



## Atrazine induction of a family 4 cytochrome P450 gene in *Chironomus tentans* (Diptera: Chironomidae)

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### Abstract

Cytochrome P450-dependent microsomal monooxygenase (P450) activity was measured in control and atrazine-exposed third instar midge larvae, *Chironomus tentans*. Significantly elevated O-demethylase activity was observed in gut homogenates taken from midges exposed to atrazine concentrations from 1 to 10 ppm for 90 h. No significant induction was observed at atrazine concentrations below 1 ppm. A region of a cytochrome P450 family 4 gene was amplified and sequenced from *C. tentans* larvae. Alignments of inferred amino acid sequences with other insect CYP4 gene homologues indicate a high degree of similarity. Northern blot analysis employing the CYP4 gene fragment as a probe showed an over-expression in *C. tentans* exposed to atrazine. The results support the previously identified inducibility of cytochrome P450-dependent activity and provide insight into the potential consequences of atrazine exposure to aquatic organisms. Ó 2003 Elsevier Ltd. All rights reserved.

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