# Expanded understanding of promising blood fat-lowering protein

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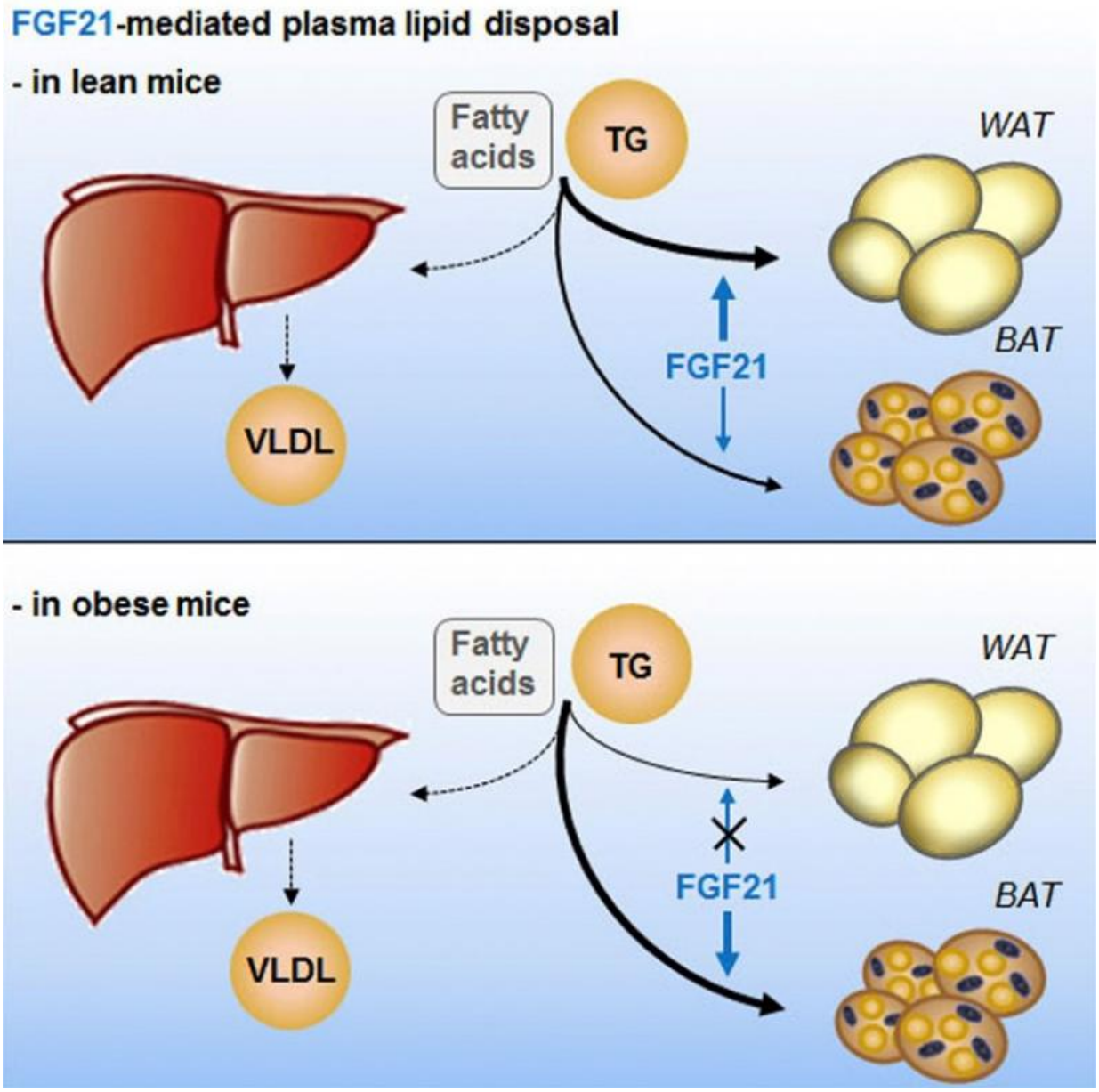

Credit: Umeå University

New research on the blood lipid-lowering protein FGF21 shows how it redistributes fatty acids by two distinct mechanisms. The discovery could lead to improved pharmaceutical treatment for type 2 diabetes and other obesity-related diseases. This according to a new study published in the journal *Cell Metabolism*.

"The protein FGF21 is an exciting potential therapeutic agent for the treatment of cardiovascular diseases and type 2 diabetes. This study provides breakthrough understanding mode of action of the protein," says Stefan K. Nilsson, assistant professor at the Department of Medical Biosciences at Umeå University, who took part in the study as visiting scientist at the University Medical Centre in Hamburg.

The research results, published in the journal *Cell Metabolism*, shows that a part of FGF21's redistributing effect on fatty acids can be explained by the fat-splitting enzyme Lipoprotein lipase (LPL).

"LPLs have been of interest to researchers at Umeå University for 50 years, which makes it especially rewarding to have contributed to this study," says Stefan K. Nilsson.

The study was conducted at the University Medical Center in Hamburg in collaboration with the pharmaceutical company Pfizer. The hope is that this research will lead to new therapeutic agents in the future. A drug that stimulates this pathway could be used to treat and reduce clinical manifestations of obesity-related health problems such as cardiovascular disease and type 2 diabetes.

"My visiting research fellowship in Hamburg is merely the start of a

continuous collaboration with one of the strongest research teams in the area of cellular fat transport. This will, of course, be beneficial to future studies on blood lipids here at Umeå University," continues Stefan K. Nilsson.

The researchers have studied what mechanisms are responsible for the protein FGF21's reducing of blood lipid levels. The results show that FGF21 lowers the release of free fatty acids from the white adipose tissue, this decreases the release of liver produced blood lipids. The reduced levels of blood lipids are also due to the fact that FGF21 activate the enzyme Lipoprotein lipase, which is active mainly in the adipose and muscle tissue of the body. Elevated enzyme activity leads to faster hydrolytic cleavage and uptake of blood lipids.

In the study, the researchers also found that FGF21 changed the metabolic pattern in diabetic mice models and increased their metabolism of excess energy via brown adipose tissue.

**More information:** Christian Schlein et al. FGF21 Lowers Plasma Triglycerides by Accelerating Lipoprotein Catabolism in White and Brown Adipose Tissues, *Cell Metabolism* (2016). DOI: 10.1016/j.cmet.2016.01.006

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