

Metformin may help the immune system better identify breast cancer cells

April 12 2024



Credit: Unsplash/CC0 Public Domain

Metformin is a widely prescribed drug for managing type 2 diabetes. In recent years, indications of its potential anticancer properties have emerged in research. A study conducted at the University of Helsinki has found that metformin activates the body's immune cells. The effect was particularly observed in what are known as dendritic cells, which are the most effective in helping the immune system identify cancer cells as foreign entities. The research is [published](#) in the *Journal for ImmunoTherapy of Cancer*.

"Our study found that metformin contributed to the metabolism of [dendritic cells](#) so that they became active and enhanced the [immune response](#) against [cancer cells](#)," says Rita Turpin, the first author of the study.

Identifying this effect can help to develop anticancer therapies based on the combined effect of metformin and the mechanisms that activate the immune system.

New weapons for the immune system?

The researchers investigated the effects of metformin in human breast cancer tissue samples, which contained living cancer cells and immune cells that had infiltrated the cancer tissue. The living tissue cultures used in the study, known as patient-derived explant cultures, show what cancer drugs do to cancer cells and, at the same time, what they do to immune cells that have penetrated the cancer tissue.

"Our work demonstrates that we can learn a lot about how cancer drugs influence tumor-resident immune cells by investigating living patient-derived tumor samples," research group leader Juha Klefström says.

According to Klefström, patient-derived explant cultures can be used to identify drugs that kill cancer cells but leave the immune cells unharmed. Or they can be used to find safe and tolerable drugs, such as [metformin](#), which help immune cells to become active and defend against cancer.

Without [breast cancer patients](#) donating tumor samples, such research would not be possible.

"We are truly grateful to all the patients who participated in the study for their invaluable contribution to the promotion of cancer research," Klefström says.

More information: Rita Turpin et al, Respiratory complex I regulates dendritic cell maturation in explant model of human tumor immune microenvironment, *Journal for ImmunoTherapy of Cancer* (2024). [DOI: 10.1136/jitc-2023-008053](#)

Provided by University of Helsinki

Citation: Metformin may help the immune system better identify breast cancer cells (2024, April 12) retrieved 2 May 2024 from <https://medicalxpress.com/news/2024-04-metformin-immune-breast-cancer-cells.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.