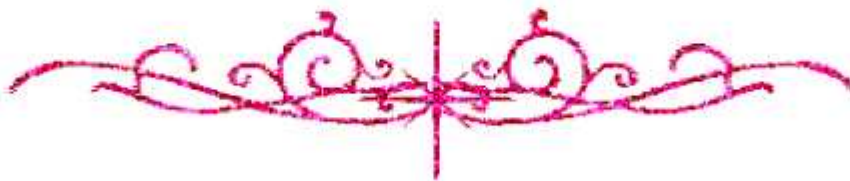


بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



جامعة عين شمس

التوثيق الإلكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأقراص المدمجة قد أعدت دون أية تغييرات



يجب أن

تحتفظ هذه الأقراص المدمجة بعيدا عن الغبار



Potential Therapeutic Outcomes Of The Addition of Vitamin D to Type 2 Diabetes Mellitus Treatment

Thesis

*Submitted for Partial Fulfillment of M. Sc. Degree in
Pharmaceutical Science (Pharmacology and Toxicology)*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgment

*In the name of **ALLAH**, The Most Gracious and the Most Merciful. Peace and blessings be upon our prophet Mohammad and his good followers till the day of judgment.*

At the beginning, I wish to express my sincere thanks to my supervisors:

***Prof. Dr. Ebtehal El -Demerdash**, Professor and Headmaster of Pharmacology and Toxicology Department, Faculty of Pharmacy, Ain Shams University for her kind support and guidance throughout the work.*

***Prof. Dr. Mohamed Reda Halawa**, Professor of Internal Medicine, Endocrinology, Faculty of Medicine, Ain Shams University for his kind help in clinical work.*

***Associate . Prof. Dr. Mai Tolba**, Associate professor of pharmacology and toxicology, Faculty of pharmacy Ain Shams University, for her kind guidance throughout the work.*

I would like to express my thanks to my family: my mother and my father for giving me all the love and wholehearted support to continue

Yasmin Khairy

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List of Abbreviations

Abb.	Full term
<i>ADA</i>	<i>American Diabetes Association</i>
<i>AGEs</i>	<i>Advanced glycation end products</i>
<i>AGIS</i>	<i>Alpha glucosidase inhibitors</i>
<i>APCs</i>	<i>Antigen presenting cells</i>
<i>BMD</i>	<i>Bone mineral density</i>
<i>BMI</i>	<i>Body mass index</i>
<i>BPD</i>	<i>Biliopancreatic diversion</i>
<i>BpD-DS</i>	<i>Bilio pancreatic diversion with duodenal switch</i>
<i>CRP</i>	<i>C- Reactive protein</i>
<i>CVD</i>	<i>Cardiovascular disease</i>
<i>D 2</i>	<i>Vitamin D 2 (ergocalciferol)</i>
<i>D 3</i>	<i>Vitamin D3 (Cholecalciferol)</i>
<i>DBp</i>	<i>D-Binding protein</i>
<i>DM</i>	<i>Diabetes mellitus</i>
<i>DN</i>	<i>Diabetic nephropathy</i>
<i>DPP-4</i>	<i>Dipeptidyl peptidase -4</i>
<i>DR</i>	<i>Diabetic retinopathy</i>
<i>EASD</i>	<i>European Association for the study of diabetes</i>
<i>ELISA</i>	<i>Enzyme linked immunosorbent assay</i>
<i>Fas / Fas-L</i>	<i>Fas related pathways</i>
<i>FBG</i>	<i>Fasting blood glucose</i>
<i>FDA</i>	<i>Food and drug administration</i>
<i>FGF-19</i>	<i>Fibroblast growth factor 19</i>
<i>FGF-23</i>	<i>Fibroblast growth factor 23</i>
<i>FXR</i>	<i>Farnesoid -X receptor</i>
<i>GFR</i>	<i>Glomerular filtration rate</i>
<i>GIP</i>	<i>Glucose dependant insulinotropic polypeptide</i>
<i>GLp-1</i>	<i>Glucagon like peptide 1</i>

List of Abbreviations (cont...)

Abb.	Full term
<i>GWAS</i>	<i>Genome wide association studies</i>
<i>Hb A1c</i>	<i>Glycated hemoglobin</i>
<i>HOMA-IR</i>	<i>Homeostatic model assessment of insulin resistance</i>
<i>HPFS</i>	<i>Health – professional follow –up study</i>
<i>HRB</i>	<i>Horseradish peroxidase</i>
<i>IL – 1 RA</i>	<i>Interleukin 1 receptor antagonist</i>
<i>IL -6</i>	<i>Interleukin 6</i>
<i>IL-1 β</i>	<i>Interleukin 1 β</i>
<i>IL-12</i>	<i>Interleukin 12</i>
<i>IM</i>	<i>Intramuscular</i>
<i>INF-γ</i>	<i>Interferon γ</i>
<i>IQR</i>	<i>Interquartile range</i>
<i>LAGB</i>	<i>Laparoscopic adjustable gastric Banding</i>
<i>LSG</i>	<i>Laparoscopic sleeve gastrectomy</i>
<i>MDA</i>	<i>Malondialdehyde</i>
<i>MI</i>	<i>Myocardial infarction</i>
<i>MS</i>	<i>Multiple sclerosis</i>
<i>NF-κb</i>	<i>Nuclear factor- κB</i>
<i>NHANES-III</i>	<i>Third national health and nutrition examination survey</i>
<i>NIH</i>	<i>National institute of health</i>
<i>OGTT</i>	<i>Oral glucose Tolerance test</i>
<i>PK C</i>	<i>Protein kinase C</i>
<i>PPAR- gamma</i>	<i>Peroxisome proliferator activated receptor- γ</i>
<i>PHPT</i>	<i>Primary hyperparathyroidism</i>
<i>PTH</i>	<i>Parathyroid hormone</i>
<i>RAAS</i>	<i>Renin angiotensin aldosterone system</i>

List of Abbreviations (cont...)

Abb.	Full term
<i>Ros</i>	<i>Reactive oxygen species</i>
<i>RR</i>	<i>Rapid response</i>
<i>RYGB</i>	<i>Roux en –Y-gastric by pass</i>
<i>SGLT2</i>	<i>Sodium glucose Co – transporter 2</i>
<i>SHPT</i>	<i>Secondary hyperparathyroidism</i>
<i>T1DM</i>	<i>Type 1 Diabetes mellitus</i>
<i>T2DM</i>	<i>Type 2 diabetes mellitus</i>
<i>TAC</i>	<i>Total antioxidant capacity</i>
<i>TH₁</i>	<i>T helper 1</i>
<i>TH₂</i>	<i>T helper 2</i>
<i>TLRs</i>	<i>Toll –like receptors</i>
<i>TMD</i>	<i>Tetramethyl benzidine</i>
<i>TNF- α</i>	<i>Tumor necrosis factor -α</i>
<i>TZDS</i>	<i>Thiazolidinediones</i>
<i>VD</i>	<i>Vitamin D</i>
<i>VDD</i>	<i>Vitamin D deficiency</i>
<i>VDRs</i>	<i>Vitamin D Receptors</i>
<i>VDR-RXR</i>	<i>Vitamin D receptor –Retinoic acid α – receptor</i>
<i>VDT</i>	<i>Vitamin D toxicity</i>
<i>WHO</i>	<i>World Health Organization</i>

Abstract

Diabetes mellitus (DM) is a group of metabolic disorders characterized by chronic hyperglycaemic condition resulting from defects in insulin secretion, insulin action or both. Type 2 Diabetes Mellitus (T2DM) is the predominant form of diabetes and accounts at least 90 % of all cases of DM. Insulin resistance is a risk factor for diabetes. Evidence shows that vitamin D (VD) has an important role in modifying the risk of Type 2 Diabetes Mellitus (T2DM), especially among insulin resistant diabetic patients. Recently a novel association between insulin resistance and vitamin D deficiency has been proposed. Mechanism of involvement of vitamin D in overcoming insulin resistance includes promotion of pancreatic β cell function, enhancement of insulin sensitivity and suppression of pancreatic cells inflammation. In the current research we investigate the association between hypovitaminosis D and T2DM. And also we will study the effect of vitamin D supplementation on glycaemic status, oxidative stress status and inflammatory markers in T2DM patients. Therefore, forty T2DM patients were assessed for diabetic, inflammatory and antioxidant parameters. After VD supplementation for six months for the intervention group of patients (n=20), there was significant improvement in VD level, Homeostatic model assessment of insulin resistance (HOMA - IR), Fasting blood glucose (FBG), glycated haemoglobin (HbA1c), serum insulin, interleukin 6 (IL-6), tumor necrosis factor- α (TNF- α), total antioxidant capacity (TAC), malondialdehyde (MDA). In Conclusion : Vitamin D has a promising effect in treatment of Type 2 Diabetes as there is a significant improvement in glycaemic, inflammatory and oxidative stress parameters in Type 2 Diabetes mellitus patients.

Keywords: Type 2 Diabetes Mellitus, cytokines, HOMA - IR, malondialdehyde, Vitamin D, insulin resistance.