

Gut microbe may improve fatty liver

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Oral administration of a commensal gut microbe, *Faecalibacterium prausnitzii*, improves fatty liver in mice. *F. prausnitzii* is considered one of the most important bacterial indicators of a healthy gut. It has been shown to reduce inflammatory diseases in mice but its effects on liver have never before been studied. This relationship was discovered by the Academy of Finland Postdoctoral Researcher, Satu Pekkala, from the Faculty of Sport and Health Sciences, University of Jyväskylä, together with researchers from the University of Turku.

Due to the central role of [liver](#) in the whole body metabolism, fatty liver is a major health problem. In Finland alone, it affects around 1.000.000 people of the general population and has an occurrence of 90% among obese individuals. Humans with high liver fat content had less *F. prausnitzii* and more inflammation in the [subcutaneous adipose tissue](#). The researchers, therefore, decided to study whether oral *F. prausnitzii* treatment would decrease hepatic fat content in high-fat fed mice that serve as a model for fatty liver. The results were very promising. Compared to the high-fat control mice, *F. prausnitzii*-treated mice had lower hepatic fat content, AST and ALT, as well as increased fatty-acid oxidation.

In addition, hepatic lipidomic analyses revealed decreases in several species of triacylglycerols, phospholipids and cholesteryl esters. Expression of adiponectin, which is one of the main beneficial mediators of metabolism, was increased in the visceral adipose tissue. While the *F. prausnitzii*-treated [mice](#), in fact, had more subcutaneous fat, the fat was healthy as it was more insulin sensitive and less inflamed. Interestingly,

F. prausnitzii treatment increased muscle mass, which may be linked to enhanced mitochondrial respiration. This is an issue that, according to Pekkala, definitely should be studied further.

These findings tentatively suggest that fatty liver might be treated with *F. prausnitzii*. Unfortunately, the potential therapeutic bacteria are not yet accepted for treatment purposes in humans. In addition, *F. prausnitzii* is strictly anaerobic and difficult to grow, why the researchers doubt that it could be delivered alive to humans, like e.g. lactic acid bacteria. Therefore, the researchers now aim at discovering alternative, natural ways, such as diets or prebiotics to increase the natural abundance of this bacterium in the host organism to treat fatty liver.

An article of the results of the research was published in the ISME (International Society of Microbial Ecology) Journal, the most highly regarded journal in this field of research. The research was based on the earlier findings of the researchers in a human cohort, which were published in the *Journal of Hepatology* in 2014.

More information: Eveliina Munukka et al. Faecalibacterium *prausnitzii* treatment improves hepatic health and reduces adipose tissue inflammation in high-fat fed mice, *The ISME Journal* (2017). DOI: [10.1038/ismej.2017.24](https://doi.org/10.1038/ismej.2017.24)

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