

# **The association of cytochrome *4F2* *rs210622* variation with type II diabetes and its complications**

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## **Abstract**

**Background:** 20-Hydroxyeicosatetraenoic acid (20-HETE) is one of the arachidonic acid metabolites, the omega hydroxylated metabolite, produced by the CYP4F2 enzyme. Moreover, the *CYP 4F2* gene is described as the major gene involved in the synthesis of 20-HETE in humans. The genetic variances in the *CYP 4F2* gene can affect on CYP4F2 enzymatic activity and 20HETE production. Furthermore, pathological diseases such as ischemic cerebrovascular disorders, cardiac ischemia-reperfusion damage, renal diseases, hypertension, and diabetes mellitus have all been linked to higher levels of 20-HETE.

**Aim:** This study will find out the association between the major genetic variant in *CYP4F2* and type II diabetes and its complications among Jordanian patients.

**Methods:** Ninety genomic DNA samples of healthy controls and 90 samples from DM2 patients were genotyped for *CYP4F2* genetic variants. The DNA samples were amplified using polymerase chain reaction (PCR). These products were sequenced using Applied Biosystems Model (ABI3730x1).

**Results:** The frequency of *CYP4F2* *rs2108622* *C>T* genetic variant was found among healthy subjects and diabetic patients. It is found that there was no significant association between these polymorphisms and the incidence of CVD, CKD, and DL ( $P>0.05$ ). Also, the baseline triglyceride, low-density lipoprotein, high-density lipoprotein, creatinine, and HbA1c% among Jordanian diabetic and healthy controls subjects were not significantly associated with the *CYP4F2* *rs2108622* variant. On the other hand, there was a significant association between the *CYP4F2* *rs2108622* genetic variant and the retinopathy among the patients. In addition, the frequency of co-dominant and dominant genotyping models showed statistical differences among all studied groups.

**Conclusion:** The findings of this study indicated that the *CYP4F2* SNP of *rs2108622* is dominant, and the individual will be two times more likely to develop diabetes. Furthermore, the *rs2108622* *CYP4F2* SNP was found to be associated with retinopathy in DM2 patients.

**Keywords:** *CYP4F2* gene, Jordanians, genetic variants.