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USE OF *Gammarus pulex* AS BIOMARKER MODEL TO ASSESS THE ECOLOGICAL QUALITY OF INLAND WATERS: A PROTEOMIC APPROACH

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Environmental pollution of surface waters represents a considerable threat to aquatic communities. It is thus important to develop methods, such as exposition biomarkers, for the detection and evaluation of aquatic pollution. The use of proteomics to identify a battery of new biomarkers constitutes a novel and sensitive approach that can act as an early alert system. This can be achieved by means of the identification of a set of proteins that can be used as a common biomarker for organisms such as aquatic invertebrates. Individuals of *Gammarus pulex* species (Amphipod Crustacean), chosen for its occurrence in Belgian rivers and for its sensitivity to many classes of pollutants, have been exposed under laboratory conditions to organic pollutants including chlordecone and several congeners of polychlorobiphenyls (PCB 77, PCB 169 and the 7 regulation-relevant congeners including PCBs 28, 52, 101, 118, 138, 153 and 180). The responses of the organisms have been evaluated using a classic biomarker (GST) as well as using proteomics. Proteomic analyses using bidimensional gel electrophoresis have thus been developed in order to highlight modifications in protein pattern according to exposition of organisms to pollutants in search of a sensitive and common response within the proteome of the organisms. The complex protein mixtures related to the different experiment materials was separated by two dimension electrophoresis methods and the related spots of proteins significantly varying were selected and identified by mass spectrometry (Maldi-Tof-MS-MS) coupled with data bank investigations. The down regulated or over-expressed proteins in contaminated organisms were discussed in relation to the metabolic pathways they belonged to.