

Inflammation in fat tissue helps prevent metabolic disease

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Chronic tissue inflammation is typically associated with obesity and metabolic disease, but new research from UT Southwestern Medical Center now finds that a level of "healthy" inflammation is necessary to prevent metabolic diseases, such as fatty liver.

"There is such a thing as 'healthy' inflammation, meaning inflammation that allows the tissue to grow and has overall benefits to the tissue itself and the whole body," said Dr. Philipp Scherer, Director of the Touchstone Center for Diabetes Research and Professor of Internal Medicine and Cell Biology at UT Southwestern. "The same principle also applies in muscle: Exercise induces some inflammation in the tissue, but also leads to better and stronger muscles and, consequently, a healthier organism."

Using animal models, Dr. Scherer and his team, with first author, Dr. Ingrid Wernstedt Asterholm, former Assistant Instructor at UT Southwestern and current Assistant Professor at the University of Gothenburg in Sweden, found that suppressing inflammation in [fat tissue](#) results in reduced fat expansion and thus leaner mice, even when the animals are fed a high-fat diet. The findings were first published online June 12 in *Cell Metabolism*.

What Dr. Scherer, holder of the Gifford O. Touchstone, Jr. and Randolph G. Touchstone Distinguished Chair in Diabetes Research, and his team expected to find that the reduced body fat content would lead to improvements in metabolism and a lower incidence of metabolic disease. Unexpectedly, the team found that the lean mice showed symptoms of metabolic disease, such as glucose intolerance.

This result might be because when fat tissue expands, it absorbs excess lipids, preventing them from being deposited in other tissues, such as the liver. Indeed, the animal models showed signs of fatty liver, caused by buildup of fat in liver cells,

and a "leaky gut," caused by disruption of the gut wall.

"What our research shows is that we need some localized inflammation to remodel our fat tissue and to prevent [metabolic diseases](#) such as fatty liver," said Dr. Asterholm. "This finding may explain in part why anti-inflammatory medicines have so far not been successful as anti-diabetic treatments. The effects of interventions that promote local low-level [inflammation](#) in fat tissue remain to be determined."

Provided by UT Southwestern Medical Center

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