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**Name of Journal:** *World Journal of Diabetes*

**Manuscript NO:** 63858

**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



Mechanisms linking gut microbial metabolites to insulin resistance



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## Metabolites Linking the Gut Microbiome With Risk for Type ...

<https://pubmed.ncbi.nlm.nih.gov/32157661>

Abstract. Purpose of review: An increasing body of evidence suggests that the **gut** microbiome influences the pathogenesis of **insulin resistance** and type 2 diabetes (T2D). In this review, we will discuss the latest findings regarding the **mechanisms linking** the **gut** microbiome and **microbial metabolites** with T2D and therapeutic approaches based on the **gut** microbiota for the prevention and treatment of T2D.

**Cited by:** 5

**Author:** Tiantian Zhu, Mark O. Goodarzi

**Publish Year:** 2020

## Metabolites Linking the Gut Microbiome with Risk for Type ...

<https://link.springer.com/content/pdf/10.1007/s13668-020-00307-3.pdf> ▾

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**Publish Year:** 2020

### PEOPLE ALSO ASK

How does the gut microbiota affect insulin resistance?



How does gut microbiota contribute to obesity?



How does inflammation affect the gut microbiota?





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

### Metabolites Linking the Gut Microbiome with Risk for Type ...

<https://link.springer.com/article/10.1007/s13668-020-00307-3>

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**.

Cited by: 5 Author: Tiantian Zhu, Mark O. Goodarzi  
Publish Year: 2020 Estimated Reading Time: 3 mins

#### PEOPLE ALSO ASK

- How does the gut microbiota affect insulin resistance?
- What is the role of the gut microbiota?
- How is gut microbiota dysbiosis linked to PCOS?
- Is there a link between obesity and insulin resistance?

Feedback

### Linking Gut Microbiota and Inflammation to Obesity and ...

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

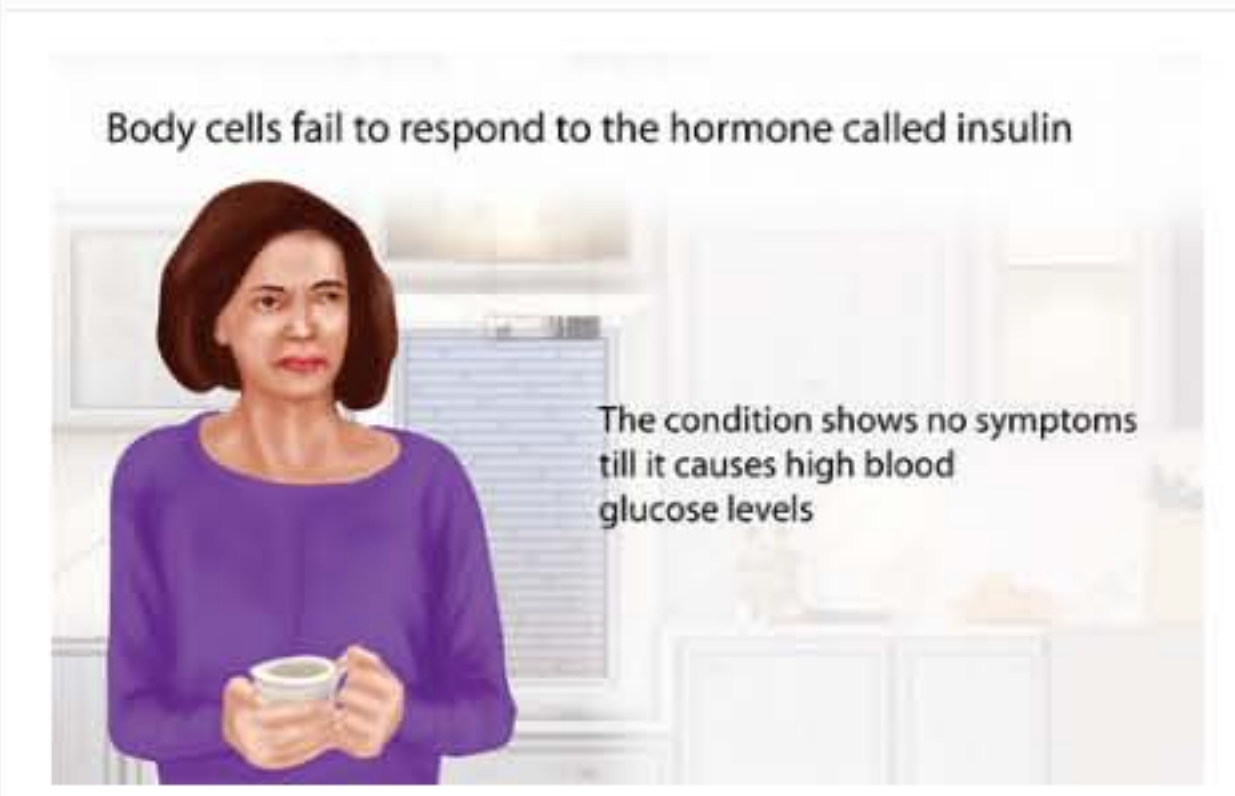
In this review, we present several **mechanisms** that contribute to explaining the **link** between **intestinal flora** and **insulin resistance/obesity**. The LPS from **intestinal flora bacteria** can induce a chronic subclinical inflammatory process and obesity, leading to **insulin resistance**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

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

### Mechanisms linking the Gut Microbiome and Insulin Resistance

## Insulin Resistance

Medical Condition



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