

FIELD EVALUATION OF ETHOXY-RESORUFINE-O-DE-ETHYLASE (EROD) AS A MONITOR FOR MARINE POLLUTION

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The regional and annual variations of the ethoxy-resorufine-O-de-ethylase (EROD) activity in relation to the fat content and organochlorine (polychlorinated biphenyls (CBs), hexachlorobenzene (HCB) and p,p'-dichlorodiphenyldichloroethylene (p,p'-DDE)) concentrations in dab (*Limanda limanda*) liver were examined. The biochemical data combined with the chemical data revealed that: (1) a significant EROD induction took place in March and was followed by a rapid decrease in activity in May and September; (2) very few regional differences in EROD activity were observed; (3) the fat content in September was 2.5 fold higher than in March, which indicates that fat was degraded in winter probably due to starvation; (4) the CB content in liver fat remained constant during the year; (5) subsequently the CB and fat content varied in a constant ratio; (6) the CB behavior indicates a saturation condition; (7) the seasonal variation of p,p'-DDE was similar to that of CBs; (8) the liver HCB concentration remained more or less constant during the year; (9) the HCB concentration in the fat was roughly 2.5 fold lower in September than in March, indicating that its partitioning is in a state of equilibrium; (10) the EROD activity varies inversely as the CB and p,p'-DDE content in the liver; (11) the EROD inductions in early spring are probably caused by the mobilization of CBs (and other contaminants) during fat metabolization; (12) the decrease in EROD activity and the simultaneous increase in liver CBs in May and September indicate that the mechanism of CB uptake is well isolated and not available for induction; (13) no correlations between the EROD activity and the organochlorine concentrations were found; (14) no sex differences in EROD activities were observed; (15) migration of dab might influence the interpretation of EROD data. The annual variation in activity of hepatic 7-ethoxy-resorufine-O-de-ethylase (EROD) in dab was used as the basis for the design of a model to predict marine pollution. An attempt was made to interpret these EROD measurements in the light of chemical analysis. How other factors (apart from contaminants) affect the EROD activity was also examined.