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The Gut Microbiota and Inflammation: An Overview

Abstract:

The gut microbiota encompasses a diverse community of bacteria that carry out various functions influencing the overall health of the host. These comprise nutrient metabolism, immune system regulation and natural defense against infection. The presence of certain bacteria is associated with inflammatory molecules that may bring about inflammation in various body tissues. Inflammation underlies many chronic multisystem conditions including obesity, atherosclerosis, type 2 diabetes mellitus and inflammatory bowel disease. Inflammation may be triggered by structural components of the bacteria which can result in a cascade of inflammatory pathways involving interleukins and other cytokines. Similarly, by-products of metabolic processes in bacteria, including some short-chain fatty acids, can play a role in inhibiting inflammatory processes. In this review, we aimed to provide an overview of the relationship between the gut microbiota and inflammatory molecules and to highlight relevant knowledge gaps in this field. Based on the current literature, it appears that as the gut microbiota composition differs between individuals and is contingent on a variety of factors like diet and genetics, some individuals may possess bacteria associated with pro-inflammatory effects whilst others may harbour those with anti-inflammatory effects. Recent technological advancements have allowed for better methods of characterizing the gut microbiota. Further research to continually improve our understanding of the inflammatory pathways that interact with bacteria may elucidate reasons behind varying presentations of the same disease and varied responses to the same treatment in different individuals. Furthermore, it can inform clinical practice as anti-inflammatory microbes can be employed in probiotic therapies or used to identify suitable prebiotic therapies.

Keywords:

cytokines; gut microbiota; inflammation; microbiome

BIOGRAPHY:

Prof. Dr. Anil Batta is presently professor & Head with senior consultant in Govt. Medical College, Amritsar. He did his M.B.B.S. and M.D. in **Medical Biochemistry** from Govt. Medical College, Patiala in 1984 and 1991, respectively. His research interest is mainly in clinical application especially cancer and drug de-addiction. He has supervised more than 25 M.D., M.Sc. and Doctorate researches and published more than 130 international research papers. He is the chief editor of **America's Journal of Biochemistry**. He is also working as advisor to the editorial board of International Journal of Biological and Medical Research. He has been deputed member Editorial Board of numerous International & National Medical Journals of Biochemistry. He has also been attached as technical advisor to various national and international conferences in Biochemistry. He has been attached as hi-tech endocrinal, genetics and automated labs of Baba Farid Univ. of Health Sciences, Faridkot. He has chaired various sessions in the Biochemistry meets. He has been designated as member Editorial Board of various in US and other European Countries. He is also involved in various research projects at Govt. Medical, Amritsar. He has done superspecialisation in **Drug-de-addiction** from PGIMER, Chandigarh.

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