

Researchers Find Food-free Route to Obesity

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Can people get fat -- and risk debilitating diabetes -- without overeating? The answer may be yes, according to Timothy Kieffer, a University of British Columbia researcher, who has found that imbalance in the action of a hormone called leptin produces obesity and major disturbance in blood sugar levels, even when food intake is at normal levels.

The findings were published this month in *Cell Metabolism*.

“Obesity is a complex condition -- not simply a matter of food intake. We now have some new directions for understanding the connection between obesity, hormones, and diabetes,” says Kieffer, a diabetes researcher and associate professor in the departments of cellular and physiological sciences and surgery. “By targeting defects in the connection, we may discover new therapies to inhibit obesity and its frequent complication, Type 2 diabetes.”

The hormone leptin is produced by fat and helps regulate insulin secreted by pancreatic beta cells. Kieffer and colleagues found that weakening leptin signaling to beta cells caused them to malfunction, leading to obesity and disrupted blood sugar levels, even in the absence of overeating.

“We think a defect in the communication between leptin and beta cells can cause over-production of insulin, leading to excessive accumulation of fat in the body,” he says. “This process appears to contribute to obesity -- quite independent of eating -- while also harming control of blood sugar levels. Hormones alone aren’t the sole cause of obesity but

they might be a factor that links obesity to diabetes.”

Diet and exercise will always play an important role in preventing obesity and the risk of diabetes, he adds.

“Dr. Kieffer’s work is helpful because it expands what we know about an important hormone involved in the development of obesity,” says Dr. Diane Finegood, Scientific Director of the Canadian Institutes of Health Research Institute of Nutrition, Metabolism and Diabetes. “Obese people have a four- to five-fold increased risk of developing Type 2 diabetes. This work helps improve our understanding of why the two conditions are linked. The more we understand the complex relationships between conditions and their underlying mechanisms, the better our chances of developing safe and effective therapies.”

About 80 per cent of patients with Type 2 diabetes (formerly known as adult onset diabetes) are obese. Diabetes care costs Canadians about \$13 billion annually.

Diabetes is caused by the inability of specialized cells of the pancreas, called beta cells, to produce sufficient amounts of insulin, a hormone critical for regulating blood sugar levels.

Source: University of British Columbia

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