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# Main Differences Between Diabetes Mellitus Types 1 and 2 in Relation to Genetic Factors

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### ABSTRACT

**Introduction:** Diabetes mellitus type 1 (DM1) and 2 (DM2), are responsible for more than 95% of the world cases. Being auto-immune DM1, characterized by the destruction of the pancreatic beta cells through the lymphocytes of the body, multifactorial and dependent on immunological, genetic and environmental factors. On the other hand, DM2 is caused by the inability of pancreatic beta cells to raise the level of insulin in the blood, presenting environmental and genetic factors. **Objective:** To differentiate genetically the types 1 and 2 diabetes mellitus. **Methodology:** A literature review was carried out through the Scielo platform, which selected complete articles published between 2007 and 2012 in Portuguese and in the book Williams Treated of endocrinology, 11th edition. **Results and Discussion:** For DM1 some polymorphic risk genes are known. These are found in the Histocompatibility Complex, more precisely in the region of the Human Leukocyte Antigen (HLA) system on chromosome 6 (p21.3), which are HLA-DQ alpha, HLA-DQ Beta, HLA-DR, insulin and the PTPN22 gene. The HLA-DQ / DR loci are considered the main genetic markers in the presence of antigens in the islets of Langerhans and in the control of the immune response. Non-HLA genes also contribute to the onset of DM1, such as the polymorphism of the insulin gene on chromosome 11, and the genes for the Carrier Involved in the Presentation of Antigen (TAP). In the more rare monogenic form of DM2, mutations occur in the insulin receptor, peroxisome proliferator-activated gamma receptor (PPAR gamma), insulin and a polymorphism in the mRNA gene. In the most common polygenic forms of DM2, the most studied genes are calpain-10, PPAR gamma2 and Kir6.2. **Conclusion:** DM1 is complex, and is involved in gene mutations that regulate the immune system. In DM2, mutations occur in membrane proteins. There must be rapid diagnosis so that you can minimize the damage caused by the accumulation of glucose in your blood.

**Keywords:** Diabetes; Genes; Insulin; Polymorphism

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