

Vitellogenin as a biomarker for estrogenic chemicals: Development of antibodies and primers with broad species applications.

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In oviparous vertebrates, estrogen stimulates the female liver to produce the egg yolk precursor protein, vitellogenin. This protein circulates in the blood, is taken up by oocytes, and is then cleaved into egg-yolk proteins. Knowledge of serum vitellogenin levels is valuable in studies of vertebrate reproductive cycles. Furthermore, vitellogenin levels are now being used as a biomarker for exposure of animals to environmental estrogens. Thus, there is a need for assays capable of measuring serum vitellogenin of various species. Immunoassays are the method of choice for measuring vitellogenin; however, the available antibodies show little interspecies crossreactivity, due to a lack of sequence conservation. We have developed polyclonal and monoclonal antibodies against a conserved region of vertebrate vitellogenins that show broad species crossreactivity. These antibodies recognize vitellogenins from species of fishes, amphibians, reptiles, and birds. Recently, vitellogenin RT-PCR has been developed as a more rapid and sensitive means of assessing *in vivo* exposure to estrogens. We have generated a series of degenerate primers that recognize vitellogenin cDNAs from several phylogenetically distant species. The new antibodies and primers should be useful for studies of vitellogenin and vitellogenesis in wildlife species for which specific reagents are not available. Supported by grant NIH ES07621 to BDP and grants USDA 9504243 and USDA 98-35102-6517 to KWS.