ABSTRACT

Part I of this thesis consists of two reviews. The first examines the isolation and biological activities of diterpenes from the genus Croton (Euphorbiaceae). The second discusses the chemistry of the fourteen-membered ring diterpenes, namely, the cembranoids and casbenoids. The syntheses of both (±)-cembrene and (−)-casbene are outlined.

Part II presents a reinvestigation of Croton nitens (Euphorbiaceae). In the first section, three known diterpenes, compounds A, B and C, were isolated. Compound A is the casbenoid diterpene, crotonitenone. Compounds B and C are the (−)-kaurene diterpenes, (−)-kaur-16-ene-19-oic acid and the 15-oxo-(−)-kaur-16-ene-19-oic acid, respectively. Further studies on compound A and its suggested role in a biogenetic scheme as an intermediate leading to other classes of diterpenes, namely, the crotofolanes and phorbols, are discussed. In carrying out this biomimetic study, cyclisation of ring A of compound A was effected by the use of sodium hydride on the triketone of compound A. It is noted, however, that the cyclisation resulted in the formation of a six-membered ring instead of the desired five-membered ring. The second section involves the determination of the absolute stereochemistry of compound A employing Horeau's method. This was found to be identical to its relative stereochemistry as originally determined.

Part III presents a preliminary investigation into three Croton species: C. wilsonii, C. humilis and C. linearis (Euphorbiaceae). From this examination, C. linearis is the only species of the three that
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...seems to warrant further investigation since the three compounds isolated, namely, compounds V, VI and VIII, appear to be diterpenes, although their gross structures were not determined.