

**DETECTION OF XENOBIOTICS IN THE NORTHERN ADRIATIC WATERS  
BY ESTIMATING THEIR BIOCHEMICAL EFFECTS IN FISH**

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Any lipophylic compound, xenobiotic or natural, induces at some concentration a biochemical response in residential fish: the enhancement of mixed function oxydase (MFO) enzyme system. The field studies indicated the potential of MFO for biological monitoring (Payne, 1976; Kurelec et al, 1977). Recently we demonstrated that i.p. application to experimental fish of hexane extracts from water induce MFO (benzopyrene monooxygenase - BPMO) proportionall to the xenobiotics present in the water (Kurelec et al, 1982). This "MFO-induct test" has been used to monitor xenobitics in the Rijeka Bay (Rijavec et al, 1981). With the same method we monitored xenobiotics in Northern Adriatic in November 1979. along the transects Venezia-Piran (Stations 1, 3 and 4), Rovinj-River Po (Stations 5, 7 and 8) and Porto Corsini-Pula (Stations 11 and 13). The activity of induced MFO was expressed in pmol of benzo(a)pyrene hydroxyde per mg of protein per min. The enhancement of MFO above its basic activity in experimental fish was expressed as a degree of induction with basal activity as unity. The results are presented in Table 1.

**Table 1. Xenobiotics in Northern Adriatic as detected  
by MFO-induct test in November 1979**

Transect	Station	Activity of BPMO	Degree of induction
Venezia- Piran	1	10.1	5.3
	3	12,3	6.4
	4	1.4	0.7
Rovinj- Po	5	1.5	0.8
	7	1.9	1.0
	8	2.0	1.0
Porto Corsini- Pula	11	21.0	11.0
	13	10.7	5.6
Control fish		1.9	1.0

Stations 1, 3, 11 and 13 contain large amounts of hexane extractable xenobiotics. Their content is higher than in any station at any season in Rijeka Bay. It seems very probable that polluted waters at transect Piran-Venezia originate from the land-base sources of the Trieste Bay. The influence of this source was not visible at the transect Rovinj-River Po. Toxic substances detected at transect Porto Corsini-Pula probably originate from the River Po. Here the modern insights into the movement of the waters in Northern Adriatic can explain the somewhat peculiar finding of high amounts of xenobiotics at the station 13.

These preliminary results encourage the application of this method also to sediments as well as to the biota. In addition they argue for inclusion into the investigations of the impact of pollution on the marine ecosystem as a relevant biological monitoring method.

#### Literature:

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