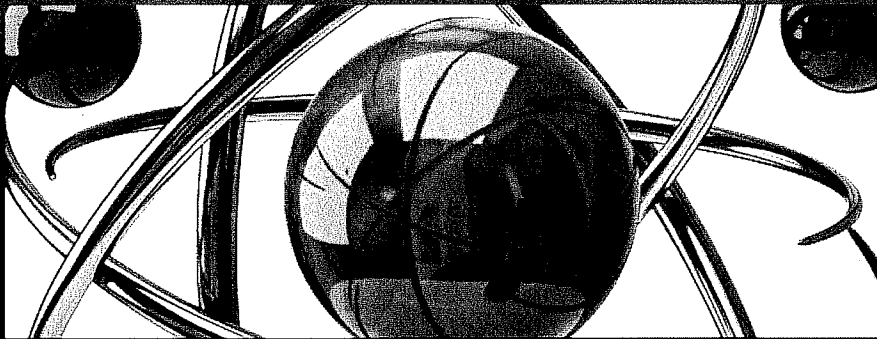


Volume 88(1) - 2015

Journal of Biological Research

Bollettino della Società Italiana di Biologia Sperimentale



86th SIBS National Congress

Palermo, Italy, 24-25 October 2013

Botanical Garden, Lanza Hall

ibor

www.jbiolres.org

 **press**

Nutrition in inflammatory bowel disease patients

A. Abruzzo,¹ G. Tomasello,^{2,3} E. Sinagra,^{2,4} F. Cappello,^{3,5} P. Damiani,^{3,4} F. Damiani,¹ M. Bellavia,³ C. Campanella,^{3,6} F. Rappa,^{3,6} A. Marino Gammazza,^{3,7} L. Cicero,⁸ A.I. Lo Monte^{1,2}

¹School in Surgical Biotechnology and Regenerative Medicine, Faculty of Medicine, University of Palermo; ²Department of Surgical, Oncological and Stomatological Sciences, University of Palermo; ³S. Raffaele-G. Giglio Institute Foundation, Cefalù; ⁴Department of Experimental Biomedicine and Clinical Neuroscience, Section of Human Anatomy, University of Palermo; ⁵School of Medicine Specialization in Geriatrics, University of Palermo; ⁶Euro-Mediterranean Institute of Science and Technology, Palermo; ⁷Department of Biological, Chemical and Pharmaceutical Sciences and Technologies, University of Palermo; ⁸Institute for Experimental Veterinary Medicine of Sicily A. Mirri, Palermo, Italy

Inflammatory bowel disease (IBD) is a chronic disorder characterized by a relapsing-remitting course, which alternates between active and quiescent states, ultimately impairing a patients' quality of life.

The two main types of IBD are Crohn's disease (CD) and ulcerative colitis (UC). CD shows a transmural granulomatous inflammation that can involve any segment of the intestine affecting all layers of the intestinal wall while UC is limited to the mucosa and superficial sub-mucosa of the colon. In physiological conditions the gut is constantly exposed to various antigens, commensal microflora and pathogens and the inflammatory response is finely balanced. Anyhow in some individuals with genetic susceptibility an anomalous inflammatory response can arise due to the deregulation of the negative feedback mechanisms implicated in its self-regulation. It is thought that a vast number of environmental risk factors may be implicated in the development of IBD, including smoking, dietary factors, psychological stress, use of non-steroidal anti-inflammatory drugs and oral contraceptives, appendectomy, breastfeeding, as well as infections. Nutritional support as a primary therapy has a crucial role in the management of patients with IBD since it can control the inflammatory process, treat malnutrition and its consequences, and avoid the use of immune-modulating drugs and their side effects. The gut microbiota is clearly manipulated by dietary components such as n-3 PUFA and conjugated linoleic acid (CLA) which favorably reduce endotoxin load via shifts in the composition and metabolic activity of the microbial community.

In particular, the beneficial effect of n-3 polyunsaturated fatty acids

(PUFAs) and fermentable fiber, during the remission/quiescent phase of both CD and UC is highlighted. In fact, PUFAs are associated with a less grade of inflammation since they are metabolized to 3-series prostaglandins and thromboxanes and 5-series leukotrienes and, in addition, exert antiinflammatory effects when compared with their n-6 PUFA counterparts. In similar action to dietary n-3 PUFA, conjugated linoleic acid (CLA) have been reported to ameliorate intestinal inflammation in animal models of IBD. In contrast to corticosteroids, CLA suppresses gut inflammatory responses while enhancing antigen specific responsiveness of T cells against viral and bacterial pathogens.

Available data about nutritional interventions do not always match due to the incomplete knowledge of pathogenic mechanisms underlying IBD development. Further studies are therefore needed to improve nutritional therapeutic approach. In particular, is still unclear the role of the fiber in helping the remission of the disease. There are mainly two theories. On one hand, dietary fibers can act as effective prebiotic by altering the intestinal microbial composition and promoting the growth of beneficial bacterial communities within the large intestine.

Some authors reported a positive effect associated with the production by colonic microflora of short chain fatty acids (SCFA), able to down-regulate the production of pro-inflammatory cytokines, to promote the restoration of intracellular Reactive Oxygen Species (ROS) balance, and the activation of NF- κ B.

On the other hand, fibers can promote diarrhea, pain and gas aggravating the clinical state. We suggest that the consumption of fermentable fibers may have a good impact on patients' health. Now it is well known that various SNPs are linked to the risk of IBD development and therefore there is the possibility of predict if an individual is predisposed to the disease. The identification of some polymorphisms has an essential role because it allows the modification of diet in the hope of controlling symptoms or preventing relapse. As a consequence, foods that can potentially exacerbate symptoms are eliminated and substituted with those that promote a well-being state.

Correspondence: Giovanni Tomasello, Department of Surgical, Oncological and Stomatological Sciences, University of Palermo, Via Liborio Giuffrè 5, 90127 Palermo, Italy.

E-mail: giovanni.tomasello@unipa.it

©Copyright A. Abruzzo et al., 2015

Licensee PAGEPress, Italy

Journal of Biological Research 2015; 88:5161

This article is distributed under the terms of the Creative Commons Attribution Noncommercial License (by-nc 3.0) which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.