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Manuscript Type: REVIEW

Mechanisms linking gut microbial metabolites to insulin resistance

Gut microbial metabolites and insulin resistance

Abstract

Insulin resistance is the rate-limiting step in the development of metabolic diseases, including type 2 diabetes. The gut microbiota has been implicated in host energy metabolism and metabolic diseases and is recognized as a quantitatively important organelle in host metabolism, as the human gut harbors 10 trillion bacterial cells. Gut microbiota break down various nutrients and produce metabolites that play fundamental roles in host metabolism and aid in the identification of possible therapeutic targets for metabolic diseases. Therefore, understanding the various effects of bacterial metabolites in the development of insulin resistance is critical. Here, we

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Cited by: 5**Author:** Tiantian Zhu, Mark O. Goodarzi**Publish Year:** 2020

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Publish Year: 2020

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Mar 09, 2020 · **Metabolites linking** the **gut microbiota** and T2D. SCFAs regulate host glucose homeostasis in part by stimulating the secretion of PYY and **GLP-1** through binding to the receptors on intestinal epithelial cells. Indole derivatives have beneficial effects on **insulin sensitivity**. Bile acids may promote **GLP-1** secretion and improve **insulin sensitivity**.

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- How does the gut microbiota affect insulin resistance? ▾
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Feedback

Linking Gut Microbiota and Inflammation to Obesity and ...

<https://pubmed.ncbi.nlm.nih.gov/27252163>

In this review, we present several **mechanisms** that contribute to explaining the **link** between **intestinal flora** and **insulin resistance/obesity**. The LPS from **intestinal flora bacteria** can induce a chronic subclinical inflammatory process and obesity, leading to **insulin resistance** through activation of TLR4.

Cited by: 303 Author: M. J. A. Saad, A. Santos, P. O. Prada
Publish Year: 2016

Insulin Resistance

Medical Condition

Body cells fail to respond to the hormone called insulin



A condition where the body does not respond to the hormone called insulin and unable to convert the glucose into energy.

- 📊 Very common (More than 3 million cases per year in US)
- 🧪 Requires lab test or imaging
- 🔧 Treatments can help manage condition, no known cure
- 🕒 Can last several years or be lifelong

The exact cause is not known, but contributing factors include obesity, sedentary lifestyle, and chronic stress. Insulin resistance is generally asymptomatic. Symptoms of high blood sugar include lethargy, difficulty concentrating, increased thirst and hunger. Treatment mainly includes self-care practises such as physical exercise and maintaining a healthy weight.

Symptoms

Insulin resistance does not present with symptoms until it leads to high blood sugar levels, which may cause:

- Darkening of armpits, neck, and groin
- Absence of menstruation
- Lethargy
- Brain fog
- Hunger
- Frequent urination