

ABSTRACT

Chemical Constituents of Selected Octocorals from the Southern Caribbean

This thesis describes the isolation and structural elucidation of secondary metabolites from the Southern Caribbean octocorals *Pseudopterogorgia rigida*, *Eunicea laciniata*, *Pseudoplexaura flagellosa* and *Erythropodium caribaeorum*. The metabolites were isolated by the use of standard chromatographic techniques and High Performance Liquid Chromatography (HPLC) where appropriate. Their structures were deduced by a combined use of 1D and 2D NMR spectroscopy, and MS analysis where necessary.

Chapter one briefly describes the selected gorgonian octocorals.

Chapter two reviews the literature on the compounds found in the gorgonian octocorals belonging to the genera *Pseudopterogorgia*, *Eunicea*, *Pseudoplexaura* and *Erythropodium*.

Chapter three discusses the chemical investigation of the Caribbean gorgonian *Pseudopterogorgia rigida* collected off northeastern Venezuela. A new sesquiterpene derivative named mochiquinone was isolated from a sample of *P. rigida*, along with the known compounds, α -curcumene, (-)-curcaphenol, (-)-curcuquinone and (-)-curcuhydroquinone. Mochiquinone

has a unique structure in that it is the first sesquiterpene reported containing an additional C-alkylated group on the main skeleton.

In Chapter four, a previously isolated trihydroxy gorgosterol derivative (gorgost-5-ene-3 β ,9 α ,11 α -triol), a new gorgosterol (gorgostane-3 β ,5 α ,6 β ,9 α ,11 α -pentol) and the known sterol cholestan-3 β ,5 α ,6 β -triol are reported from the Caribbean octocoral *Eunicea laciniata* collected off northeastern Venezuela. The total structural assignment and detailed stereochemistry of gorgost-5-ene-3 β ,9 α ,11 α -triol is presented for the first time and the full structure of gorgostane-3 β ,5 α ,6 β ,9 α ,11 α -pentol advanced.

Chapter five discusses the chemical studies on the Caribbean gorgonian *Pseudoplexaura flagellosa* collected also off northeastern Venezuela. Two acetylated 4 α -methylsterols were isolated as an inseparable mixture from this octocoral. By the use of concerted 2D NMR techniques, it was possible to both identify the compounds as the acetates of 4 α ,24R-dimethyl-5 α -cholest-22-en-3 β -ol and 4 α ,23,24R-trimethyl-5 α -cholest-22-en-3- β -ol and to fully assign their ^1H and ^{13}C chemical shifts.

In Chapter six, an analysis of a sample of *Erythropodium caribaeorum*, collected off the coast of Tobago, is reported. Six known erythrolides (A, B, E, F, I and J) were isolated. Erythrolide I is being reported for the first time from *E. caribaeorum* collected in Trinidad and Tobago.

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