

## ***Dedication***

*To my family*

*To my teachers*

*To my friends*

*To all people whom I love I dedicate this work  
with my best wishes.*

***Ehab Salih***

# **Acknowledgements**

*All and first thanks to the almighty ALLAH*

*I would like to express my profound gratitude first of all; to my father and mother who encouraged and granted me to perform this study.*

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## Abstract

The present study examined the effect of Diabetes mellitus type 2 on GGT and ALT in diabetic patients. This cross-sectional study comprised of fifty diabetic patients; of those patients, 25 were females (aged 30\_60 years) and 25 were males (aged 30\_60 years) Also, 20 Volunteers non diabetic (apparently healthy) were involved as a control in this study; 10 were females (aged 30\_60 years) and 10 were males (aged 30\_60 years).. Subject selection was done by a non-random (non-probability) sampling procedure from the diabetic patients in the Friendship Hospital in Khartoum state during period of (April to July/2010).

Serum levels of GGT and serum ALT was performed manually by using enzymatic reaction depended reagents.

The serum levels of GGT and serum ALT showed significant increase in diabetic patients compared to the control group ( $P$ .Value  $\leq 0.05$ ).

Means  $\pm$  SD of serum liver enzymes for diabetic's patients versus controls:

( $1.40 \pm 0.81$ ) U/L **versus** ( $1.00 \pm 0.00$ ); for serum **ALT (U/L)**.

( $2.64 \pm 0.78$ ) U/L **versus** ( $1.00 \pm 0.00$ ); for Serum **GGT (U/L)**.

The present study, revealed significant increase in serum levels of GGT and serum ALT in diabetic patients type 2 probably due to the duration of Diabetes Type 2 (4-6 years) and the age of diabetic Type 2 patients (30-60) in our study.

## مستخلص الدراسة

أجريت هذه الدراسة التوقعية لدراسة تأثير داء السكري النوع الثاني على مستويات معدل انزيمات الكبد. حيث تمت مقارنة مستويات انزيمات الكبد في مصل الدم (انزيم النين ترانس اميناز, انزيم قلوتاميل ترانس اميناز) عند 50 من المرضى الذين يعانون من داء السكري, 25 منهم رجال (اعمارهم من 30-60 سنة) و 25 منهم نساء (اعمارهم من 30-60 سنة), مع 20 من الأصحاء, 10 منهم رجال (اعمارهم من 30-60 سنة) و 10 منهم نساء (اعمارهم من 30-60 سنة) (غير المصابين بداء السكري) كمجموعة تحكم (مجموعة ضابطة) تم اختيار المرضى بطريقة غير عشوائية من المرضى الذين يعانون من داء السكري (بمستشفى الصداقة الصيني في الفترة من (ابريل وحتى يوليو/2010).

كان هناك ارتفاع ذو دلالة معنوية, حيث كان الإحتمال الإحصائي للمقارنة اقل من 0.05 في كل المستويات الوسيطة لانزيم النين ترانس اميناز, ولانزيم قلوتاميل ترانس اميناز, وذلك عند مقارنة المستوى الوسطى عند المرضى الذين يعانون من داء السكري مقارنة بمجموعة التحكم, و كانت النتائج كالآتي:

(المستوى الوسطى  $\pm$  الانحراف المعياري عند مجموعة المرضى مقارنة بالمجموعة الضابطة)

النين ترانس اميناز. **في مقابل**  $0.81 \pm 1.40$   $0.00 \pm 1.00$  (يونت\ليتر) بالنسبة لمصل الدم لانزيم

قلوتاميل ترانس اميناز. **في مقابل**  $0.78 \pm 2.64$   $0.00 \pm 1.00$  (يونت\ليتر) بالنسبة لمصل الدم لانزيم

وعليه تخلص هذه الدراسة إلى وجود أثر واضح لمرض السكري النوع الثاني عند مرضى السكري في زيادة مستويات افراز انزيم النين ترانس اميناز و انزيم قلوتاميل ترانس اميناز في الدم, نسبة لمدة المرض (4-6 سنوات) وارتفاع معدل اعمار المرضى (30-60 سنة).

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## **List of Abbreviations**

ALT .....	alanine aminotransferase.
GGT .....	gamma-glutamyl transferase.
ALP .....	Alkaline phosphatase.
SREBP-1c .....	substrate-2.Upregulation of sterol regulatory element-binding protein 1c.
VLDL.....	very low-Density Lipoprotein.
HDL-C.....	High-Density Lipoprotein Cholesterol
SD .....	standard
LDL.....	Low-Density Lipoprotein
TC.....	Total Cholesterol
TG.....	Triglycerides