

Powdered cranberry combats colon cancer in mice

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Cranberries are often touted as a way to protect against urinary tract infections, but that may be just the beginning. Researchers fed cranberry extracts to mice with colon cancer and found that the tumors diminished in size and number. Identifying the therapeutic molecules in the tart fruit could lead to a better understanding of its anti-cancer potential, they say.

The team will describe their approach in a presentation at the 250th National Meeting & Exposition of the American Chemical Society (ACS).

According to the American Cancer Society, one in 20 Americans will develop colon cancer at some point in his or her lifetime. While progress has been made on the detection and treatment of colon cancer, it remains the second leading cause of cancer-related deaths in the U.S.

Colon cancer may offer a particularly good target for a dietary treatment, says Catherine Neto, Ph.D., simply due to the anatomy of digestion. "Cranberry extracts may also afford protection toward other cancers, but it seems reasonable to look at colon cancer," she says. "Cranberry constituents and metabolites should be bioavailable to the colon as digestion proceeds."

In previous studies, Neto and colleagues at the University of Massachusetts, Dartmouth, found that chemicals derived from cranberry extracts could selectively kill off colon <u>tumor</u> cells in laboratory dishes. "We've identified several compounds in cranberry extracts over the years



that seemed promising, but we've always wanted to look at what happens with the compounds in an animal model of cancer," Neto says. This led to a collaboration with Hang Xiao, Ph.D., of the University of Massachusetts, Amherst. His team had developed a mouse model that mimics the type of colon cancer associated with colitis, an inflammatory bowel condition that affects hundreds of thousands of people in the U.S.

For Neto's part, her team generated three powdered cranberry extracts: a whole fruit powder, an extract containing only the cranberry polyphenols, and one containing only the non-polyphenol components of the fruit. Some evidence suggests that polyphenols have anti-inflammatory properties, and she wanted to assess their contribution to the cranberry's overall impact.

The researchers mixed the cranberry extracts into the meals of <u>mice</u> with <u>colon cancer</u>. She notes that the mice do not seem to mind the tart flavor. After 20 weeks, the mice given the whole cranberry extract had about half the number of tumors as mice that received no cranberry in their chow. The remaining tumors in the cranberry-fed mice were also smaller. Plus, the cranberry extracts seemed to reduce the levels of inflammation markers in the mice.

"Basically, what we found was pretty encouraging. All preparations were effective to some degree, but the whole cranberry extract was the most effective," says Neto. "There may be some synergy between polyphenol and non-polyphenol constituents." Neto's graduate student Sarah Frade will present the work at the ACS meeting.

In the study, the researchers were careful not to give the mice an absurd amount of cranberry. "This is approximately equivalent to a cup a day of cranberries if you were a human instead of a mouse," Neto says. However, she's not sure someone could get the same benefits from juice, which lacks some of the components in the skin of the cranberry.



Currently, Neto is looking deeper into the cranberry to see if she can isolate individual components responsible for its anti-cancer properties. The researchers are also analyzing the metabolites in the mice that consumed the fruit extracts to better understand what happens due to mouse metabolism after the cranberry components are digested.

More information: Inhibition of colon cancer growth and inflammation in cellular and mouse models by cranberry extracts (Vaccinium macrocarpon), the 250th National Meeting & Exposition of the American Chemical Society (ACS).

Provided by American Chemical Society

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