



Dr Georges MOUTON MD

Functional Medicine

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Title

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FROM MICROBIOME TO METABOLOMICS: MASTERING NEW WORDS



Clinical Review State of the Art Review

The role of the gut microbiome in systemic inflammatory disease

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ABSTRACT

The role of the gut microbiome in models of inflammatory and autoimmune disease is now well characterized. Renewed interest in the human microbiome and its metabolites, as well as notable advances in host mucosal immunology, has opened multiple avenues of research to potentially modulate inflammatory responses. The complexity and interdependence of these diet-microbe-metabolite-host interactions are rapidly being unraveled. Importantly, most of the progress in the field comes from new knowledge about the functional properties of these microorganisms in physiology and their effect in mucosal immunity and distal inflammation. This review summarizes the preclinical and clinical evidence on how dietary, probiotic, prebiotic, and microbiome based therapeutics affect our understanding of wellness and disease, particularly in autoimmunity.

*"Humans are a complex collection of mammalian and prokaryotic cells. Recent estimates suggest that the ratio of bacterial to human cells is approximately one to one. The term "**microbiota**" refers to the microbial flora, which represents symbiotic, commensal, and pathogenic microorganisms (also known as pathobionts) harboured by humans. The **microbiome** represents the collective genomes of these microorganisms. Although a person's microbiome is relatively stable and resilient over time, environmental factors that can alter the composition include diet, probiotics (which contain live beneficial bacteria), prebiotics (which contain supplements that promote the growth of specific bacteria), viruses, and drugs, particularly antibiotics."*

*"The metagenomic approach, in which the combined genomes of a microbial community are studied in their entirety (including viruses and fungi), has allowed for a more comprehensive characterization of the human microbiome. It is complemented by **metatranscriptomics**, which defines the collection of genes expressed by a particular microbial community, and by **metaproteomics** and **metabolomics**, which define the proteins and metabolites (such as short and medium chain fatty acids) collectively produced (or metabolized) by the microorganisms."*

*"This review summarizes current understanding of the biological roles that the microbiome plays in health and disease. It assesses the evidence linking alterations in human microbiome homeostasis (that's **dysbiosis**) to the development of autoimmune disease in humans and animal models."*