# Fructose Is an Unexpected Fuel for the Spread of Cancer

Wistar scientists discovered that fructose suppresses cholesterol function, which helps cancer cells move freely and metastasize.

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How sweet it isn't! Researchers at The Wistar Institute found a surprising link between fructose, a naturally occurring sugar in fruits and a common food additive, and the spread of an aggressive form of ovarian cancer. The study, published in Nature Aging, found that following chemotherapy, surviving cancer cells send signals to neighboring tumor cells to make them become more capable of spreading.

"Some cancer cells that survive chemotherapy aren't dividing anymore, but they're still biologically active," said the study's first author, Aidan Cole, PhD, a postdoctoral fellow in the lab of senior study author Katherine Aird, PhD, in a Wistar Institute press release. "Instead, they continue to release molecules that send signals to nearby cells. Our study is among the first to show that a nutrient—in this case, fructose—can act as one of those signals."

About 21,010 women will be diagnosed with ovarian cancer in the United States, and 12,450 women will die of the malignancy in 2026, according to the American Cancer Society. It is often referred to as a silent killer and is the fifth deadliest cancer among women.

To learn more about ovarian cancer, click #Ovarian Cancer or read Cancer Health's Basics on Ovarian Cancer.

High-grade serous carcinoma is the most common type of ovarian cancer, and it is typically treated with platinum-based chemotherapy, such as cisplatin, a treatment that causes surviving cancer cells to enter a paused state where they stop dividing, known as cellular senescence.

A majority of patients with high-grade serous ovarian cancer respond well to platinum-based chemotherapy, but recurrence and metastasis is common, accounting for about 90% of deaths,

according to the study's authors. Earlier research suggested that the cancer cells that survive treatment and enter cellular senescence play a role in the metastasis of this type of ovarian cancer, but The Wistar Institute study is the first to show that cancer cells in cellular senescence release a complex mix of signaling molecules that influence surrounding cells.

"As far as we know, this is the first time anyone has shown, in a preclinical model rather than just a dish, that it's the molecules these cells release—not the cells themselves—that drive the cancer's spread," said Cole.

For the study, the researchers isolated molecules that surviving cancer cells released and identified fructose as a major culprit in signaling nearby tumor cells to spread.

Further large-scale analytical techniques, including CRISPR-based gene editing, showed that fructose reduces cholesterol levels in cells neighboring the tumor. This is notable because cholesterol acts as a kind of glue between cells, holding them in place. When cholesterol levels drop, cancerous cells may be more apt to separate from the tumor and spread.

The research suggests that changes in diet and nutrition may play a bigger role in fighting cancer and calls into question the role of cholesterol-lowering medications called statins, which are taken by 39 million people in the United States, in cancer spread.

"We haven't tested this effect in patients yet, but it raises questions about combining cholesterol-lowering drugs with chemotherapy, especially since ovarian cancer is most common in postmenopausal women who are often already on statins," said Aird in the Wistar press release.

The research team also found that consumption of high fructose consumption alone, often found in sugary drinks, signaled cancer spread. High fructose corn syrup accounts for about 8% to 20% of the daily caloric intake of some Americans, according to the researchers, indicating a potential avenue for future researched focused on low-fructose diets during cancer treatment.

The researchers plan to investigate how their findings may impact other abdominal cancers.

"We think other cancers that spread within the torso—pancreatic, colon, liver—could behave similarly. We can't call it universal yet, but we think the effects are not just limited to ovarian cancer," said Aird.

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http://beta.docker.cancerhealth.com/article/fructose-unexpected-fuel-spread-cancer