ABSTRACT

A Chemical Investigation of Secondary Metabolites of Jamaican *Caulerpa*, *Padina* and *Tabebuia*

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This thesis is divided into two parts, Part I and Part II. Part I delves into a review of the marine algae, *Caulerpa* and *Padina* and details the isolation and characterization of secondary metabolites from the genera, in addition to a biological investigation. Part II examines the literature on the natural products of *Tabebuia* and also deals with the isolation and structural elucidation of compounds from *Tabebuia riparia*.

From *C. sertularioides* three compounds were derived, a marine sterol, a bisindole pigment and a fatty acid (compounds A, B and C respectively). Examination of *C. racemosa* resulted in the isolation of a long-chain monounsaturated hydrocarbon derivative, compound D. The total structural assignments of compounds A and B were deduced by extensive 2D NMR spectroscopy and reported for the first time. Investigation of the marine alga *Padina vickersiae*, revealed a monounsaturated fatty acid (compound E). The algal extracts and the compounds isolated were tested for biological activity.

The second part of this dissertation examines the endemic terrestrial species *Tabebuia riparia*. The bark, leaves and twigs and heartwood of *T. riparia* were extensively investigated. From the hexane extract of the bark, four compounds were identified, a plant sterol (compound F) and a long-chain hydrocarbon steryl ester (compound G). Also detected were the presence of two lupane triterpenes (compounds H and I). The structures of compounds F and H were confirmed by conversion to the corresponding acetates (compounds F^1 and H^1). From the acetone extract of the leaves and twigs, a triterpene acid was identified in addition to a mixture of urs-12-ene triterpenes characterized as the acetates (compounds K and L). Chromatography of the ethyl acetate extract of the bark, led to the isolation of a glucosidic iridoid (compound M^1), characterized as the hexaacetate (compound M).

Keywords: Dionne Michelle Estwick; marine algae; *Caulerpa*; *Padina*; secondary metabolites; terrestrial species; *Tabebuia*.