

A new weapon in the fight against cancer

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Lithocholic acid, a bile acid produced in the liver, is particularly effective in killing cancer cells.

Where can you find the next important weapon in the fight against cancer? Just do a little navel-gazing. New research from Concordia confirms that a tool for keeping the most common forms of cancer at bay could be in your gut.

In a report published in the *International Journal of Molecular Sciences*, Vladimir Titorenko, a professor of biology at Concordia, and his colleagues show that lithocholic acid, a [bile acid](#) produced in the liver, is particularly effective in killing [cancer cells](#).

For the study, the research team tested thousands of chemicals found in the body with the help of a robot and discovered more than 20 that could

delay the [aging process](#), something inevitably linked to [cancer](#).

Most effective was lithocholic acid. When entering a cancer cell, the acid goes to "energy factories" called mitochondria and then sends molecular signals that lead to the cells' demise.

It not only helped slow the aging process but also had an anti-tumour effect, killing cells of breast, prostate and neuroblastoma cancer—in a petri dish, that is.

Indeed, these results aren't applicable to humans—yet. Titorenko performed the first round of studies using yeast because the ways aging progresses, and the ways it can be delayed by some diets, are similar in both yeast and humans.

"Various cancers are associated with aging—the older you get, the more instances we see of diseases like breast and [prostate cancer](#)—so studying how diet can slow that aging process is important," says Titorenko, who holds a Concordia Research Chair in genomics, cell biology and aging.

In collaboration with Thomas Sanderson from the INRS-Institut Armand-Frappier in Laval, Titorenko is now testing whether the same bile acid can delay the development of prostate cancer in laboratory mice.

If those trials confirm the anti-tumour effect of lithocholic acid, the hope is that it will have a similar effect in human patients, along with the possibility of slowing the human aging process in general.

The study progresses the fundamental knowledge of how to naturally slow down aging of non-cancerous cells as well as how to kill cancer cells.

"We are attempting to understand what kind of molecular processes

within our cells are responsible for cell aging and aging-associated death," Titorenko says.

"Satisfying our curiosity as scientists pursuing new fundamental knowledge fits with our other objective: to find ways that natural chemical products can delay aging and the diseases associated with it."

Provided by Concordia University

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