

Mammary gland development of blueberry-fed lab animals studied

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U.S. Department of Agriculture (USDA)-funded studies of mammary gland development in laboratory rats fed blueberries or other foods of interest may aid breast cancer research.

In an early study that has paved the way to follow-up experiments, Rosalia C. M. Simmen of the Arkansas Children's Nutrition Center (ACNC) in Little Rock, Ark., has determined that several indicators of rat [mammary gland](#) health were improved in the offspring (pups) of mothers (dams) that had been fed 5 percent [blueberry](#) powder in their rations during pregnancy and during the weeks that they nursed their pups.

The powder comprised 5 percent of the total weight of the feed, according to Simmen, a senior investigator at the center and a professor at the University of Arkansas for Medical Sciences in Little Rock.

The ACNC is a partnership between the USDA's Agricultural Research Service (ARS), Arkansas Children's Hospital in Little Rock, and the university.

The effects noted in the blueberry study have not been shown in humans and have not yet been traced to a particular blueberry compound, Simmen noted.

Her team evaluated several structural indicators of normal mammary gland development in the [lab animals](#), including branching of the gland.

There was significantly more branching in the offspring of the group that consumed the diet containing 5 percent blueberry powder than in offspring of dams fed rations containing 2.5 percent or 10 percent blueberry powder, Simmen reported.

Branching occurs when cells specialize or differentiate. Differentiation is generally preferable to rapid proliferation of undifferentiated cells, which can be a risk factor for [breast cancer](#).

In their analysis of several biochemical indicators, the team found, for instance, that the level of the tumor-suppressing protein PTEN ([phosphatase](#) and tensin homolog deleted in chromosome 10) was significantly higher in mammary tissues of offspring of dams on the 5 percent regimen. That's a plus, because PTEN is thought to help protect against cancer.

Lab animal studies of blueberries' potential role in preventing breast cancer date to 2006. But Simmen's investigation, published in *Nutrition Research* in 2009, provided the first evidence from a lab animal study of the early influence that the mother's blueberry consumption can have on normal, healthy development of the mammary gland in her offspring.

More information: Read more about these experiments in the May/June 2011 issue of *Agricultural Research* magazine:

www.ars.usda.gov/is/AR/2011/may11/fruit0511.htm

Provided by United States Department of Agriculture

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