

# Common diabetes drug not effective against early-stage breast cancer, researchers say

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Metformin 500mg tablets. Credit: public domain

A widely used and inexpensive type 2 diabetes drug, once hoped to hold enormous promise in treating breast cancer, does not prevent or stop the spread of the most common forms of the disease, according to new research.

The study, which has yet to be peer-reviewed, was led by Toronto researchers and run by the Canadian Cancer Trials Group under the umbrella of the Breast International Group network. It is the largest study of its kind to date, tracking more than 3,600 [breast cancer](#) patients from across Canada, the U.S., Switzerland and the U.K.

The randomized, double-blind trial enrolled patients who were treated with two pills a day of either placebo or the [diabetes drug metformin](#). Overall, researchers found the addition of [metformin](#) to standard [breast](#) cancer treatments did not improve outcomes in the two most common types of breast cancer, hormone receptor-positive or negative.

"The results tell us that metformin is not effective against the most common types of breast cancer and any off-label use of this drug for the treatment of these common types of breast cancer should be stopped," said Pamela Goodwin, a professor in the department of medicine at the University of Toronto's Temerty Faculty of Medicine, who also is a medical oncologist at Sinai Health and a clinician scientist at the Lunenfeld-Tanenbaum Research Institute.

Goodwin presented the findings this week at the 2021 [San Antonio Breast Cancer Symposium](#).

While metformin was found not to be effective in treating the most common forms of breast cancer, Goodwin said the trial found a potentially important result for individuals with a less common but aggressive form of the disease called HER2-positive breast cancer.

For this subtype of breast cancer, researchers found there was evidence that use of metformin for five years might lead to a reduction in deaths. HER2-positive cancer makes up about 20 percent of all breast cancers.

"Metformin is not beneficial for use in most common breast cancers, but in the cases of HER2 positive breast cancer, our findings suggest it may be beneficial," said Goodwin, who is also a professor in the Institute of Health Policy, Management and Evaluation at the Dalla Lana School of Public Health.

"These results need to be replicated in future research before metformin is used as a breast cancer treatment, however, it could provide an additional treatment option for HER2-positive breast cancer," said Goodwin.

Metformin belongs to a class of drugs called biguanides, which are used to treat high blood sugar or diabetes. Previous observational and [pre-clinical studies](#) suggested metformin may also reduce the risk of development and increase survival of some cancers, including breast cancer.

It was theorized the drug may slow breast cancer growth by improving patient metabolism, notably insulin levels, leading to reduced growth of cancer cells, or that it might impact cancer cells directly.

The results have been submitted for publication. A potential next step will be to prospectively test the impact of metformin in patients with HER2-positive breast [cancer](#) in a randomized clinical trial.

Provided by University of Toronto

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