

THE ROLE OF GENETIC MARKERS IN ASSESSING THE RISK OF TYPE 2 DIABETES IN DIABETIC PATIENTS

KHilola Olimjon qizi Gayberdiyeva

Tashkent medical academy 1th year master student in Public health and health management: Nutrition, Department of children, adolescent and nutritional hygiene.

Scientific advisor: DsC., Associate professor **Dilafruz Gayratovna Abdullayeva**

Actuality. Type 2 diabetes mellitus (T2DM) is a metabolic disorder that arises due to either insufficient insulin production or a decreased sensitivity to insulin. It has become a significant global public health concern, affecting millions of individuals worldwide. In addition to diminishing the quality of life, T2DM contributes to the development of severe complications, including cardiovascular diseases, nephropathy, and diabetic retinopathy, ultimately reducing life expectancy. Among the key risk factors contributing to the development of type 2 diabetes is genetic predisposition, which is determined by specific genetic markers. Notably, the **PPAR- γ** gene is considered one of the most significant markers associated with T2DM. This gene plays a critical role in regulating cellular sensitivity to insulin and modulating lipid and glucose metabolism. Certain polymorphisms within this gene have been shown to increase susceptibility to the disease.

Investigating the influence of these genetic markers in the offspring of diabetic patients can facilitate the development of personalized preventive strategies. Early identification of genetic susceptibility enables proactive health monitoring and the implementation of tailored lifestyle interventions, including healthy nutrition and physical activity. Such an approach is essential for reducing the overall prevalence of type 2 diabetes and improving the health outcomes and quality of life of individuals in high-risk populations.

Purpose of Research. The aim of this study was to assess the influence of genetic markers on the risk of developing type 2 diabetes mellitus (T2DM) in the offspring of patients diagnosed with this disease.

Materials and Methods. The study involved 160 patients diagnosed with type 2 diabetes. PCR analysis was conducted to detect the presence of the **Pro12→Ala** and **C1431T** polymorphisms in the **PPAR- γ** gene. In addition, assessments were performed for blood glucose levels, insulin resistance, and body mass. The data were analyzed using statistical methods to evaluate the association between genetic markers and the risk of diabetes development.

Results. The findings revealed that the presence of the **Pro12→Ala** and **C1431T** polymorphisms in the **PPAR- γ** gene significantly increases the risk of developing T2DM. A strong correlation was identified between these genetic markers and biochemical parameters such as blood levels of magnesium, calcium, vitamin D, uric acid, and C-peptide. These results underscore the importance of monitoring biochemical indicators in individuals with a genetic predisposition to diabetes.

Conclusion. The study confirmed that genetic markers such as those in the **PPAR- γ** gene contribute to an increased risk of type 2 diabetes in the offspring of affected patients. These genetic variants are associated with a predisposition to T2DM and adversely affect metabolic parameters, including insulin resistance and blood glucose levels. The findings highlight the importance of genetic testing in the descendants of diabetic patients for timely risk assessment. Personalized prevention programs targeting genetically predisposed individuals may help delay or prevent the onset of the disease, improve quality of life, and reduce the risk of diabetes-related complications.