

Not all fat is created equal

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A Temple University study finds fat in obese patients is "sick" when compared to fat in lean patients.

When our bodies don't work properly, we say we're sick. A study published in the September issue of *Diabetes* finds that the same could be said for fat tissue found in obese patients. The cells in their fat tissue aren't working properly and as a result, are sicker than cells found in lean patients' fat tissue.

Lead author Guenther Boden, M.D. theorizes that "sick fat" could more fully explain the link between obesity and higher risk of diabetes, heart disease and stroke.

Researchers from the departments of endocrinology, biochemistry and surgery at the Temple University School of Medicine took fat biopsies from the upper thighs of six lean and six obese patients and found significant differences at the cellular level.

"The fat cells we found in our obese patients were deficient in several areas," said Boden, Laura H. Carnell Professor of Medicine and chief of endocrinology. "They showed significant stress on the endoplasmic reticulum, and the tissue itself was more inflamed than in our lean patients."

Endoplasmic reticulum (ER) is found in every cell and helps synthesize proteins and monitor how they're folded. The stress that Boden describes causes the ER in fat cells to produce several proteins that ultimately lead

to insulin resistance, which has been found to play a major role in the development and progression of obesity-related conditions.

The National Institutes of Health recently reported that each time a body mass index (BMI) over 25 is raised by one point, the risk for diabetes increases 25 percent and the risk for heart disease increases 10 percent.

Reducing weight can help reduce stress on the ER, which can lower the risk of insulin resistance and the resulting conditions. Currently Boden and his team are looking at whether free fatty acids are a potential cause for this ER stress.

Source: Temple University

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