

**STUDIES ON BIOACTIVE COMPOUNDS AND
ELEMENTAL DISTRIBUTION OF SOME SELECTED
MYANMAR MEDICINAL PLANTS AND RELATED
KINETIC SYSTEMS**

Ph.D. DISSERTATION

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Title : Studies on Bioactive Compounds and Elemental Distribution of Some Selected Myanmar Medicinal Plants and Related Kinetic Systems

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Abstract : In search of the correlation between the structure and the activity of known active principles in two of the commonly used Myanmar traditional medicinal plants **Lout-They leaves** (*Desmodium triquetrum* DC.) and **Tayoke-Saga bark** (*Plumeria acutifolia* Poir.) modelling studies based on PC4, ChemOffice and HYPERCHEM were carried out. From among some selected medicinal plants which have been subjected to elemental distribution assayed by AAS (Atomic Absorption Spectroscopy), two of the plants *Desmodium triquetrum* DC. and *Plumeria acutifolia* Poir were selected and the active principles quercetin and fulvoplumierin were isolated, identified, derivatized and characterized by conventional and modern techniques such as UV, FT-IR, ¹H-NMR and Mass Spectrometric techniques. Moreover antibacterial studies based on the agar disc diffusion technique has been accomplished. From the modelling and correlated biochemical studies it was found that the derivatized products indicate a little more significant sensitive bioactive response than the source compound. Apart from the structure-activity modelling system, rate studies on the aspect of model systems were also worked out. The investigation is also focused on the rate study regarding the methylation of the phenolic functional group of quercetin isolated from *Desmodium triquetrum* DC. Fundamental rate study was thus made choosing α and β - naphthol and their possible reaction with the methylating agent dimethyl sulphate. An advanced kinetic study involving the radical-molecule kinetics of OH (hydroxy radical) and DMS (dimethyl sulphide) was also carried out by using the pulse laser photolysis-pulse laser induced fluorescence (PLP-PLIF). ORIGIN software and Laplace transform method were used to determine the rate parameters such as rate constant, equilibrium constant, and activation energy.