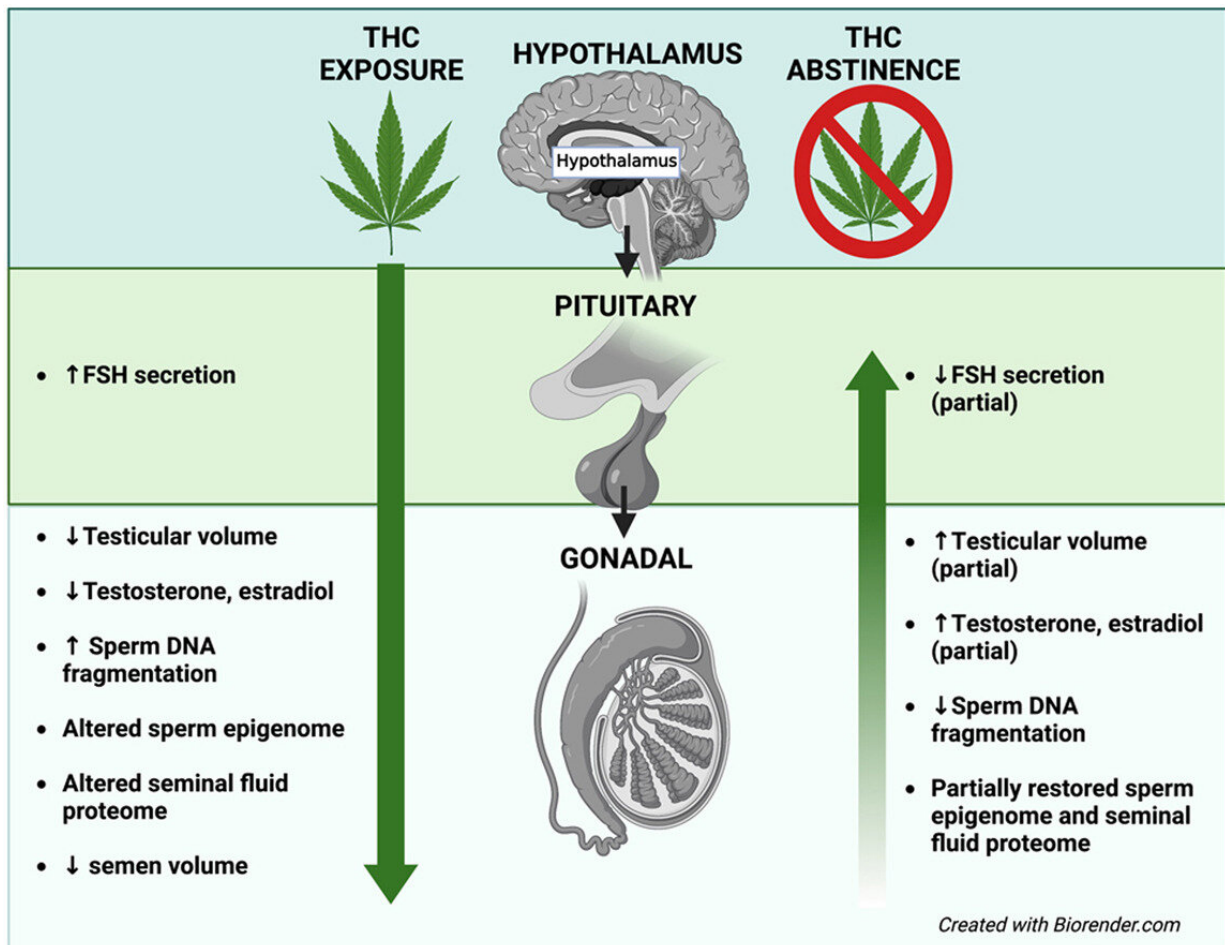


Ending THC use may reverse its impacts on male fertility

March 27 2023



Graphical abstract. Credit: *Fertility and Sterility* (2023). DOI: 10.1016/j.fertnstert.2023.02.034

A [2022 study](#) from Oregon Health & Science University researchers confirmed that chronic use of cannabis may greatly impact male fertility and reproductive outcomes in nonhuman primates—but it was unclear whether the effects are permanent. Now, the OHSU research team has confirmed that discontinuing use of THC can at least partly reverse these effects, according to a new study published online today in *Fertility & Sterility*.

This is one of the first studies demonstrating that discontinuation of chronic THC use can partially restore [negative impacts](#) to male [reproductive health](#) in [nonhuman primates](#).

Delta-9-tetrahydrocannabinol, or THC, is the main psychoactive ingredient in cannabis, which is one of the most commonly used drugs among reproductive age men in the United States and worldwide. Yet there is a significant lack of safety data around THC, and users may be unaware of its potentially harmful impacts on their reproductive health. This study aimed to gain a deeper understanding of the reversibility of these impacts, which can help providers more effectively counsel patients—especially those interested in conceiving—on risks and recommendations for THC use.

"It's so important that we research, understand and educate about the implications of THC on reproductive health, especially as use continues to increase among individuals of reproductive age and more states legalize cannabis," said the study's corresponding author Jamie Lo, M.D., M.C.R., associate professor of obstetrics and gynecology (maternal-fetal medicine), OHSU School of Medicine, and Division of Reproductive & Developmental Sciences at the Oregon National Primate Research Center, or ONPRC.

"These findings are important because we can now more confidently assure patients that by abstaining from THC for at least four months, the

impacts of THC on [male fertility](#) can be partly reversed," Lo said. "This allows for more concrete, informed recommendations for patients who are in the process of family planning or actively trying to conceive."

The research involved a multidisciplinary team including Carol Hanna, Ph.D., director of the Assisted Reproductive Technology Core at ONPRC at OHSU, and researchers from the University of Georgia and Duke University.

In a model using nonhuman primates, researchers administered THC in progressive doses over a period of about seven months, looking specifically at changes to the tissue of the male subjects' reproductive health organs and testes, as well as the quantity and quality of their sperm. Analyses showed that THC exposure caused a significant reduction in size of the testes and impacted male productive hormones, both which negatively impact overall fertility. In addition, THC exposure impacted the sperm, altering the regulation of genes important for nervous system development, including those linked to autism spectrum disorder.

Interestingly, after discontinuing THC exposure over a period of about four months, researchers discovered these adverse effects were partially reversed, indicating that damage from chronic THC use can be partially restored.

Though further research is needed to fully understand the biological mechanism of this reversal process, the study offers a comprehensive initial understanding of the benefit of discontinuing THC use as a part of family planning, and also provides some insight to the minimum duration of abstinence from THC needed to repair damage after chronic use. These findings can also inform providers on how to more effectively counsel patients on cannabis use prior to attempting to conceive.

"We understand that for teens and young adults, family planning might not be top of mind. However, THC even in moderate doses could impact their fertility outcomes, so this is a serious concern for us as [healthcare providers](#)," said Jason C. Hedges, M.D., Ph.D., associate professor of urology in the OHSU School of Medicine, Division of Reproductive & Developmental Sciences at ONPRC, and the study's lead author. "The more we can understand and define this issue, the better information we can provide to patients to be able to optimize their reproductive health."

Looking forward, the team will continue to expand their understanding of the relationship between THC and reproductive health. Ongoing research efforts will focus on the effects of chronic THC use over long periods of time and through various modes, such as vaping, as well as investigating the impacts of THC on fetal and offspring development.

More information: Jason C. Hedges et al, Cessation of chronic delta-9-tetrahydrocannabinol use partially reverses impacts on male fertility and the sperm epigenome in rhesus macaques, *Fertility and Sterility* (2023). [DOI: 10.1016/j.fertnstert.2023.02.034](https://doi.org/10.1016/j.fertnstert.2023.02.034)

Provided by Oregon Health & Science University

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