

## Sea bass (*Dicentrarchus labrax*) as a potential bioindicator of estrogenic contamination in marine surface waters

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Exposure of aquatic wildlife in surface waters to (xeno-)estrogens is known to cause reproductive dysfunction. Estrogenic responses in fish are the net result of complex chains of events that will depend on a number of factors, such as bioavailability, bioconcentration/bioaccumulation, and biotransformation. Most of known estrogenic chemicals are lipophilic and hydrophobic and therefore have a strong potential to accumulate in aquatic biota. Therefore, determining environmental exposures may be very difficult and not be particularly meaningful. As test organism the sea bass (*Dicentrarchus labrax*) was selected, a common species in European marine systems. This work is part of a study focusing on the combination effects of mixtures of estrogenic chemicals in marine and freshwater organisms. Juvenile sea bass were used in order to analyse the bioconcentration and distribution among different tissues of the chemical residues of a set of reference estrogenic chemicals such as 17 $\beta$ -estradiol (E2), ethynylestradiol (EE2), nonylphenol (NP), octylphenol (OP), bisphenol-A (BPA). Fish were exposed for a period of two weeks to environmentally relevant levels of these compounds, after which liver, bile, muscle, gill and kidney were collected and analyzed. Actual concentrations of E2, EE2 and BPA seawater in the tanks were determined by either gas chromatography with ion trap detection or HPLC coupled to diode array detection. In bile, levels of BPA were determined according to a method presented earlier by Houtman et al. (13<sup>th</sup> Annual Meeting SETAC Europe, 2003). Actual NP and OP concentrations in both water and tissues were determined by HPLC-ESI-MS according to recently developed methods by Pojana et al. (*J. Anal. Chem., in press*). Bioconcentration and distribution of residual compounds in tissues were correlated to the levels of plasma vitellogenin (results are presented also at this conference) and to actual exposure concentrations. The general suitability of the sea bass as a bioindicator of estrogenic contamination in the marine environment is discussed.

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