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EXPRESSION AND INDUCTION OF CYTOCHROME P450 FAMILY 4 BY ATRAZINE IN *Chironomus tentans* (Diptera: Fabricius)

Cytochromes P450 represent the single most important enzyme family involved with detoxification of xenobiotics, and increased amounts of specific P450 isozymes are observed after treatment of organisms with a variety of organic chemicals (Scott 1999). Induction of the P450 system can have important consequences concerning the ability of insects to tolerate exposure to pesticides. Recently, several studies have shown that midge larvae (*Chironomus tentans*) simultaneously exposed to atrazine and selected organophosphate insecticides exhibited greater than additive toxicity. Although a biochemical understanding of atrazine induction of P450 enzymes in *C. tentans* and its potential for synergism with other toxins is emerging, there is nothing presently known regarding the specific P450 forms involved in this induction. Studies performed in our lab have also measured the effect of atrazine exposure on cytochrome P450-dependent monooxygenase activity and have found increased activity as a result of atrazine exposure (10 ppm). A 45-kDa protein of increased intensity was observed after SDS-PAGE of microsomal protein that is similar in size to cytochrome P450 enzymes reported for other insects. Heme staining of SDS-PAGE gels and immunochemical studies using a *Drosophila melanogaster* anti-P450 polyclonal antiserum, further support the cytochrome P450 nature of this inducible 45-kDa protein (Londoño et al. 2004). Identification of specific atrazine-inducible P450 genes could enhance sensitivity of detection and provide insight into potential consequences of exposure. The objective of present research is to identify specific P450 genes involved in this process and measure their responsiveness to induction.

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