

ANTIDIABETIC STUDIES OF TETRACERA SPECIES AND IDENTIFICATION OF ACTIVE PRINCIPLES THROUGH CHROMATOGRAPHY AND MOLECULAR DOCKING APPROACHES

Professor Dr Qamar Uddin Ahmed

Drug Discovery and Synthetic Chemistry Research Group, Department of
Pharmaceutical Chemistry, Kulliyyah of Pharmacy, International Islamic University
Malaysia, 25200 Kuantan, Pahang DM, Malaysia

E-mail: quahmed@iium.edu.my; qamaruahmed@yahoo.com

The search for safe and effective antidiabetic agents has continued to be an important area of investigation worldwide. In this regard, traditional medicinal plants have been proven to be a good source for safe phytopharmaceuticals. *Tetracera* is a genus of flowering plants of the Dilleniaceae family native to the tropics. Several species have been documented through ethnomedicinal investigations for their traditional uses to prevent rheumatism, diarrhoea, hepatitis, inflammation, diabetes mellitus, skin related infections and hypertension. These folklore claims have attracted the attention of natural product scientists to this genus species to further confirm their traditional claims and medicinal value. Hence, this presentation is an attempt to summarize the studies conducted in our research laboratory on three different species of genus *Tetracera* viz., *T. scandens* (L.) Merr., *T. indica* (Christm. & Panz.) Merr. and *T. macrophylla* Hook.f. & Thomson and to explore the isolated phytochemicals for their antidiabetic potential. Results revealed that all species contained flavonoids as their major bioactive compounds which were further evaluated upon purification and structure characterization for their toxicity, antioxidant and antidiabetic effects through various *in vitro* and *in vivo* assays. Molecular modification of some rare flavonoids isolated from these plants were subjected to the structure activity relationship study to further confirm their antioxidant and antidiabetic potentials. *In silico* molecular docking study was conducted to understand the molecular interaction with established pharmacological targets and mechanisms of actions at the molecular level as an antihyperglycemic agent. The results suggest that phenolic compounds from these plants can be considered as promising candidates in the development of new antidiabetic lead compounds. Moreover, the precise mechanism of action of these flavonoids based novel derivants for

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their antihyperglycemic effect may provide a strong foundation for the clinical studies in human beings as a promising safe anti-diabetic drug.

Keywords: Tetracera species; traditional claims; *in vitro* and *in vivo* antidiabetic activities; active principles; *in silico*; toxicity

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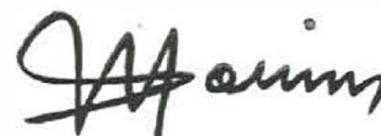
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