

Avocados may hold the answer to beating leukemia

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Professor Paul Spagnuolo from the University of Waterloo has discovered a lipid in avocados that combats acute myeloid leukemia by targeting the root of the disease -- leukemia stem cells. Worldwide, there are few drug treatments available to patients that target leukemia stem cells. Credit: Light Imaging/University of Waterloo

Rich, creamy, nutritious and now cancer fighting. New research reveals that molecules derived from avocados could be effective in treating a form of cancer.

Professor Paul Spagnuolo from the University of Waterloo has discovered a lipid in avocados that combats [acute myeloid leukemia](#) (AML) by targeting the root of the disease - [leukemia stem cells](#). Worldwide, there are few drug treatments available to patients that target leukemia stem cells.

AML is a devastating disease and proves fatal within five years for 90 per cent of seniors over age 65. Spagnuolo's new avocado-derived drug could one day significantly increase life expectancy and quality of life for AML patients.

"The stem cell is really the cell that drives the disease," said Professor Spagnuolo, in Waterloo's School of Pharmacy. "The stem cell is largely responsible for the disease developing and it's the reason why so many patients with leukemia relapse. We've performed many rounds of testing to determine how this new drug works at a [molecular level](#) and confirmed that it targets stem cells selectively, leaving healthy cells unharmed."

Spagnuolo's research is published today in *Cancer Research*, a top-ten oncology journal. Through partnership with the Centre for Commercialization of Regenerative Medicine (CCRM) he has also filed a patent application for the use of the compound, named avocatin B, to treat AML.

"It's an exciting time for our lab. With the help of CCRM we are now pursuing commercial partnership that would take avocatin B into clinical trials," said Professor Spagnuolo. "Not only does avocatin B eliminate the source of AML, but its targeted, selective effects make it less toxic to the body, too."

The drug is still years away from becoming approved for use in oncology clinics, but Spagnuolo is already performing experiments to prepare the drug for a Phase I clinical trial. This is the first round of trials where people diagnosed with AML could have access to the drug.

Professor Spagnuolo is among only a handful of researchers worldwide, applying the pharmaceutical industry's rigorous drug discovery research processes to food-derived compounds, called nutraceuticals.

There are multiple potential applications for Avocatin B beyond oncology, and the drug is just one of several promising compounds that Spagnuolo and his team have isolated from a library of nutraceuticals. Most labs would use food or plant extracts, but Spagnuolo prefers the

precision of using nutraceuticals with defined structures.

"Extracts are less refined. The contents of an extract can vary from plant to plant and year to year, depending on lots of factors - on the soil, the location, the amount of sunlight, the rain," said Spagnuolo. "Evaluating a nutraceutical as a potential clinical drug requires in-depth evaluation at the molecular level. This approach provides a clearer understanding of how the nutraceutical works, and it means we can reproduce the effects more accurately and consistently. This is critical to safely translating our lab work into a reliable [drug](#) that could be used in oncology clinics."

Provided by University of Waterloo

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