

Iraqi J Pharm Sci, Vol.31(2) 2022

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DOI: <https://doi.org/10.31351/vol31iss2pp33-3>

Mitochondrial Copies Number and Some Renal Function Biomarkers in Type 2 Diabetes Mellitus on Metformin

Abstract

One of the most common metabolic illnesses in the world is diabetes mellitus. This metabolic disease is responsible for a large percentage of the burden of kidney damage and dysfunction. This study aims to explain mitochondrial copies number changes in relation to both glycemic index and renal status in T2DM treated with metformin monotherapy visiting Al-Wafaa Diabetes Research Center in Mosul. During the period 1st January to 30 May 2021, 47 patients with T2DM (Mean age 50.48 ± 7.74 years) were participate in this case-control study. These patients' results were compare to a control group of 47 seemingly healthy people (Mean age 45.89 ± 9.06 years). All participants' demographic and medical histories were acquire through the delivery of a questionnaire. Blood samples collected and tested for the ubiquinone oxidoreductase chain 1 gene, HbA1c, uric acid, urea, and creatinine, among other things. In diabetics, there were extremely significant increases in Blood HbA1c, Serum urea, and creatinine ($p < 0.001$, 0.003 , and 0.043 , respectively) when compared to the control group. In diabetic group, serum uric acid levels did not change significantly. HbA1c and uric acid had a strong negative correlation ($r = -0.045$ and $p < 0.05$, respectively). In diabetic individuals, the number of mitochondrial copies was substantially lower than in the control group ($p < 0.001$). In comparison to non-diabetic controls, diabetic patients treated with mono-metformin treatment had a lower mitochondrial copy number and moderate renal impairment