

**THE EFFECT OF SELECTED PLANT EXTRACTS  
ON THE EXPRESSION PROFILES OF THE  
INSULIN 2 GENE IN PANCREATIC CELLS OF  
STREPTOZOTOCIN- INDUCED DIABETIC RATS**

**VALENTINO MILTON JUNIOR GUMBILAI**

PERPUSTAKAAN  
UNIVERSITI MALAYSIA SABAH

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## ABSTRACT

### THE EFFECT OF SELECTED PLANT EXTRACTS ON THE EXPRESSION PROFILES OF THE INSULIN 2 GENE IN PANCREATIC CELLS OF STREPTOZOTOCIN- INDUCED DIABETIC RATS

Diabetes is a major public health problem. The new therapies developments that are able to improve glycemia management, cure diabetes and even protect from it are of great interest. This study investigated the effect of selected plant extracts on the Insulin gene expression profile against STZ- induced pancreatic cell damages. Eighteen rats were divided into six groups: (i) Normal control rats; (ii) diabetic control rats, diabetic rats administered with (iii) *Momordica Charantia*, (iv) *Morinda Citrifolia*, (v) *Parkia Speciosa* and (vi) Metformin. All rats were given treatment daily for 3 days before the STZ injection and for 1 subsequent week thereafter. *M. charantia* extract showed the highest significant value of total phenolic content (292.13 mg/g) compared to *M. citrifolia* and *P. speciosa* extracts. The DPPH scavenging rate for *M. charantia* extract was ranging from 4.3% to 51.8% followed by *M. citrifolia* extracts (1.8% to 57.9%) and *P. speciosa* extract (0.4% to 48.7%). The result showed that *M. charantia* extract has the highest antioxidant activity with  $EC_{50}$  value was 356.56  $\mu$ g/ ml. *M. charantia* extract also showed the highest value in the total flavanoid content (14.56 mg/g) compared to other two samples. Expression of both GAPDH as the reference gene and Ins2 gene as the target gene was measured by SYBR Green I fluorescence; melting curves and agarose gel electrophoresis were used to verify the specificity of gene (Ins2) for diabetic rats treated with *M. charantia* extracts expressing fold differences of 32 fold expression compare to the diabetic control rats only. This study report the preliminary study of the effect of plant extracts on the pancreatic cell insulin gene expression profile. The results represent an important step toward improved understanding of the regulation of insulin secretion on insulin 2 (Ins2) genes.