food habit. Elucidating the impact at the cellular level allows us to understand the ways in which the polluting elements and their derivatives can disrupt the metabolism of aquatic organisms triggering apoptosis in individual cells or necrosis affecting groups of neighbouring cells. The aim of this preliminary study is to highlight the influence of the environmental factors on two fish population by statistical and spectroscopic methods, allowing the observation of the changes in structural components of cell's membranes. In many studies, an accurate method for biomolecules quantification is necessary for the purpose of selecting optimum species and environmental living conditions. Biological samples were collected from two different ecosystems: the Oituz River placed in a region less affected by urban and industrial pollution, and the Mures River, located in an area with a higher degree of pollution. Different samples from brain and muscle and theirs etheric extract were analyzed using ATR-FTIR and UV-VIS spectrometry. Detailed analysis of the different spectral regions after spectral decomposition reveals differences between the two fish populations. The infrared spectroscopy was assisted by statistical analyses in order to develop a calibration model and to reveal the mainly spectral region that correlate with the etheric extract.

*Key words:* ATR-FTIR, chemometric, environment, fish, UV

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