'Good fat' could help manage type 2 diabetes

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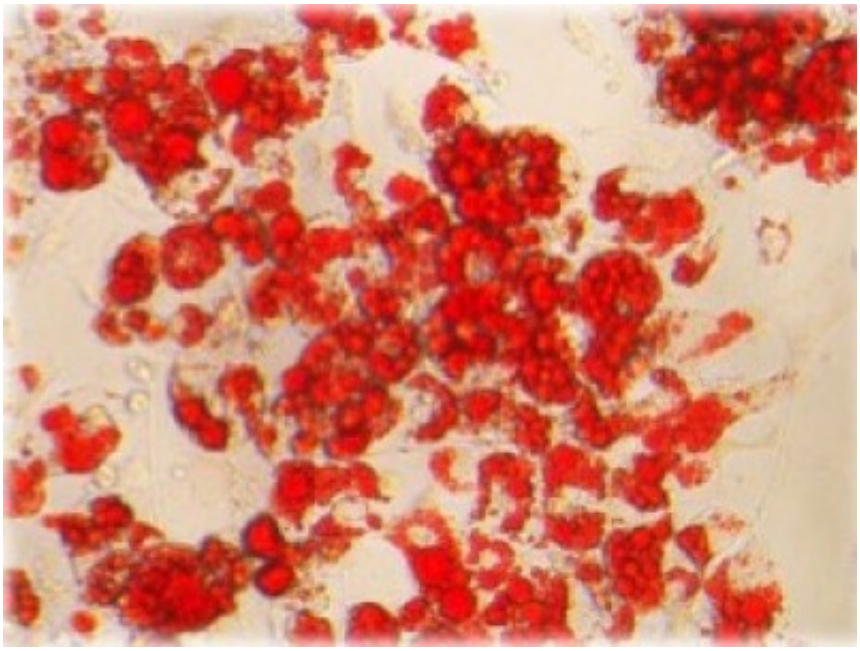

(Medical Xpress)—A special type of fat found in some people could be used to manage type 2 diabetes.

Scientists from Monash University and Stockholm University have discovered that brown fat, nicknamed the 'good fat' because it warms up the body in cold temperatures, burning up calories in the process, also 'hoovers up' excess sugar.

The findings, published in The *Journal of Cell Biology*, are significant

for people with type 2 diabetes, whose bodies are unable to respond to insulin properly, resulting in elevated blood glucose levels. Researchers believe that if brown fat cells can be activated, blood glucose levels could be controlled without the need for daily insulin injections.

Lead researcher Dr Masaaki Sato from the Monash Institute of Pharmaceutical Sciences (MIPS) said learning more about how brown fat works is critical.

"Brown fat was discovered in adults a few years ago and now research is taking place world-wide to understand why some adults have it and others don't," Dr Sato said.

"In theory if we can find out how to stimulate brown fat into action, we could use it, not only to manage obesity, but type 2 diabetes too. Our findings are at a very early stage but they show real potential to find a new way to manage this disease."

Previously brown fat was thought to be present only in animals and babies, but PET scans of adult patients in 2007 proved otherwise. Located on the back, the upper half of the spine and the shoulders, younger people are more likely to have brown fat than people who are overweight or obese. Brown fat is also known to increase in cold weather and decline in warm environments.

By observing cells, the research team found that following application of a drug that mimics cold exposure, brown fat produces large amounts of a protein that transports glucose into cells, and importantly does so independently of the way insulin transports glucose into these cells. Closer analysis showed brown fat cells produced 10 times the amount of glucose transporters than insulin.

Dr Dana Hutchinson, a co-author on the paper, said what remains

unclear is why some people have good fat and others do not.

"We know brown fat absorbs excess glucose in the blood at a much more efficient rate than other mechanisms the body. Unfortunately If you're diabetic you're far less likely to have it," Dr Hutchinson said.

"If we can uncover the mystery of why some people have brown fat, we can then look to develop ways to stimulate its growth."

Potentially the research could lead to a completely new medicine to treat type 2 diabetes, offering an alternative to daily insulin injections.

The next phase of research will see the team investigate the impact of being obese and diabetic on glucose regulation in brown fat.

Provided by Monash University

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