

ABSTRACT

Phytochemical investigation of the leaves of *Monstera adansonii*, *Monstera dubia*, *Xanthosoma undipes* and *Montrichardia arborescens* (Araceae) from Trinidad

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This thesis comprises five chapters and discusses the isolation and characterization of twenty-four secondary metabolites from the leaves of four species of the Araceae family. Structural elucidation were performed using various spectroscopic and spectrometric methods including COSY, DEPT, HSQC, HMBC, T-ROESY, TOCSY, MS, IR and comparisons with reports in the literature.

Chapter one surveys the Araceae and identifies the secondary metabolites previously isolated together with their respective biological activities.

The *Monstera* genus is reviewed in chapter two followed by discussions of the phytochemical study conducted on *Monstera adansonii*. Five norisoprenoids, three aromatic compounds, one lignan and one DNA nucleoside were isolated.

Chapter three describes the chemical investigation of *Monstera dubia*. Two norisoprenoids, one aromatic compound, one indole derivative, one DNA nucleoside and one RNA nucleoside were isolated.

A review of the *Xanthosoma* genus is reported in chapter four followed by discussions of the isolation and characterization of compounds from *Xanthosoma undipes*. Seven norisoprenoids, one aromatic compound, one DNA nucleoside, one RNA nucleoside and two flavone C-glycosides were isolated. One of the flavone C-glycosides, with the proposed name 2''-O- β -D-xylosylbayin (CCCXLIV), is a novel naturally occurring compound. The sambubioside disaccharide unit present in both isolated flavone C-glycosides was not previously reported for the Araceae. In addition, this is the first report of a flavonoid deoxygenated at position 5 of the A-ring in the Araceae family.

Chapter five surveys the *Montrichardia* genus and describes the isolation and identification of metabolites from *Montrichardia arborescens*. One norisoprenoid, three aromatic compounds, one lignan, one RNA nucleoside, one amino acid and three flavonol glycosides were isolated. The neohesperidose disaccharide unit present in two of the isolated flavonol glycosides was not previously reported in the Araceae. Conclusions made from this research are highlighted at the end of the chapter, which includes identifications of viable chemotaxonomic markers for the Araceae species located in Trinidad. Future directions of this research are also proposed.

To date, this is the first report of the phytochemical investigations of *Monstera adansonii*, *Monstera dubia*, *Xanthosoma undipes* and *Montrichardia arborescens*. All isolated compounds were obtained from their respective genera for the first time and thirteen are new to the Araceae family of which one is novel.

Keywords: Araceae; *Monstera adansonii*; *Monstera dubia*; *Xanthosoma undipes*; *Montrichardia arborescens*; extraction; isolation; characterization; norisoprenoids; simple aromatics; DNA nucleoside; RNA nucleoside; lignans; flavonol glycosides; flavone C-glycosides.