PB-57

Development of quantitative vitellogenin ELISA assays for fish test species used in endocrine disruptor screening.

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Induction of the yolk protein precursor vitellogenin (Vtg) in plasma has proved to be a simple and sensitive biomarker for assessing exposure to environmental estrogens in fish. The widespread use of Vtg in this regard has lead to the need for standardized assays to quantify Vtg. Monoclonal antibodies, that can be produced from a single clone with a desired specificity and in unlimited amounts, have the potential to help accomplish this. Several governmental organisations, e.g. the OECD and EPA, have decided to incorporate standardized Vtg assays in screening programmes for endocrine disruptors.

Using various combinations of monoclonal and polyclonal fish Vtg antibodies in a sandwich assay format, we have developed quantitative ELISA assays for Vtg in rainbow trout (*Oncorhynchus mykiss*), carp/fathead minnow (*Cyprinus carpio/Pimephales promelas*), zebrafish (*Danio rerio*), and medaka (*Oryzias latipes*), using stabilized Vtg from the test species as a standard. The assays show a high sensitivity, are simple and robust, and are able to detect responses to estrogenic compounds such as 17 β -estradiol and nonylphenol in plasma or whole body homogenate from the different test species. The study is supported by the Norwegian Research Council (NFR).