LONG-TERM MONITORING OF PCBS AND DDTS IN MUSSELS FROM THE EASTERN ADRIATIC SEA

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Abstract
Mussels (*Mytilus galloprovincialis* Lam.) are collected along the eastern Adriatic coast over a period of 34 years (1972-2006). They were used as indicator organisms for monitoring levels of polychlorinated biphenyls (PCBs) and organohlorine insecticides (DDTs) [1,2]. Concentrations of these persistent organic contaminants have been determined using GC/ECD.
Keywords : Adriatic Sea, Ddt, Pcb, Monitoring, Mollusca.

The Adriatic Sea is an elongated basin (139 000 km^2) of the northern Mediterranean, extending for 800 km into the heartland of the European continent. Croatian karstic region warrants particular attention because of its high ecological sensitivity and the unfortunate unscrupulous destruction during the warfare of 1991 - 1995.
Bioaccumulation of chemicals in biota may be a prerequisite for adverse effects on ecosystems. Mussels have been used in many parts of the world as indicator organisms because of their ability to sequester lipophilic contaminants such as PCBs and DDTs [1].
For the evaluation of a possible hazard from the pollution of the area of Adriatic with PCBs and DDTs, investigation of fish and mussels is implemented since 1972 [2]. The long-term monitoring of chlorinated hydrocarbons in mussels was carried out along the coastal waters of the east Adriatic [Fig 1]. In this region significant quantities of wastewater are discharged directly into the sea from the coastal regions, which are densely populated and have well-developed industrial and marine activities. Also, tourist population increases significantly during the summer period, raising the basic organic load and various pollutants.

Fig. 1. Map of the monitoring coastal area.

All sample analyses are performed by the Analytical group for organic pollutants at Rudjer Boskovic Institute; with uniformed methodology [3].
The following ranges of levels of chlorinated hydrocarbons are determined in mussels on the wet sample mass: PCB ranges from below method sensitivity (0.1) to 1510 ngg^{-1}, respectively DDT ranges from 0.1 to 1088 ngg^{-1}.
Due to non-normal distributions of the elaborated data, temporal trends are investigated through regression analyses and it was necessary to use log-transformation [Fig 2]. Concentration of PCBs is nearly sustained, slightly elevating throughout the investigated period, while DDT levels are significantly decreased since 1970's.

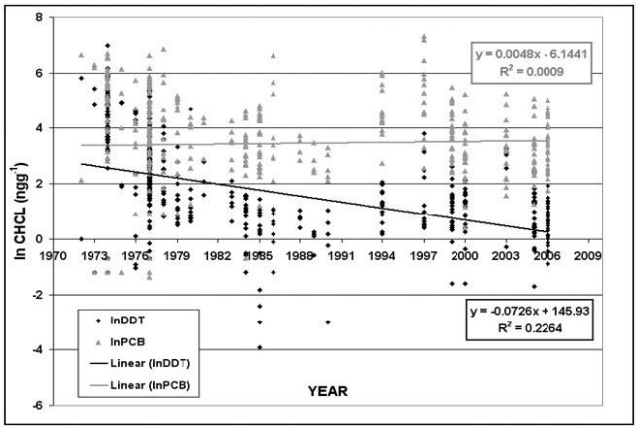

Fig. 2. Temporal trends of chlorinated hydrocarbons.

References

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