

# Common cholesterol-fighting drug may prevent hysterectomies in women with uterine fibroids

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Researchers at the University of Texas Medical Branch at Galveston, in collaboration with The University of Texas Health Science Center at Houston (UTHealth), Baylor College of Medicine and the Georgia Regents University, report for the first time that the cholesterol-lowering drug simvastatin inhibits the growth of human uterine fibroid tumors. These new data are published online and scheduled to appear in the January print edition of the *Journal of Biological Chemistry*.

Statins, such as [simvastatin](#), are commonly prescribed to lower [high cholesterol levels](#). Statins work by blocking an early step in cholesterol production.

Beyond these well-known cholesterol-lowering abilities, [statins](#) also combat certain tumors. Statins have previously been shown to have anti-tumor effects on breast, ovarian, prostate, colon, leukemia and lung cancers. The effect of statins on [uterine fibroids](#) was unknown.

"Non-cancerous uterine fibroids are the most common type of tumor in the female reproductive system, accounting for half of the 600,000 hysterectomies done annually in the U.S. Their estimated annual cost is up to \$34 billion in the U.S. alone," said UTMB's Dr. Mostafa Borahay, assistant professor in the department of obstetrics and gynecology and lead author. "Despite this, the exact cause of these tumors is not well understood, as there are several genetic, familial and hormonal

abnormalities linked with their development."

The study investigated the impact of simvastatin on human uterine fibroid cell growth. The researchers revealed that simvastatin impedes the growth of uterine fibroid [tumor cells](#). The researchers also studied the way simvastatin works to suppress these tumors. Simvastatin was shown to inhibit ERK phosphorylation, which is a critical step in the molecular pathway that prompts the growth of new cells. In addition, simvastatin stops the progression of tumor cells that have already begun to grow and induces calcium-dependent cell death mechanisms in fibroid tumor cells.

"Taken together, this study has identified a novel pathway by which simvastatin induces the death of uterine fibroid tumor cells." said Darren Boehning, associate professor in the department of biochemistry and molecular biology at the UTHealth Medical School, adjunct professor in the department of neuroscience and cell biology at UTMB and member of The University of Texas Graduate School of Biomedical Sciences at Houston.

"The findings of this study are particularly significant; statins have been in clinical use for years so their safety profile is well known," said Dr. Borahay. "Having a safe medicine to treat these common tumors has been a goal for women and the medical community for a long time."

"The research team is currently studying the effects of statins in fibroid animal models and adopting nanotechnology to enhance the drug delivery to the tumor," said Chandrasekhar Yallampalli, professor in the department of obstetrics and gynecology at Baylor College of Medicine.

**More information:** *Journal of Biological Chemistry*,  
[www.ncbi.nlm.nih.gov/pubmed/25359773](http://www.ncbi.nlm.nih.gov/pubmed/25359773)

Provided by University of Texas Medical Branch at Galveston

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