

High-fat diets inflame fat tissue around blood vessels, contribute to heart disease

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A study by researchers at the University of Cincinnati (UC) shows that high-fat diets, even if consumed for a short amount of time, can inflame fat tissue surrounding blood vessels, possibly contributing to cardiovascular disease.

These findings will be published in the Feb. 20 edition of the American Heart Association journal *Circulation Research*.

Neal Weintraub, MD, and colleagues examined adipose tissue—or fat—surrounding the coronary arteries of humans. The researchers found these fat cells to be highly inflamed, suggesting that they could trigger inflammation of the blood vessels, an important component of atherosclerosis.

They also found that the inflammation of fat tissues around the arteries of mice is increased by feeding the animals a high-fat diet for just two weeks.

"This is independent of weight gain or blood lipids—cholesterol levels," says Weintraub, senior author of the study and chair of the cardiovascular diseases division at UC.

Weintraub says that high fat diets contribute to atherosclerosis—or the hardening of arteries—in a number of ways.

"Elevated blood lipids—or cholesterol levels—can worsen with the

intake of high fat diets, and this is known to contribute to atherosclerosis," he says. "However, many patients who consume high fat diets do not exhibit abnormal lipid profiles but still develop atherosclerosis nonetheless.

"These new findings suggest a direct link between poor dietary habits and inflammation of blood vessels, mediated by the fat cells surrounding the blood vessel wall."

Weintraub adds that the diet fed to the mouse models was not unlike the diets consumed by many Americans.

"It produced striking abnormalities of the fat tissue surrounding blood vessels in a very short period of time," he says. "This is a warning to those who say there isn't a problem because their weight and cholesterol levels are under control. Lipid profiles don't hold all the answers.

"Bad dietary habits can lead to a number of problems, and this suggests that a high fat diet is detrimental in ways we didn't previously understand."

Weintraub says there is no real way to measure the effects of poor dietary habits on fat tissue surrounding blood vessels.

"We don't know why these cells are so responsive to high-fat diets," he says. "We must now conduct further experiments to answer these types of questions."

Source: University of Cincinnati

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