

Drug to control appetite could also fight anxiety

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Did you know that our body produces its own marijuana-like compound to protect us against anxiety? A study led by Ottawa researchers, published today in *Neuron*, reveals a new biological pathway that regulates this system and suggests that a drug currently in clinical trials to treat obesity might also provide an attractive way to combat anxiety disorders.

"Anxiety and [obesity](#) are growing problems in society," said Dr. Hsiao-Huei Chen, associate professor of medicine at the University of Ottawa and a senior scientist at the Ottawa Hospital Research Institute. "Not only have we found a new [biological pathway](#) that regulates these two conditions, but we also found that they may be amenable to treatment with the same drug."

Dr. Chen and her colleagues were originally studying the effect of a gene called LMO4 on brain development and regeneration when they noticed that mice that lacked this gene in a certain part of the brain displayed anxious behaviour and became obese. Their new research, together with a previous study, shows that an enzyme called PTP1B plays a crucial role in a molecular pathway that links LMO4, anxiety, obesity and the body's natural marijuana (endocannabinoid) system. When the researchers used a drug (trodesquamine) that specifically inhibits the activity of PTP1B, they found that both anxiety and obesity were reduced.

"Current treatments for anxiety disorders have addiction issues and other side effects. Our approach lets the brain fix itself by simply re-instating

the appropriate level of PTP1B," said Dr. Chen, who is also a member of the University of Ottawa Brain and Mind Research Institute.

Troglusquemine is in [clinical trials](#) for its effects on appetite control and weight loss, and also for its potential effect on breast cancer. Previous studies have found that people with metabolic and obesity-related diseases often suffer from mood or [anxiety disorders](#). Knowing that a common biological link exists between obesity and anxiety, it may be possible to treat the disorders in tandem.

"It is our hope that we can quickly start clinical trials to determine if this novel drug may be able to treat obesity and anxiety at the same time," added Dr. Chen, whose work on LMO4 has also linked it to diabetes.

More information: "Chronic Stress Induces Anxiety via an Amygdalar Intracellular Cascade that Impairs Endocannabinoid Signaling" *Neuron*. Zhaohong Qin, Xun Zhou, Nihar R. Pandey, Haley A. Vecchiarelli, Chloe A. Stewart, Xia Zhang, Diane C. Lagace, Jean Michel Brunel, Jean-Claude Béïque, Alexandre F.R. Stewart, Matthew N. Hill, and Hsiao-Huei Chen. 2015.

Provided by Ottawa Hospital Research Institute

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