

Subclinical Processes in the Development of Type Two Diabetes

Thiago Gomes Heck^{1,2*}, Mirna Stela Ludwig^{1,2}, Greice Franciele Feyh dos Santos Montagner¹ and Matias Nunes Frizzo¹

¹Research Group in Physiology (GPeF), Department of Life Sciences (DCVida), Regional University of Northwestern Rio Grande do Sul State (UNIJUÍ), Ijuí, RS, Brazil

²Post graduate Program in Integral Attention to Health (PPGAIS-UNIJUI/UNICRUZ), Ijuí, RS, Brazil

*Corresponding author: Thiago Gomes Heck, Research Group in Physiology (GPeF), Department of Life Sciences (DCVida), Regional University of Northwestern Rio Grande do Sul State (UNIJUÍ), Ijuí, RS, Brazil, Tel: 55 16 3602-458; E-mail: gomesheck@yahoo.com

Received: December 30, 2014; Accepted: January 21, 2015; Published: January 28, 2015

Copyright: © 2015 Heck TG et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

The imbalance in metabolic homeostasis in type 2 diabetes (T2DM) is accompanied by cellular stress, altered expression and circulating concentration of heat shock proteins (HSP) and cytokines (pro and anti-inflammatory). Also T2DM subjects had altered redox state (oxidative stress) and erythrocytes parameters. This set of molecular, biochemical and immuno haematological alterations are usually subclinical events, but characterizes chemical and biological processes associated with the development of insulin resistance and the pathophysiology of T2DM. These

cytotoxic T lymphocytes (Th1) and then in autoimmune diseases classified as cytokines Th1 type. Moreover, IL-4 may be classified as Th2, to increase antibody production in Th2 lymphocyte source.

The most of cytokines exerts immunomodulation by binding to specific receptors on the cell membrane, and thus, initiating intracellular signaling cascades that affect gene expression, mediated by transcription factors. Finally, the functional classification of cytokines can be split by the duality between pro and anti-inflammatory effects. IL-1 and TNF cytokines (Th1-related cytokines lymphocyte response) are classified as pro-inflammatory while the IL-10, IL-13 and TGF- β (cytokines associated with Th2-type immune response) has anti-inflammatory roles. In this scenario, autoimmune

