

Vieira AT, Teixeira MM, Martins FS. (2013). The Role of Probiotics and Prebiotics Inducing Gut Immunity. *Front Immunol*. Dec 12;4:445.

The gut immune system is influenced by many factors, including dietary components and commensal bacteria. Nutrients that affect gut immunity and strategies that restore a healthy gut microbial community by affecting the microbial composition are being developed as new therapeutic approaches to treat several inflammatory diseases. Although probiotics (live microorganisms) and prebiotics (food components) have shown promise as treatments for several diseases in both clinical and animal studies, an understanding of the molecular mechanisms behind the direct and indirect effects on the gut immune response will facilitate better and possibly more efficient therapy for diseases. In this review, we will first describe the concept of prebiotics, probiotics, and symbiotics and cover the most recently well-established scientific findings regarding the direct and indirect mechanisms by which these dietary approaches can influence gut immunity. Emphasis will be placed on the relationship of diet, the microbiota, and the gut immune system. Second, we will highlight recent results from our group, which suggest a new dietary manipulation that includes the use of nutrient products (organic selenium and *Lithothamnium muelleri*) and probiotics (*Saccharomyces boulardii* UFMG 905 and *Bifidobacterium* sp.) that can stimulate and manipulate the gut immune response, inducing intestinal homeostasis. Furthermore, the purpose of this review is to discuss and translate all of this knowledge into therapeutic strategies and into treatment for extra-intestinal compartment pathologies. We will conclude by discussing perspectives and molecular advances regarding the use of prebiotics or probiotics as new therapeutic strategies that manipulate the microbial composition and the gut immune responses of the host.