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Properties of Insulin Reduce Inflammation Caused by Obesity, Lower Risk of Type 2 Diabetes, Research Finds

Recent decades have seen a huge increase in type 2 diabetes and cardiovascular disease. This is a result of people being less active and eating fattier diets, which can lead to obesity and, in turn, diabetes. In a thesis from the Sahlgrenska Academy at the University of Gothenburg, Sweden, researchers have discovered properties of insulin which reduce inflammation caused by obesity and can therefore lower the risk of type 2 diabetes.

When you put on weight, your fat tissue grows and begins to produce a wealth of inflammatory molecules. The increase in these inflammatory molecules leaves the fat tissue in a state of chronic inflammation. This plays an important role in the development of insulin resistance, an early stage of type 2 diabetes, where the body is unable to regulate blood sugar levels using its own insulin.

"It's still not entirely clear, why obesity causes insulin resistance," says Emelie Wallerstedt from the Institute of Medicine at the University of Gothenburg. "Inflammation could be part of the reason why obesity leads to type 2 diabetes."

Research has shown that both obesity and insulin resistance are affected by inflammatory conditions in the body. Previously it was believed that fat tissue served merely as a depository for fat, but now scientists know that it is also an important organ for the release of a wide range

of different substances, including inflammatory molecules. In the thesis, the researchers managed to identify the properties of the inflammatory molecule IL-6.

"IL-6 impairs insulin signalling, but the insulin signalling itself can also inhibit and 'turn off' the IL-6 signal and inflammation," says Wallerstedt. "The protein PKCdelta also plays an important role in the regulation of the IL-6 signal, and we have shown that if we disable the function of this molecule, the inflammation decreases."

A greater understanding of these signalling mechanisms could make it possible in the future to develop medicines that can "turn off" the inflammation and so reduce the risk of insulin resistance and other obesity-related disorders.

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