

Lipopolysaccharides from gut microbiota: is it time for a paradigm shift?

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Gut Microbiota is crucial in the immune response modulation. Perception of microbial-associated molecular patterns, such as lipopolysaccharides (LPS), represents the first line of the host immune defense.¹ Due to their chemical structure, LPS are considered potent elicitors of immune inflammatory reactions, being usually associated to perilous bacteria and detrimental outcomes for human health.² Nevertheless, LPS also decorate the membrane of harmless Gram-negatives composing our gut microbiota. How LPS is tolerated and remains (apparently) silent in the gut is a major unsolved question representing a frontier in our understanding of innate immunity.

Deciphering the structure and immunological properties of LPS from “good” gut microbes is of paramount importance, with tremendous repercussions for basic and clinical domains of biomedicine. A detailed structure to function study of LPS from gut microbiota will give insights in the mechanisms at the basis of host-microbes crosstalk. This will provide priceless information about how gut microbiota modulate immune response through their LPS, thus resulting in an unprecedented improvement of the knowledge of the immune system.²

In this communication, I will show some recent results about the chemical structure and immunological properties of LPS from some beneficial gut bacteria that displayed unique features. I will show the potential of these glycomolecules in the perspective of a future design of novel inflammation-silencing drugs as an alternative therapeutic approach for the treatment of immune inflammatory disorders.

Bibliographic references:

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