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## Press information

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### An antidiabetic drug moves a step forward

**In humans, apelin is able to regulate blood sugar levels and increase the sensitivity of cells to insulin. These two observations have paved the way for a clinical trial led by Inserm researchers from Toulouse, and represent a promising step forward for the development of a new treatment for diabetes, in particular type 2 diabetes. This work has been published in the journal *Diabetes, Obesity and Metabolism***

It is a journey that began over 10 years ago. A classic research story that demonstrates the long road between discovering a therapeutic molecule and its possible use in humans. The potential use of apelin was [demonstrated in 2008](#) by university professor Philippe Valet and his Inserm team. This ubiquitous molecule (it is found throughout the body) can, if necessary, regulate the body's blood sugar level instead and in place of insulin. However, this rescue pathway is only activated if the main pathway does not function properly.

Normally, sugar from food is stored in the liver, muscle, and adipose tissue, and is released as and when the body requires. This process is however dependent on the action of insulin, which "captures" sugar for storage. If insulin does not function properly, it leads to diabetes (increased blood sugar levels). Either it is not produced by the body at all: this is type 1 diabetes. Or the insulin receptors located on the surface of the liver, muscle, and adipose tissue cells become desensitized: this is type 2 diabetes. This results in two problems: the levels of circulating glucose are too high, and in time this becomes harmful to the body.

After discovering this alternative pathway, which enables another way of absorbing sugar, the researchers soon had the idea of stimulating this natural pathway and producing synthetic apelin.

Today, the researchers report the positive results of a clinical trial in 16 patients that was carried out within the Diabetology Department headed by Professor Pierre Gourdy. Healthy but overweight men were recruited to take part in a study that aimed to prove the efficacy and tolerability of two different doses of intravenously-administered apelin. The first group received a dose equivalent to 9 nmol/kg, and the second group received 30 nmol/kg. The patients' glycemia was measured before and after the injection.

The results show that the injection of the smallest dose led to better absorption of circulating blood glucose, while administration of the highest dose also led to a demonstrable increase in cell insulin sensitivity. No side effects were observed.

*"This is what we call a 'proof of concept' study", explains Philippe Valet. "Although the sample is a small one, the results that we have just obtained encourage us to move on to larger studies in order to confirm them on a larger scale and be able to consider proper marketing authorization."*

This work could notably contribute to research into the treatment of diabetes, which affects over **400 million people around the world.**

## Sources

### **Apelin administration improves insulin sensitivity in overweight men during an hyperinsulinemic euglycemic clamp**

Pierre Gourdy (1, 2), Laurent Cazals (1), Claire Thalamas (2, 3), Agnès Sommet (3, 4), Fabienne Calvas (3), Monique Galitzky (3), Claire Vinel (2), Cédric Dray (2), Hélène Hanaire (1), Isabelle Castan-Laurell (2, \*), Philippe Valet (2, \*).

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### ***Diabetes, Obesity and Metabolism***

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