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ROLE OF DIETARY FIBER IN IMMUNE MODULATION BY SHORT CHAIN FATTY ACIDS

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In the last 50 years the population has been affected by chronic non-transmissible diseases (CND's) whose chronic low-grade inflammatory base is well elucidated. In addition, it is observed that CND's are strongly associated with the western dietary pattern, and that adjuvant to these diseases there are presence of gastrointestinal symptoms. It is a characteristic of the Western diet, the low fiber intake due to the reduced consumption of unprocessed or minimally processed foods of plant origin. In this context, the role of dietary or supplementary fibers on immune regulation is known, especially when they are metabolized by probiotic bacteria, and converted to short chain fatty acids (SCFA's). Among SCFA's, butyrate has the greatest impact on the maintenance of intestinal selective permeability in two ways: when it is metabolized by the intestinal L-cell, it stimulates the release of GLP-2 (Glucagon Like Peptide 2), responsible for the maintenance of tight junctions; and by the stimulation of G protein receptors (GPRC), butyrate appears able to signal the NACHT, LRR and PYD domains-containing protein 3 (NALP3) pathway involved in the inflammasome system, stimulating the production of IL-18, therefore improving epithelial integrity. Other SFCA's such as acetate promote the differentiation of goblet cells as well as increase mucus production. The role of these bacterial metabolites on the stimulation of IgA production by B lymphocytes and in the promotion of T_{reg} cell stimulation is also evidenced, resulting in a higher immunological tolerance to food antigens. T_{reg} cells, when metabolizing butyrate, produce IL-10, which plays local anti-inflammatory effect. Finally, these SFCA's shows an anti-inflammatory potential by inhibiting the production of NF-kb, TNF, IL-6 and Interferon in macrophages. Thus, it is necessary improve the intake of fiber-rich foods aiming to reduce chronic low-grade inflammation which is one of the major culprits of CND's.

Biography

Jefferson holds a degree in Nutrition from the University of Brasília (2013). Currently, he is a Nutritionist - GENES Nutrition Consulting. He has an experience in Nutrition, with emphasis in Nutrition Biochemistry. He holds a Postgraduate degree in Functional Clinical Nutrition from the VP - Nutrition Consulting (2016) and is currently pursuing a Postgraduate degree in Sports Nutrition and Exercise Physiology from UFG and Clinical Nutrition Applied to Pathologies Based on Orthomolecular Practice. He is a Professor of Post-graduation in VP Functional Nutrition since 2017.

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