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Japan research could lead to oral diabetes treatment (Update)

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Japanese researchers said Thursday they had moved a step closer to an oral treatment for diabetes, offering hope of a breakthrough against a disease racking an increasingly obese world.

Scientists at the University of Tokyo said they have created a compound that helps the body to control glucose in the bloodstream.

Glucose is a fuel that is vital to the functioning of organs all over the body, but too much of it is bad news. In some people it leads to Type 2 diabetes, a condition that can cause heart disease, strokes and kidney failure.

Doctors say the incidence of Type 2 diabetes has rocketed over the last few decades, a factor they blame largely on the growing number of overweight people.

Studies have shown that obese people tend to have lower levels of adiponectin—a hormone that regulates glucose and increases the effectiveness of insulin.

Now researchers in Japan have developed a compound they named AdipoRon that mimics the effects of the hormone. Crucially, unlike adiponectin, which is broken down as it passes through the gut, AdipoRon survives unscathed all the way to the blood.

AdipoRon could be "a lead compound" in a possible oral treatment for

diabetes, according to Toshimasa Yamauchi, a member of the research team and lecturer at the Graduate School of Medicine at the University of Tokyo.

"We aim to launch clinical tests in a few years," he told AFP.

Doctors advise people with Type 2 diabetes to eat healthily and exercise, but the researchers said that sometimes proves too much of a challenge.

"Dietary therapy is not easy even for healthy people, no matter whether or not they are obese or have disease," they said in a press release.

"The opportunities for exercise have inevitably reduced drastically as society has become more automated.

"A compound that could imitate dietary and exercise treatments and realise health benefits" has long been a desired goal in the field, said the team, whose work was published in the online version of *Nature*.

A firefighter or goal keeper in the body

Researchers found the four-month survival rate for obese and diabetic mice fed with high-fat food was only 30 percent against 95 percent for the same kind of mice on a normal low-fat, balanced diet.

Similar overweight and diabetic creatures on the high-fat diet that were given the compound showed a four-month survival rate rising to 70 percent.

The team's repeated experiments "have showed mice given the compound lived longer even though they were fed with high-fat food and did not lose weight", Yamauchi said.

He noted some people have difficulty exercising because of heart or other physical problems, or may find it difficult to cope with restrictions on the intake of carbohydrates, fats and proteins.

The compound could eventually supplement exercise or dietary restrictions for those people, he said, adding it also had potential as a weight loss medicine because of an increase in energy consumption that had been noted.

Yuji Matsuzawa, the doctor whose research team found and named adiponectin in humans in 1995, said the latest findings marked "major progress" in the study of the protein.

"More research needs to be done on adiponectin as it is a multi-potent hormone that could prevent cancer, arterial stiffening and many other problems—a firefighter or goalkeeper in the body, so to speak," Matsuzawa said.

"There also could be another approach aimed at increasing production of adiponectin itself as it derives from fat cells," he said.

As the study proceeds, "we will see whether the approach to invigorate the hormone receptor could outstrip the effect of self-made adiponectin", said Matsuzawa, who heads Sumitomo Hospital in Osaka.

According to the World Health Organisation, around 347 million people worldwide have diabetes.

The less common kind, Type 1, is characterised by the body not producing enough insulin. It can be treated by daily injections, but cannot be cured.

Around 90 percent of global sufferers have Type 2, a form the WHO

says is "largely the result of excess body weight and physical inactivity.... (a) growing global problem".

Half of all diabetes sufferers die of cardiovascular disease, according to the WHO.

More information: Paper: dx.doi.org/10.1038/nature12656