

UNIVERSITI TEKNOLOGI MARA

**EVALUATION OF ANTIDIABETIC ACTIVITY
OF *Ficus deltoidea* AND *Schisandra chinensis***

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Candidate's Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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ABSTRACT

The antidiabetic potentials of various extracts obtained from the leaves of *Ficus deltoidea* (Moraceae) and fruits of *Schisandra chinensis* (Schisandraceae), the existing plants with no known scientific report on their antidiabetic potentials, were investigated using normoglycemic mice, streptozotocin-induced diabetic rats and obese rats when applicable. The extracts were prepared through maceration of dried powdered leaves and fruits of the respective plants by methanolic solution and subsequently subjecting dried methanolic extract to sequential partition with *n*-hexane, chloroform and *n*-butanol. The extracts were administered to the animal models via the oral route. Their blood glucose levels were determined by glucose oxidase method at various time intervals. The acute and sub-chronic toxicity profiles of selected extracts were investigated by examining the blood levels of alanine aminotransferase, aspartate aminotransferase, bilirubin, urea, creatinine, as well as, the histological profiles of liver and kidney tissues. The extracts of *S. chinensis* did not demonstrate a marked blood glucose lowering response in normoglycemic mice. The extracts of *F. deltoidea*, particularly those of methanolic and butanolic counterparts, exhibited significant blood glucose lowering activities in normoglycemic mice. Nevertheless, only the methanolic extract of *F. deltoidea* could translate its blood glucose lowering activity in the diabetic rats. The findings indicated that the methanolic extract might contain insulin mimetic and/or insulin receptor sensitizer in addition to insulin secretagogue agent thereby leading to blood glucose lowering in both normoglycemic mice and diabetic rats. The butanolic extract might contain mainly insulin secretagogue constituents and hence was only able to reduce the blood glucose concentration of normoglycemic mice. The ability of an extract to reduce the blood glucose concentration of diabetic rats was ascribed to its containment of insulin mimetic and/or insulin receptor sensitization constituents. Inferring from dose-blood glucose lowering response of obese rats, it was noted that the methanolic extract of *F. deltoidea* could enhance the sensitivity of insulin receptor for insulin in the event of resistance brought about by hyperglycemia, but not that of obesity. The methanolic extract of *F. deltoidea* demonstrated its effectiveness as blood glucose lowering agent in diabetic rats, with a status of at least practically non-toxic for consumption via the oral route. The scientific information in relation to the existing known antidiabetic natural products was assessed and compiled in the form of a monograph.

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