

IDENTIFICATION OF THE POLYOLS ROUTE IN JURKAT LYMPHOCYTES

ABSTRACT.

Background: The polyol pathway consists of two enzymes: aldose reductase and sorbitol dehydrogenase. Aldose reductase converts glucose to sorbitol, later sorbitol is transformed into fructose by sorbitol dehydrogenase (SDH). It has been found that polyol pathway causes damage to the central nervous system through the generation of oxidative stress in diabetic mice. Aldose reductase is involved in the pathogenesis of diabetic cataract since sorbitol and fructose generates osmotic and oxidative stress which induce cell death. Lymphocytes are fundamental cells of the immune system, which fight the pathogens that cause infectious diseases. Unlike muscle and fat cells, lymphocytes do not need insulin for glucose to enter their cytoplasm as they express the Glut 1 transporter as retinal cells and nerve cells (The most affected cells in diabetic patients). The hypothesis of this work suggested that the expression of the polyol pathway enzymes in lymphocytes of the Jurkat cell line could affect the functions of these cells.

Materials and methods: Western-blot analysis was performed using Jurkat cells against the aldose reductase and sorbitol dehydrogenase.

Results: The results showed the presence of the enzyme aldose reductase in Jurkat cells. However, it was not possible to detect the enzyme sorbitol dehydrogenase in these cells.

Conclusions: The presence of aldose reductase in lymphocytes could explain why infectious diseases are increased in patients with diabetes.

Key words: Polyols route, lymphocytes, diabetes

'Declarations of interest: none'.

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