University of Lethbridge News Release

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Cancer-fighting properties of the buffalo bean being investigated by U of L research team

Biology professor and cancer researcher Dr. Roy Golsteyn may have found the building blocks to a new cancer-fighting drug — and it was growing in the prairie landscape outside his University of Lethbridge lab all along.

Golsteyn says the need for new cancer drugs is constant and, as a scientist who's worked in the pharmaceutical industry, he knows some of the best drugs come from plants.

Dr. Sophie Kernéis-Golsteyn, fellow researcher and married to Roy, was the principal investigator in a study that examined extracts of the buffalo bean (Thermopsis rhombifolia) for anti-cancer effects.

"In the lab, the buffalo bean showed anti-cancer activity right away," says Golsteyn. "Because it was such a great candidate, we were able to identify how we think the buffalo bean will be able to stop cancer cells. We predict it will limit cell growth by inhibiting an enzyme that's needed for some types of cancer cells to grow."

Pharmaceutical companies have identified which types of cancers depend on the enzyme and they've developed synthetic compounds to inhibit it. However, the synthetic compounds aren't performing the way researchers hoped they would.

"Now, here's a natural plant compound that appears to do what an oncologist would like it to do. So, were we lucky? Absolutely, but you have to look first to be lucky and that's why Alberta plants are so interesting — no one has really ever looked," he says.

Golsteyn's lab is currently working with Pierre Fabre Laboratories, a French pharmaceutical company with expertise in natural products chemistry, to do further analysis to identify the chemical compound that gives the buffalo bean its cancer-fighting properties.

“Together, we hope to know precisely what the chemical is and then a decision can be made whether this is valuable medicine or not. Even if it doesn’t work as we hope, then we’ll learn something and if it does work, we’ll see how far it goes. It would be quite nice if our little area in Alberta can give rise to a much-needed cancer drug,” says Golsteyn.

At the request of Pierre Fabre Laboratories, Golsteyn and his team recently harvested 10 kilograms of buffalo bean plants growing on University property under the watchful eye of Dr. John Bain, a biology professor and director of the U of L’s herbarium, to ensure the harvest was done in a sustainable fashion. After the plants have been dried and processed, they’ll be shipped to France for further analysis.

After the French lab purifies compounds from the buffalo bean, Golsteyn’s lab conducts further tests. Depending on the results, both research partners decide whether the compound can be further developed as an anti-cancer drug.

“I want to thank people who donate to charities like the Alberta Cancer Foundation and the University of Lethbridge because those funds have helped us undertake this important research,” says Golsteyn. “It has also given us opportunities to train the next generation of cancer scientists here in Lethbridge.”

The U of L’s unique location may yield other cancer-fighting plants as well. Golsteyn’s team is also looking at another flower that is a member of the sunflower family. Animals won’t eat this flower and First Nations recognized it as traditional medicine. Previous research has shown the plant is toxic to cancer cells and Golsteyn and his team of researchers want to know why. The plant has gone through a battery of tests in the lab and the results show promise. A natural product chemist at the University of British Columbia is conducting detailed analysis of the plant compounds.

“We’re very excited about it,” says Golsteyn, adding a publication on the results should be forthcoming sometime this year.

He also invites community members, including ranchers, to contact him if they know of other interesting plants.

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Contact:
Caroline Zentner, public affairs advisor
403-394-3975 or 403-795-5403 (cell)
caroline.zentner@uleth.ca