

NATURAL PRODUCT ISOLATION
AND
STEROID BIOTRANSFORMATIONS

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ABSTRACT

Outlined in part 1 of the thesis is the isolation and characterization of natural products from *Satureja brownei* (of the Labiatae family) and *Capraria biflora* (of the Scrophulariaceae family). A review of phytochemical investigations of the *Satureja* genus is detailed in chapter 1 while the isolates of *S. brownei* are discussed in chapter 2. Compounds isolated include β -sitosterol (2), stigmasterol (3), ursolic acid (4), oleanolic acid (5), 7-methoxy-4-methylcoumarin (6), the flavonoid xanthomicrol (7), a novel monoterpene, 2 β ,5 β -epoxy-1 β -hydroxymenthane (8), and sitosterol glucoside (9). Molluscicidal assays of crude plant extracts, isolated compounds and an active but unidentified metabolite are also recorded in this chapter. Selected members of the Scrophulariaceae family found in Jamaica are reviewed in chapter 3 while the isolates found in *Capraria biflora* are discussed in chapter 4. The hexane extract contained the common

phytosterols β -sitosterol (1) and stigmasterol (2). A novel sesquiterpene, caprariolide (3), was obtained from the extract in fairly large quantities. β -Sitosterol glucoside (4) was the only compound characterized from the acetone extract.

The propensity of previously uninvestigated fungi, *Thielaviopsis paradoxa* and *Colletotrichum musae*, to transform selected steroids is investigated in part 2 of the thesis. Enzyme-mediated mechanisms of oxidation, reduction and hydroxylation are outlined in chapter 1. Transformation reactions with *Thielaviopsis paradoxa*, isolated from the coconut, are detailed in chapter 2. Selective oxidations and reductions are performed with this fungus. Enzyme-mediated reactions of steroids with *Colletotrichum musae* (obtained from a *Musa* sp.) are outlined in chapter 3.