

Poster #14

The Dysregulation of Testosterone Esterification by Tributyltin in a Prosobranch Gastropod (*Ilyanassa obsoleta*)

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Exposure to the environmental contaminant tributyltin (TBT) has been casually linked with imposex, the imposition of male sex characteristics onto female prosobranch gastropods. Past studies have associated TBT exposure with increased testosterone titers in imposexed females. We previously established that the fatty acid esterification of testosterone by microsomal acyl-CoA:testosterone acyltransferase (ATAT) is a major process for maintaining free testosterone homeostasis in the eastern mud snail, *Ilyanassa obsoleta*. This research sought to elucidate the mechanism behind the association between TBT exposure and elevated testosterone concentrations by examining the effects of TBT on ATAT activity. Exposure of snails to TBT reduced the accumulation of testosterone-fatty acid esters by these organisms. However, ATAT activity in microsomes isolated from TBT-exposed snails was not suppressed. Microsomal ATAT activity also was not directly inhibited by TBT in vitro. Preliminary studies suggest that ATAT is susceptible to induction by testosterone during certain times of the year and exposure to TBT significantly attenuates this induction. These results suggest that TBT increases free testosterone levels by preventing the induction of ATAT activity normally associated with elevated free testosterone levels. TBT thus appears to interfere with the positive feedback control of testosterone esterification.

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