

Poster #8

Chitinase Activity in the Epidermis of the Fiddler Crab, *Uca pugilator*, as an *in vivo* Screen for Molt-Interfering Xenobiotics

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We describe herein an *in vivo* screening assay that uses epidermal chitinase activity as the endpoint following a seven-day exposure of *Uca pugilator* to test chemicals. Chitinase, a chitinolytic enzyme, is the end product of endocrine cascades of a multi-hormonal system for control of crustacean molting. Wherever a molt-interfering agent attacks on the Y-organ-ecdysteroid receptor axis, the effect should be manifested by the activity of chitinase in the epidermis. Therefore, epidermal chitinase activity is an ideal endpoint for molt-interfering effect of xenobiotics. The validity of epidermal chitinase activity being used for such a purpose is supported by our finding that two injections of 20-hydroxyecdysone at 25 µg/g live weight induced a two-fold increase in chitinase activity in the epidermis of *Uca pugilator*. A total of nine chemicals were screened for molting hormone and anti-molting activities. o,p'-DDT was found to significantly inhibit epidermal chitinase activity while kepone and methoxychlor exhibited a tendency of inhibition of enzymatic activity. None of the remaining six chemicals, namely, p,p'-DDT, atrazine, tributyltin (TBT), methoprene, dieldrin and permethrin, had an effect on epidermal chitinase activity.

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