

PHYTOCHEMICALS FROM
MIKANIA MICRANTHA AND *COCCOLOBA KRUGII*
AND
THE ESSENTIAL OILS OF
HYPTIS VERTICILLATA AND *HYPTIS CAPITATA*

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ABSTRACT

Part 1 of this dissertation describes the phytochemical investigation of the plants *Mikania micrantha* and *Coccoloba krugii* as sources for new antibacterial agents. Chapter 1 details the investigation of extracts from one hundred Jamaica plants for antibacterial activity against five pathogenic bacteria. Chapter 2 reviews the chemical literature of the *Mikania* genus and a brief introduction of the plant *Mikania micrantha* is presented in Chapter 3. The activity-guided isolation and structure elucidation of several compounds from the hexane and the acetone extracts of *Mikania micrantha* are outlined in Chapter 4. These are the phytochemicals mikanolide (1), dihydromikanolide (2), deoxymikanolide* (3), mikanin (85) and stigmasterol-D-glucoside (104). Nine derivatives of mikanolide (1) were prepared, four of which are novel compounds and the structure-activity relationship studies of these derivatives

as well as dihydromikanolide (2) and deoxymikanolide (3) are also discussed in Chapter 4. Chapter 5 reviews the chemical literature of the *Coccoloba* genus and Chapter 6 presents the isolation and structure elucidation of six compounds from the acetone extract of *Coccoloba krugii*: lupeol (101), lupeol acetate (107), lup-20(29)-en-3 β ,30-diol (127), 3 β -acetoxyleanolic acid (128), 3 β -acetoxursolic acid (129) and quercetin (130).

Part 2 presents the investigation of the chemical composition of the essential oils of *Hyptis verticillata* and *Hyptis capitata*. Chapter 7 gives a literature overview of analyses of essential oils as well as the chemical composition of oils from the *Hyptis* genus. Chapter 8 describes the investigation of the essential oils from aerial parts of *Hyptis verticillata* and Chapter 9 describes the oils from the leaves and stems and the fruit of *Hyptis capitata*.