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Immunometabolism and microbiota: Role of intestinal dysbiosis in autoimmune diabetes

In humans, a complex interaction between the host immune system and commensal microbiota is required to maintain gut homeostasis. In this symbiotic relationship, the microbiota provides carbohydrate fermentation and digestion, vitamin synthesis and gut-associated lymphoid tissue development, as well as preventing colonization by pathobionts, whereas the host offers a niche and nutrients for the survival of the microbiota. However, when this mutualistic relationship is compromised and an altered interaction between immune cells and microorganisms occurs, the gut microbiota may contribute to the autoimmune diseases development. Researchers have made efforts to clarify the role of the microbiota in autoimmune disease and find new therapeutic approaches to treat immune-mediated diseases. However, the exact mechanisms involved in the breakdown of the gut epithelial barrier and bacterial translocation are currently unknown. In our autoimmune diabetes study, we observed prevalence of *Bacteroides vulgatus, Bacteroides rodentium, Blautia coccoides, Prevotella copri, Akkermansia muciniphila* and *Bacteroides xylanisolvens*. Positive correlation was found (P=0.02; r=0.67) between fasting glucose and glycated hemoglobin A1C percentages (P=0.03; r= 0.74) with *Bacteroides xylanisolvens*. Plasma levels of IL-6 were increased in patients (P<0.05) and negative correlations between TNF (P=0.04; r=-0.57) and IFN- γ (P=0.01; r=-0.65) with *Bacteroides xylanisolvens* readings were observed. In conclusion, we observed dysbiosis in T1D patients, with lower diversity of phyla and species compared with controls. Further studies with the gram-negative *Bacteroides xylanisolvens* are necessary to determine whether it may represent a target for probiotics.

Biography

Gislane Lelis Vilela de Oliveira has her Graduation in Biological Sciences from the Paulista State University (UNESP), Sao Jose do Rio Preto, Sao Paulo, Brazil, in 2005. Her PhD degree in basic and applied immunology was obtained from the School of Medicine from Ribeirao Preto, University of Sao Paulo (USP), Brazil, in 2013. Since 2014, she is an Associate Professor at the School of Health Sciences Dr. Paulo Prata (FACISB), and she coordinates the Microbiome Study Group at the same institution. Her research group studies the interaction between the host immune system and commensal microbiota and its possible role in triggering autoimmune diseases.

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