GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS)-BASED METABOLOMICS OF *Strobilanthes crispus* FROM SABAH

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A DISSERTATION SUBMITED IN PARTIAL FULFILMENT FOR THE DEGREE OF MASTER OF SCIENCE (MOLECULAR BIOLOGY)

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ABSTRACT

Strobilanthes crispus or locally known as "bayam karang", "pecah kaca", "jin batu" and "pecah beling" in Malaysia, has been traditionally used to boost immune system, treating kidney stones, treatment for diabetes mellitus, treatment of high blood pressure and treatment of wound. Studies examining the phytochemical constituents revealed that the leaves of this plant contain ester glycosidic compound of caffeic acid, ρ-voumaric acid, , vanilic acid, ferulic acid, syringic acids, α-sitosterol, campesterol, hexadecanoic acid, methylester, lupeol, phytol, stigmasterol, flavonoid compounds such as (+)-catechin, (-)-epicatechin, rutin, and etc. While most of the literatures focused on the chemical compounds present in the leaves of *S. crispus*, none have been reported for the phytochemical constituents of the whole *S. crispus* plant including the leaf, stem, root and flower. The lacking of such information has created a gap for researchers to understand in detail the chemistry part of the plant hence causes the researchers lost a lot of important information when trying to identify, isolate and purify bioactive compounds from the plant. Thus, this study was carried out to profile the leaves, stems and roots of *S. crispus* plants from Sabah using gas chromatography mass spectrometry (GC-MS) approach. It is found that nine bioactive compounds were present in leaf extracts, eight compounds in the stem extracts and seven compounds in the root extracts of *S. crispus*. Overall, 13 bioactive phytoconstituent was found in this plant which are squalene, vitamin E, stigmasterol, campesterol, diisooctyl phthalase, gamma-tocopherol, beta-amyrin, beta-sitosterol, gamma-sitosterol, hexadecanoic acid, phytol, lupeol, and 9,12,15-Octadecatrienoic acid, (Z, Z, Z). Further study such as quantification is needed to know the amount of each bioactive compound detected in the plant in future.

ABSTRAK

Strobilanthes crispus atau dikenali oleh penduduk tempatan sebagai bayam karang, pecah kaca, jin batu dan pecah beling di Malaysia, telah digunakan secara tradisional untuk meningkatkan sistem pertahanan badan, merawat penyakit batu karang, kencing manis, darah tinggi dan juga merawat luka. Kajian mengenai kandungan fitokimia menunjukkan bahawa daun tumbuhan ini mengandungi kompaun ester glikosidik yang terdiri daripada asid kaffeik, asid ρ-voumarik, asid vanilik, asid ferulik, asid syiringik, α-sitosterol, campesterol, asid hexadekanoik, methylester, lupeol, phytol, stigmasterol, kompoun flavonoid seperti (+)-catechin, (-)-epicatechin, rutin, dan sebagainya. Sebahagian besar daripada kajian lepas hanya tertumpu pada kompaun kimia yang terdapat pada daun tumbuhan *S. crispus,* namun tidak terdapat laporan berkenaan dengan kandungan fitokimia bagi keseluruhan tumbuhan *S. crispus* yang terdiri daripada daun, batang, akar dan bunga. Kekurangan maklumat tersebut mewujudkan satu jurang bagi para pengkaji untuk memahami secara terperinci tetang komposisi kimia tumbuhan tersebut yang mana ia menyebabkan para pengkaji kehilangan banyak maklumat penting ketika mencuba untuk mengenalpasti, mengasingkan dan memurnikan kompaun bioaktif daripada tumbuhan tersebut. Oleh itu, kajian ini dijalankan untuk memprofilkan daun, batang dan akar tumbuhan *S. crispus* dari Sabah dengan mengunakan pendekatan kromatografi gas jisim spektrometri. Daripada analisa yang dijalankan sembilan kompoun telah ditemui terdapat pada ekstrak daun, lapan pada ekstrak batang dan tujuh daripada ekstrak akar. Keseluruhannya sebanyak 13 kompound telah ditemui terdapat dalam tumbuhan ini iaitu squalene, vitamin E, stigmasterol, kampesterol, diidocytyl phthalase, gamma-tokoferol, beta-amyrin, beta-sitosterol, gamma-sitosterol, hexadekanoik asid, lupeol, phytol and 9,12,15-asid oktadekatrienoik (Z, Z, Z). Kajian lanjut berkenaan dengan pengkuantitian setiap kompoun yang ditemui perlulah dijalankan dimasa hadapan.