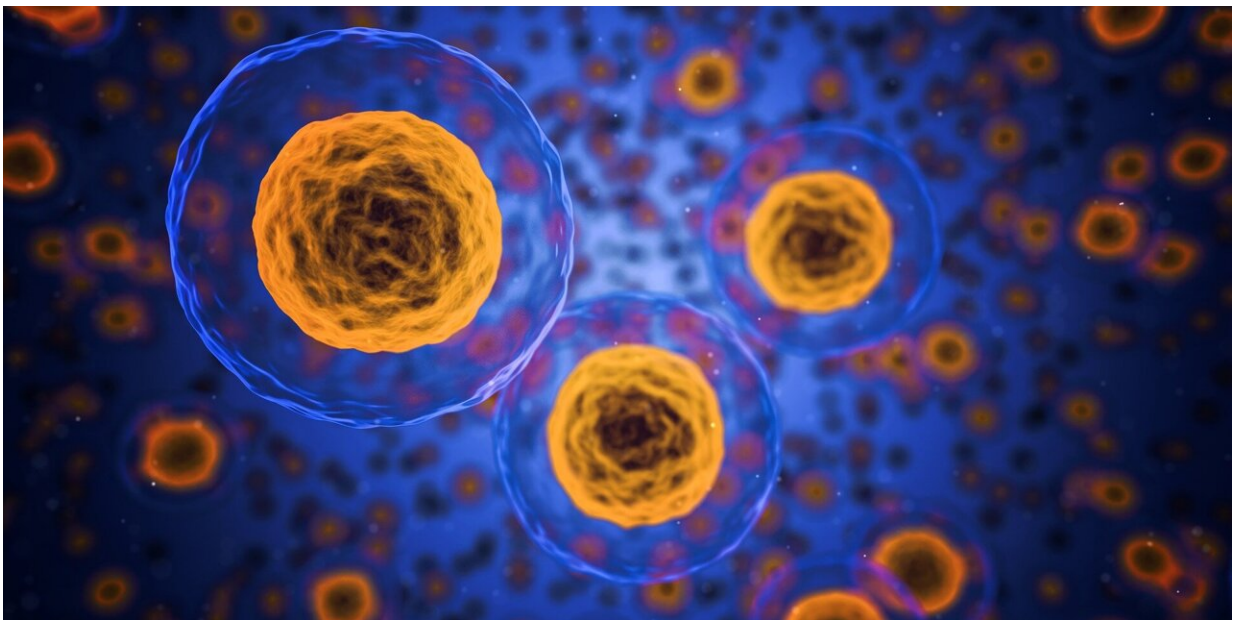


New study using human fibroid cells supports use of green tea compound as treatment for uterine fibroids

July 13 2023



Credit: Pixabay/CC0 Public Domain

In a pre-clinical, proof-of-concept study from Johns Hopkins Medicine, researchers found that epigallocatechin gallate (EGCG), a green tea compound with powerful antioxidant properties, could be promising for both treating and preventing uterine fibroids. Results of the study, first posted online May 25 in *Scientific Reports*, add to growing evidence that EGCG may reduce fibroid cell growth. The study was specifically

designed to identify the biochemical mechanisms responsible for EGCG action in fibroid cells.

The investigators emphasize that their study involves human fibroid cells grown in the laboratory and treated with EGCG extract to explore the possibility of oral EGCG supplementation as a therapy, rather than just drinking cups of green tea as a preventative measure for [uterine](#) fibroids.

"The purpose of this study was to examine how EGCG works to treat and prevent uterine fibroids," says James Segars Jr., M.D., professor of gynecology and obstetrics at the Johns Hopkins University School of Medicine. "There is no standard protocol for uterine fibroid disease management or prevention, no tools to prevent their growth, so finding a safe nonsurgical therapy is important."

Uterine fibroids are the most common benign tumors of the uterus. Made up of [smooth muscle cells](#) and a large matrix of connective tissue, the fibroids range in size from nearly microscopic to bulky masses that can enlarge and distort the uterus.

An estimated 77% of women will develop fibroids in their lifetime, most of them by age 50. Black and Hispanic women develop them at 1.5 to two times the rate of white women.

While many people with uterine fibroids are without symptoms, about 25% experience significant symptoms including heavy uterine bleeding, pelvic pain and infertility. Uterine fibroids are the leading cause of hospitalization hysterectomy in the United States, according to the U.S. Department of Health and Human Services. In addition to complete removal of the uterus, [surgical treatment](#) may include various means of removing fibroid tumors from the uterine wall.

For the new study, researchers used laboratory cultures of [uterine](#)

[fibroids](#) collected from living patients. Because uterine fibroid cells have a large extracellular matrix (the network of macromolecules and minerals in tissues that support, but are not part of, cells) compared to [normal cells](#), researchers designed their experiments to see if treatment of cells with EGCG affects protein expression associated with this matrix. Specifically, they studied fibronectin, a matrix protein; cyclin D1, a protein involved with cell division; and connective tissue growth factor (CTGF) protein.

Cells were dosed with 100 micromoles (a micromole is 1 millionth of a mole) per liter of EGCG in growth media for 24 hours, and then a Western blot—a laboratory technique used to detect a specific protein in a blood or tissue sample—was performed. In this study, researchers looked for levels of cyclin D1 and CTGF proteins in EGCG-treated fibroid cells compared to untreated cell.

They found that EGCG reduced protein levels of fibronectin by 46% to 52%, compared with an untreated control group of fibroid [cells](#). They also found that EGCG disrupted pathways involved in fibroid tumor cell growth, movement, signaling and metabolism, and they saw up to an 86% decrease in CTGF proteins compared with the control group.

"The results from this study show that EGCG targets many signaling pathways involved in fibroid growth, particularly the [extracellular matrix](#)," says study lead author Md Soriful Islam, Ph.D., M.Sc., a postdoctoral fellow at the Johns Hopkins University School of Medicine. "EGCG supplements could be an easily accessible and natural way to relieve symptoms and slow fibroid growth."

These results lend support to the FRIEND (Fibroids and Unexplained Infertility Treatment With Epigallocatechin Gallate; A Natural Compound in Green Tea) study (ClinicalTrials.gov identifier NCT05364008), an ongoing clinical trial of EGCG in women with

fibroids who are seeking pregnancy. While results from this study show promise, researchers caution that more studies need to be done, and consumers should not try to self-dose with green tea supplements. Future research on EGCG will include clinical trials with large and diverse patient groups to determine optimal doses as well as possible side effects of EGCG supplementation.

Other scientists at the Johns Hopkins University School of Medicine who contributed to this research are Maclaine Parish, Joshua Brennan and Briana Winer.

More information: Md Soriful Islam et al, Targeting fibrotic signaling pathways by EGCG as a therapeutic strategy for uterine fibroids, *Scientific Reports* (2023). [DOI: 10.1038/s41598-023-35212-6](https://doi.org/10.1038/s41598-023-35212-6)

Provided by Johns Hopkins University School of Medicine

Citation: New study using human fibroid cells supports use of green tea compound as treatment for uterine fibroids (2023, July 13) retrieved 27 April 2024 from <https://medicalxpress.com/news/2023-07-human-fibroid-cells-green-tea.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.