

FROM CROP TO CLINIC: BERRIES SHOW PROMISE IN FIGHT AGAINST CANCER

Cancer is responsible for one in every four deaths in the United States and an astounding \$189.8 billion in overall costs every year. However, as much as one-third of the country's cancer deaths could be prevented, as they are related to physical inactivity and nutrition.

That's where a unique Ohio State University "crop-to-clinic" research project comes into play. The project, which has brought together food, agriculture, and medical experts, is taking a close look at nutrients found in berries to determine if they can stop or slow some of the biological processes that contribute to the development or spread of different types of cancer.

Black and red raspberries, blackberries, strawberries, and elderberries are some of the fruits whose disease-fighting power is being researched, said Steven Schwartz, an OARDC scientist with the Department of Food Science and Technology. Berries contain a number of compounds that have been shown to have anti-carcinogenic properties, including vitamins A, C, and E; selenium; ellagic acid; and anthocyanins (which give berries their color).

"We are using state-of-the-art analytical techniques to help us measure the components present in berries that are absorbed into cells and tissues," Schwartz said. "Once we identify the compounds and their metabolites, we can better understand the molecular mechanisms responsible for the biological activity of berries to inhibit growth of cancer cells."

In laboratory studies, project scientists have found that freeze-dried berries can inhibit the development of oral, esophageal, and colon cancers in rodents. The berries prevented carcinogens from being converted into forms that cause DNA damage and also slowed down the growth of pre-malignant cells, said Gary Stoner, director of the Cancer Chemoprevention Program in Ohio State's Comprehensive Cancer Center.

Such promising results have led to the establishment of human clinical trials. In one of the studies, patients with early-stage colon cancer are fed freeze-dried black raspberries. Other studies are examining the effect of black raspberries in liquid form to treat patients with esophageal cancer. Researchers in another trial are evaluating the berries in a chewy, lozenge form in patients with oral cancers. The team has also developed a raspberry bio-adhesive gel, which will be used to treat people with pre-cancerous lesions in their mouths.



The project has received nearly \$2.4 million in federal funds secured by U.S. Representatives David Hobson and Deborah Pryce of Ohio during the past two years. A portion of this contribution will be used to study the potential protective effect of berries on cancers of the cervix and skin—two major types of cancer afflicting Ohioans.

For more information, log on to the following web sites:

<http://www-fst.ag.ohio-state.edu/cv/Schwartz/schwartz.html>

<http://www.cancer.org>

