

Galectin-3: a biomarker of metabolic progression of Type 2 Diabetes?

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Abstract

According to the International Diabetes Federation, Diabetes mellitus type 2 (DM2) has affected more than 425 million people in 2017 worldwide [1]. Not only is it a disease responsible for more than 4 million deaths, but also a trigger for other non communicable diseases and a huge burden on national health systems.

The most important clinical manifestation of T2DM is hyperglycemia and monitoring of blood glucose levels remains the only method of screening. However, when glucose levels are high, the disease is already in place. The large investment in DM2 research allowed the identification of biomarkers that could be used to describe the progression of diabetes and some were described as having a predictive potential value to differentiate between progressors / non-progressors. One of the biomarkers described is Galectin-3 (Gal3). Previous studies of our group have already demonstrated a correlation of Gal3 between diabetic and non-diabetic animals [2].

Gal3 has multiple functions depending, among other factors, on its location and target tissue. Intracellular Gal3 acts as a pre-mRNA splicing factor and regulates the cell cycle through the modulation of cell proliferation, death and differentiation. In addition, it promotes cell proliferation and cell survival, protecting against induced apoptosis. Extracellular gal3 further regulates cell adhesion. Gal3 is capable of binding high affinity, internalization and degradation of advanced glycation products, playing an important role in diabetes and aging [3].

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Pugliesi et al. demonstrated that in diabetic cohorts, plasma levels of Gal3 were correlated with the prevalence of diabetes and related metabolic conditions. Galectin-3 is considered not only as a marker of heart failure but also as a mediator of the disease due to its pro-fibrotic action [4].

The aim of the present study is to evaluate the reference values for non-diabetic, pre-diabetic and human diabetic individuals of the Portuguese population.

Keywords

Type 2 Diabetes; Early Diagnosis; Galectin-3.

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