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## Gut microbiota as a key player in triggering obesity, systemic inflammation and insulin resistance.

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#### Abstract

Obesity-related systemic inflammation contributes to develop insulin resistance. The main factors involved in the relationship of obesity with systemic inflammation and insulin resistance have not been completely elucidated. Microbiota includes around 10<sup>13</sup> to 10<sup>14</sup> microbes harboring the human gut, which are clustered in approximately a thousand different bacterial species. Several studies suggest that imbalance in the intestinal bacterial population could result in obesity, systemic inflammation and metabolic dysfunction. Here, we review the main bacterial groups observed in obesity as well as their possible role in increasing the intestinal permeability and lipopolysaccharide-related endotoxemia. Furthermore, we point out the role of intestinal dysbiosis in the inflammatory activation of macrophages with the ability to infiltrate in the visceral adipose tissue and induce insulin resistance. Finally, we discuss the apparent beneficial use of prebiotics and probiotics in ameliorating both systemic inflammation and metabolic dysfunction. Present information may be useful in the future design of novel therapies focused on treating obesity and insulin resistance by restoring the gut microbiota balance.

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