Biochemical Changes in Experimental Diabetes before and after Treatment with Mangifera indica and Psidium guajava Extracts in Rats

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APROVAL SHEET

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Biochemical Changes in Experimental Diabetes Before and After Treatment with Mangifera indica and Psidium guajava Extracts in Rats

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LIST OF ABBREVIATION

ALT : Alanine aminotransferase

ALP : Alkaline phosphatase

AST : Aspartate aminotransferase

B.W. : Body weight

CoA : Coenzyme A

Diab. : Diabetic

Diab.-MI : Diabetic – treated with *Mangifera indica*

Diab.-PG : Diabetic – treated with *Psidium guajava*

Diab.-(MI-PG): Diabetic– treated with (*Mangifera indica - Psidium guajava*)

DNA : Deoxy-Ribonucleic acid

Fig. : Figure

GBC : Glibenclamide

$GLUT_2$: Glucose uptake transporter protein type two

HMG-CoA : Hydroxymethylgutaryl-Coenzyme A

IDDM : Insulin dependent diabetes mellitus

MANOVA : Multi-factor analysis of variance analysis

M. indica : *Mangifera indica*

mRNA : messenger Ribonucleic acids

NADPH : Nicotinamide adenine dinucleotide phosphate hydrogen

NIDDM : Non-insulin dependent diabetes mellitus

O.D. : Optical density

OGTT : Oral glucose tolerance test

P. guajava : *Psidium guajava*

STZ : Streptozotocin

WHO : World Health Organization

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ABSTRACT

Male adult albino rats were used to study the hypoglycemic effect of *Mangifera indica* and *Psidium guajava* aqueous extracts either used individually or in combination of as well as the effect of glibenclamide as reference sulfonylureas drug at the dose level of 0.5 mg/kg body weight in streptozotocin-diabetic rats. Preliminary test using different doses of each plant indicated that the most effective doses were 250 mg/kg body weight for each plant. Our studies was extended to include the effect of the tested doses on different biochemical parameters including serum insulin concentration, hepatic glycogen content, total proteins, total lipids and transaminases activities in serum and liver. In addition to the previously investigated analysis our study was also extended to include the histopathological effect of the tested materials on the pancreatic cells of STZ-diabetic rats.

The obtained data of the above mentioned investigations revealed great alleviation of the impaired glucose tolerance, serum insulin and hepatic glycogen content, also serum and hepatic total protein contents were increased as a result of treatment.

In STZ-diabetic rats, the activities of (ALT, AST and ALP) either detected in sera or hepatic tissues were increased, then the activities were improved as a result of treatments.

Also, the islets of Langerhans of STZ-diabetic rats showed vaculation and hydropic degeneration of many cells and the treatments stimulate the rate of recovery of the islet cells.

Key words:

Hypoglycemic, Streptozotocin, *Mangifera indica* and *Psidium guajava*

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