A THESIS

entitled

5α-CARBOXYSTRICTOSIDINE: A POSSIBLE INTERMEDIATE IN THE BIOGENESIS OF INDOLE ALKALOIDS

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ABSTRACT

The isolation and characterisation of three amino acid glycosides from the roots of Rhazya orientalis are described. The relative stereochemistry of 5α-carboxystrictosidine is determined by NMR and thermodynamic correlations with model compounds . The absolute stereochemistry of 5α-carboxystrictosidine is established by molar rotation comparisons and biosynthesis and that of strictosamic acid by conversion into strictosidine.

The macro-isolation of secologanin is described . Secologanin is used for the partial synthesis of the diastereoisomers of 5α-carboxystrictosidine. Conformational analysis and the chemistry of these compounds leading to the assignments of their absolute configurations are presented. Final proof of the complete stereochemistry of 5α-carboxystrictosidine and 5α-carboxystrictosamic acid came from a direct comparison.

The absence of vincoside and 5α-carboxyvincoside in Rhazya orientalis is demonstrated by radio-chemical dilution analysis. The biosynthesis of 5α-carboxystrictosidine from loganin and L-tryptophan is established and it's possible biogenetic significance is discussed.

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