

Researchers pave the way for improving treatment for Type 2 diabetes

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In a study published last week in the prestigious *Proceedings of the National Academy of Sciences* of the United States of America, a team led by Dr. Vincent Poitout of the University of Montreal Hospital Research Centre (CRCHUM)* has made an important step forward in understanding how insulin secretion is regulated in the body. This discovery has important implications for drugs currently in development to treat Type 2 diabetes, a disease which is diagnosed every 10 seconds somewhere throughout the world.

Poitout's team studies the G protein-coupled free fatty acid receptor (FFA1/GPR40), a molecule that plays a key role in stimulating and regulating the production of insulin, a hormone produced by the pancreas to remove excess glucose from the blood, which otherwise would be toxic.

Poitout's team demonstrated that glucose in the blood stimulates the expression of the receptor, which in turn prompts the body to produce insulin when glucose and [fatty acids](#) rise in the circulation, such as occurs after a meal. Their accomplishment consists in mapping the intricate pathway taken by glucose to stimulate the expression of the receptor and in identifying the various genetic and cellular processes which are activated in this process. This phenomenon contributes to maintaining the right balance between the intake of nutrients and the production of insulin. That balance is precisely what is upset in [type 2 diabetes](#) patients, for whom the production of insulin is deficient, and which leads to a variety of chronic conditions.

Although a new generation of antidiabetic drugs which target this receptor to promote insulin tolerance and production is currently being tested, until now little has been known about precisely how the expression of GPR40 is controlled. "Our work has contributed to a better understanding of how these new drugs work. Our ultimate goal is to allow type 2 [diabetes patients](#) to lead a healthy life free from the many complications associated with this disease," explains Poitout.

Type 2 diabetes, which used to occur as people grew older, now appears at a younger age due to the increasing prevalence of obesity in children and adolescents. Its appearance can be hastened by an unhealthy lifestyle (fat-rich diet, lack of exercise, etc.). Although it can sometimes be controlled by adopting a healthier lifestyle and diet, most patients are required to take daily medication for the rest of their lives. The prevalence of diabetes is expected by the World Health Organization to exceed 550 million people by 2030.

Provided by University of Montreal

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