



# Peptide agonist of adiponectin receptors useful in treating T2D and obesity-linked pathologies

## ■ KEYWORDS

Adiponectin  
Diabetes T2D  
Obesity  
Metabolic syndrome

## ■ PATENT

**Title :** *Peptide agonists of adiponectin receptor 1 and 2*  
**PCT application**  
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## ■ LICENSING

Research collaboration  
Licence agreement

## ■ INVENTORS

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## ■ PROBLEM

Diabetes is one of the major causes of premature illness and death worldwide due to the severe long-term complications, such as cardiovascular disease, visual disability, renal failure, and neuropathy with limb amputation. Considering that type 2 diabetes (T2D) is increasingly prevalent (about 90% of diabetic patients) and develops early in the patients' life, their life quality and expectancy are notably reduced consequent to severe diabetic complications.

Type 1 diabetes (T1D, formerly known as insulin-dependent, juvenile or childhood-onset) is characterized by deficient insulin production, while T2D (previously named non-insulin-dependent or adult-onset) is caused by the inefficient use of insulin by the body's tissues.

Although their symptoms may be similar (e.g. polyuria, polydipsia, fatigue), they are less marked in early T2D and explains its late diagnosis, when the complications have already progressed. Being an incurable chronic disease, the costs of medical care are particularly expensive, especially when diabetic complications have developed. Therefore, early diagnosis, prevention and control of diabetes and of its complications greatly contribute to cost savings with patient care.

## ■ SOLUTION

**Adiponectin, an adipokine secreted by the adipose tissue, decreases in diabetic and obese patients.** Adiponectin has been reported to improve insulin sensitivity and exert antidiabetic, anti-inflammatory and antiatherogenic effects. Adiponectin binding to its main receptors, AdipoR1 and AdipoR2, triggers the oxidation of free fatty acids and the glucose uptake by skeletal muscle, while liver gluconeogenesis is prevented. AdipoR1 is principally expressed in skeletal muscle, where the signaling pathway of 5' adenosine monophosphate-activated protein kinase (AMPK) is activated. AdipoR2 is mostly expressed in the liver, where it activates the pathway of peroxisome proliferator-activated receptor alpha (PPAR $\alpha$ ). The two receptors are also co-expressed pancreatic beta cells and regulate the antiapoptotic effects.

**Modulation of adiponectin signaling pathways could have an effect on diseases such as obesity, type 2 diabetes and metabolic syndrome as well as provide a dietary solution.**

The invention concerns **peptides capable of binding to AdipoR1/R2**. Peptide17 (seq ID n° 5) emerged as a candidate AdipoR1/R2 agonist and could regulate glucose and lipid metabolism of obese and type 2 diabetic patients. This invention represents a potential therapy for the treatment of obesity, type 2 diabetes and metabolic syndrome.

## ■ INNOVATION

- New treatment for T2D, obesity and metabolic syndrome

## ■ TECHNOLOGY STATUS

TRL 2-3

## ■ MARKETS

- **The global prevalence of diabetes mellitus is approximately 360 million affected individuals.**

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