

ABSTRACT

Thesis Title : Chemical Modifications of Ecdysteroids
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Advisory Committee :

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Treatment of a solution of 20-hydroxyecdysone (**2**) in methanol/pyridine with hydroxylamine hydrochloride furnished 20-hydroxyecdysone 6-oxime *anti* isomer (**36**) and *syn* isomer (**37**). The two geometric oximes were characterized by ^1H NMR spectroscopy. 20-Hydroxyecdysone 2,3,22-triacetate 6-oxime *anti* isomer (**40**) and *syn* isomer (**41**) were similarly prepared and characterized. Moulting hormone activity of the oximes **36** and **37** was evaluated using *Musca* bioassay. Based on the activity of **2** the *syn* oxime **37** was moderately active, while the *anti* oxime **36** was inactive. The results not only provided information in the study of structure-activity relationships of ecdysteroids, but also provided more information concerning binding of ecdysteroids to the active sites of the receptors of insects. Furthermore, poststerone 20-oxime (**43**) was synthesized from poststerone (**19**) which

in turn was synthesized by oxidative cleavage of **2** by *m*-chloroperbenzoic acid in acetic acid. However, the oxime **43** gave negative result in the *Musca* bioassay. The result was probably due to lack of a full sterol side chain.

Acetylation of the hindered tertiary hydroxyl group at the 20-position of **2** was achieved and 20-hydroxyecdysone 2,3,20,22,25-pentaacetate (**42**) was obtained. Biological activity testing of this compound was not made due to the insolubility of the compound in suitable solvents. Synthesis of the B-ring lactone and lactam analogues of **2** was attempted, but with unsuccessful results.