# New discoveries linking gut bacteria with cholesterol metabolism give hope for the future

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(Medical Xpress)—Researchers at the Sahlgrenska Academy, University of Gothenburg, Sweden, show that cholesterol metabolism is regulated by bacteria in the small intestine. These findings may be important for the development of new drugs for cardiovascular disease.

It is well established that cholesterol is the major risk factor for cardiovascular disease. Cholesterol – which is mainly synthesized in the body but also obtained from dietary sources – is converted to bile acids in the liver, which are then secreted into the intestine and either removed from the body or recycled back to the liver.

The influence of gut bacteria on human health and disease is a rapidly expanding research area. Fredrick Bäckhed's research group is a leader in this field and is investigating how gut bacteria are linked to lifestyle diseases such as obesity, diabetes and cardiovascular disease.

In a study published in the prestigious journal *Cell Metabolism*, they show that gut bacteria reduce bile acid synthesis in the liver by signaling through a specific protein, known as the FXR receptor, in the small intestine.

'Drugs that reduce cholesterol levels have, in recent years, greatly reduced deaths from cardiovascular disease. Our study is a step forward because we have shown how gut bacteria regulate the formation of bile

acids from cholesterol', says Sama Sayin, medical doctor and PhD student at the Sahlgrenska Academy, University of Gothenburg, and the study's first author.

The FXR receptor not only affects cholesterol metabolism but is also involved in the body's sugar and fat metabolism.

'If future research can identify the specific bacteria that affect FXR signaling in the gut, this could lead to new ways to treat diabetes and cardiovascular disease', says Fredrik Bäckhed, professor at the Sahlgrenska Academy, University of Gothenburg, who led the study.

The article 'Gut microbiota regulates bile acid metabolism by reducing the levels of tauro-betamuricholic acid, a naturally occurring FXR antagonist' is published in Cell Metabolism on February 5.

**More information:** *Cell Metabolism* Volume 17, Issue 2, 225-235

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