

# Using cannabinoids to treat obesity

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Though cannabis is often associated with "the munchies" in popular culture, University of Toronto researcher Justin Matheson is asking whether cannabinoids—naturally occurring compounds in the plant—can actually be used to treat obesity.

"On the surface, the research seems a bit paradoxical," says Matheson, who earned a Ph.D. from the Temerty Faculty of Medicine's department of pharmacology and toxicology in 2020 and is now completing a post-doctoral research fellowship in the Translational Addiction Research Laboratory at the Centre for Addiction and Mental Health.

"But what my supervisor [Professor Bernard Le Foll, chair of addiction psychiatry in the Temerty Faculty of Medicine] and others have found is that people who use cannabis regularly actually have lower BMI, lower risk of obesity and a lower of risk of diabetes than people who don't use cannabis."

Matheson is one of the inaugural cohort of the Toronto Cannabis and Cannabinoid Research Consortium (TC3) fellows.

He recently spoke to writer Gabrielle Giroday about his work and the fast-growing field of cannabis- and cannabinoid-related health research.

## **What interested you in this area of research?**

My work is largely focused on substance use and addictions. For my doctorate, I focused on sex and gender and how they impact cannabis use. For example, I published [a paper in 2019](#) looking at how smoking cannabis affected young adults of different sexes.

Before this project, I was already very interested in investigating addiction to cannabis and looking at how cannabinoids can be used to treat substance use disorders.

As for this current research, there are interesting parallels between obesity and overeating, and addiction or [substance use](#) disorders. Both involve harmful behavioral patterns that lead to excessive intake of food or [psychoactive drugs](#). It's a new area that deserves further exploration.

## Can you explain your approach?

This research will include a [randomized controlled trial](#) that will look at if nabilone—a synthetic cannabinoid drug—can reduce [body weight](#) in adults with obesity.

We are recruiting a sample of 60 people who have obesity and randomizing them to receive either a high dose of the drug nabilone, a low dose, or a placebo. Participants will be 25 to 45 years old.

Nabilone will be taken as an oral capsule. It's very similar to THC, which is the active component of cannabis, but it's a little structurally different. The study participants will be taking nabilone daily over the course of 12 weeks.

During that period, we'll be monitoring the patients' body weight as well as other measures to see if there are any adverse effects of the nabilone.

In the research, we're not just trying to see if the cannabinoid drug can reduce body weight in adults who are obese, but we're also trying to understand why. We'll do this by using neuroimaging, measuring changes in the gut microbiome, and measuring cannabinoids in the blood and different hormones.

We're also taking measures of participants' brain activity at the baseline, before they enter treatment and at the end of the 12 weeks. Specifically, we're interested in seeing how the neural response to food images changes over the course of treatment.

We've started recruiting participants to take part of the research, and we're hoping to finish the trial in two years.

## **What do you hope to achieve through this work?**

Nabilone is similar to THC. And we know cannabis actually is pro-appetite—in that it increases appetite. In the past, cannabis has been associated with "the munchies" and been used by people with wasting syndromes or who are having problems with appetite. So, on the surface, the research seems a bit paradoxical.

But what my supervisor Le Foll and others have found is that people who use cannabis regularly actually have lower BMI, lower risk of obesity and a lower of risk of diabetes then people who don't use cannabis.

This research will be a first-in-human trial to see if administering nabilone will lead to a lower body weight in adults who are obese, which would replicate animal findings and which would be line with what we're seeing in epidemiological data. We don't know what we'll find yet.

## **How will you measure the effects of nabilone on each participant?**

The endocannabinoid system—which is the body's innate system that underlies the effects of cannabinoids—is a system that is very much involved in all sorts of brain processes such as our perceptions of pleasure and reward. So, we think it's possible our research might find that nabilone reduces participants' responses to food images, which is why we're doing neuroimaging of participants' brains.

Plus, there is also an interesting relationship between cannabinoids and gut bacteria, so we want to measure the gut microbiome to see whether that changes with treatment.

Research has found that people with obesity tend to have higher levels of

endocannabinoids, which are the body's own cannabinoid compounds. We believe that taking nabilone, or any cannabinoid drug, over a period of time might disrupt endocannabinoid levels, which could be one way that nabilone leads to a reduction in body weight.

## **How would you describe the field of cannabis or cannabinoid research these days?**

I think cannabis and [cannabinoid](#) research has changed, especially after legalization. It's definitely a really growing field and I feel lucky I entered the field when I did in 2015—three years before legalization happened.

I still think there's still a lot of stigma around cannabis use. This affects the participants I work with, who often use cannabis or have a cannabis use disorder. Hopefully, with legalization, this will change.

I think it's a really exciting time to be doing cannabis research, especially because there are a lot of misconceptions. It seems to be a very polarizing topic. You have cannabis advocates who present it as a "cure-all drug," and then you have prohibitionists, who argue it's bad and harming people and should be illegal.

To me, it's somewhere in the middle. There are a lot of misconceptions in the research community and in the general public, which is why the field is so fascinating and why it's where I want to take the rest of my career.

Provided by University of Toronto

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