

Researchers use oral peptide spray to stimulate weight loss in animals

December 20 2013, by April Frawley

(Medical Xpress)—A quick spray on the tongue with an oral spray containing a compound that naturally occurs in the body could be all it takes to curb appetite and spark weight loss. And unlike oral weight-loss sprays currently on the market, this one holds the promise of being backed by medical science.

Results from a new University of Florida study show that an oral spray containing a peptide responsible for signaling fullness stymies obesity in animals and does not cause negative side effects as it does when the peptide is injected.

The chemical, called peptide YY, occurs naturally in the body and is released after eating, said Sergei Zolotukhin, an associate professor of cellular and molecular therapy in the UF College of Medicine department of pediatrics.

"When mice were treated with a solution of this peptide using a simple spray, with one puff they will consume less food and they will start losing weight," Zolotukhin said. "The implications are very simple: If you put peptide YY in a spray or gum and you take it half an hour before dinner, you will feel full faster and consume less food. It could be just a 5 or 10 percent difference, but it is enough to stimulate weight loss."

More than one-third of adults in the United States are obese, according to the Centers for Disease Control and Prevention. The results of the study, published in the Nov. 20 issue of *The Journal of Neuroscience*,

could lead to an easy-to-use treatment that helps people eat less.

Peptide YY was already known for its fullness-inducing properties in the body, but researchers had stopped studying it for human use after clinical trials revealed a major negative side effect: It caused those who took it to vomit. At the time, scientists were injecting it directly into the blood stream. Because peptide YY helps stop the body from overeating, having too much in the [blood stream](#) signals the body that it has taken in too much food, spurring the urge to vomit.

But when sprayed on the tongue, the peptide acts on the saliva and enters the body through a different pathway, stimulating the brain's reward center, Zolotukhin said.

Zolotukhin and his colleagues began studying peptide YY several years ago, initially looking for a way to deliver the peptide using [gene therapy](#). They successfully prompted [weight loss](#) in rodents using gene therapy, but noticed there was no difference in the amount of the peptide that showed up in the bloodstream. In trying to uncover how the rodents were losing weight, the researchers were the first to discover that the peptide was also found in saliva.

Although the gene therapy worked, the researchers wanted to find an easier way to deliver the peptide to patients. Initial tests of the oral spray proved successful, but the team needed to be sure that the spray would not stimulate the same sickness as injection.

"Comparing systemic peptide YY versus salivary PYY, what we have found is that although salivary PYY induces similar neuronal pathways to induce fullness, at the same time, it does not induce the neuronal pathways that cause visceral sickness," Zolotukhin said.

As a result of these studies, Zolotukhin and fellow researcher C. Shawn

Dotson, an assistant professor of neuroscience, recently received National Institutes of Health funding to continue their work studying Peptide YY.

The treatment would have to go through additional testing and studies before it is ready for human trials, but the researchers are hoping to find a company to license the technology.

Provided by University of Florida

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