

L. reuteri trial information

L. reuteri supplements may modulate gut insulin metabolism: RCT ?
Pre-Print release

By Stephen DANIELLS , 21-Aug-2015

Consumption of Lactobacillus reuteri probiotics may boost insulin release in healthy people, says a new study.

Tablets containing L. reuteri strain (ATCC strain SD-5865) were found to increase insulin secretion by 49%, according to findings published in Diabetes Care .

Daily administration of L. reuteri tablets for four weeks was also associated with 76% and 43% increases in glucose-stimulated glucagon-like peptides (GLP)-1 and -2 release, wrote researchers from Germany, Denmark and the US. GLP-1 (incretin) is known to play a key role in insulin secretion and beta-cell function in the pancreas, while GLP-2 is reported to enhance intestinal function.

Administration of probiotic L. reuteri increased insulin secretion and incretin release in humans, wrote the researchers, led by Prof Michael Roden from Heinrich-Heine University in Dusseldorf. This effect was not caused by a modulation of the fecal microbiota, suggesting a direct effect of the Lactobacilli on host physiology.

The increase of the intestinotrophic gut peptide, GLP-2, which may contribute to intestinal integrity, was accompanied by stable concentrations of endotoxin and immune mediators.

Therefore, administration of a specific bacterial strain might have clinical implications by improving incretin-mediated beta-cell function in individuals with impaired glucose homeostasis and therefore warrants further studies on specific bacterial strains in type 2 diabetes.?

Study details

Prof Roden and his co-workers recruited 11 lean and 10 obese glucose tolerant people with an average age of 50 to participate in their prospective, double-blind, randomized trial. Participants received a daily L. reuteri dose of 20 billion colony forming units (CFUs) per day or placebo for four weeks. Results showed that, in addition to the increases in insulin secretion, GLP-1, and GLP-2 levels, the probiotic supplements were also associated with a 55% increase in C-peptide secretion. C-peptide is a protein that joins the A- and B-chains of insulin. It is secreted in equal measure to insulin and is seen as an important measure of insulin secretion.

An increase of GLP-2 secretion most probably enhances the expression of tight junctions in the intestinal wall, with the consequence of decreased gut permeability and leakage of

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endotoxin,? they explained. ?It has been suggested that low-grade metabolic inflammation driven by endotoxin translocation is the proposed mechanism by which the microbiota may contribute to systemic inflammation in obesity due to increased intestinal permeability.

?Lactobacilli may have the capability to improve intestinal integrity in rodents, which may diminish the LPS [lipopolysaccharide, an endotoxin] overflow from the gut to the circulation and thereby reduce the systemic concentrations of inflammatory markers.?

However, the researchers did not find any significant effects for systemic inflammation or oxidative stress in the study participants over four weeks, nor were there any impacts on insulin sensitivity, body mass, or levels of circulating cytokines.

The study was co-funded by the Heinrich-Heine University, the German Center for Diabetes Research, and the Danone Institute for Nutrition and Health.

Source: Diabetes Care
?Intake of Lactobacillus reuteri Improves Incretin and Insulin Secretion in Glucose Tolerant Humans:
A Proof of Concept?
Authors: M.-C.Simon, et al.