

Dry beans inhibit development of mammary cancer

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As the world seeks new ways to prevent and treat chronic diseases such as diabetes, heart disease and cancer, more research continues to be conducted on the benefits of certain foods in reducing people's risk of contracting these ailments. Legumes in particular are often cited as being high in antioxidants, which have the property of being able to fight off free radical cells within the body, reducing the risk of cancer and other chronic diseases. A recent study further investigated these connections, as researchers focused on the benefits of one type of legume, dry beans, in reducing the risk of mammary cancer.

To address whether dry bean consumption is associated with a reduction in mammary cancer, scientists at Colorado State University studied the anticancer activity of six market classes of bean including; small red, great northern, navy, black, dark red and white kidney bean in the diet of laboratory animals. They also evaluated whether the level of antioxidants or seed coat pigments in the bean were related to mammary cancer. The study was funded by a grant from the Beans for Health Alliance, and the Colorado Agricultural Experiment Station with assistance from Archer Daniels Midland Co. and Bush Brothers Inc. Results from the study were published in the January-February 2009 issue of the journal *Crop Science*.

Cooked dry bean powder from the six market classes and a control group without beans in the diet were fed to laboratory rats in a standard preclinical model for breast cancer. The dry bean powders were also evaluated for antioxidant capacity, phenolic and flavonoid content; all

factors thought to be associated with anticancer activity. Chemical analysis of the beans revealed that total phenolic and flavonoid content varied widely among market classes and the differences were strongly associated with seed coat color; where colored beans had ten times or greater phenolic and flavonoid content compared to white beans. Antioxidant capacity of the beans also varied widely among dry bean market classes and were highly related to seed coat color, where colored beans had approximately two to three times greater antioxidant capacity than white beans.

Dry bean consumption from every market class reduced cancer incidence (number of animals with one tumor) and tumor number per animal compared to the control group. Cancer incidence was reduced from 95% in the control group to 67% in animals fed beans. The average number of malignant tumors was also reduced from 3.2 in the control group to 1.4 tumors per animal in the group fed bean. No associations were observed between phenolic content, flavonoid content and antioxidant capacity with cancer among the bean market classes. These results clearly suggest that the anticancer activity in dry bean is not associated with seed color or antioxidant capacity.

Research is ongoing at Colorado State University to investigate the mechanisms and molecules that contribute to the anticancer properties of dry bean. Clinical trials are also underway to determine if bean in the diet of humans are associated with biomarkers for cancer incidence.

Reference: View the abstract at
crop.scijournals.org/cgi/content/abstract/49/1/179.

Source: Crop Science Society of America

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