

ABSTRACT

Many alkaloidal types occur in Croton species. These include morphinandienones, reduced morphinandienones, proaporphines, aporphines, quinazolines, reduced proaporphines, simple phenolic amines and peptide-types. Studies on the biosynthesis of the latter three types have not been undertaken in Croton species or elsewhere. However, the elaboration of morphinandienones and reduced morphinandienones in nature has received closer scrutiny and a review of the work in this field is presented in Part I of this thesis. A report of the tracer investigations directed at the morphinandienone alkaloids flavinantine, sinoacutine and norsinoacutine found in Croton flavens L. is also given in this section. It has been shown that methionine and [ $\alpha$ - $^{14}$ C]glycine can serve as precursors of the methyl groups of all three alkaloids, while the reversible conversion of sinoacutine to norsinoacutine has been demonstrated. The norsinoacutinols opted for oxidation back to norsinoacutine rather than cyclisation, whereas 8,14-dihydrosalutaridine and 8,14-dihydronorsalutaridine were not converted to any of the alkaloids of this Croton. Sinomenine and isosinomenine can serve as precursors of sinoacutine and norsinoacutine in Croton flavens, while flavinantine is formed from reticuline in preference to orientaline. Experiments relating to the incorporation of phenylalanine are discussed, and in this and the previously mentioned studies, degradations were performed in order to establish the site of the radio-

isotopes in the isolated alkaloids.

Steady progress has been made with respect to unravelling the biosynthetic sequence to many proaporphines and aporphines. In Part II work done in this area is reviewed and reported. A discussion of the formation of the proaporphine crotonosine from the reduced proaporphine linearisine in Croton linearis Jacq. is also presented. Both these alkaloids are naturally occurring in the plant.