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

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.