



## **Beans are a rich but overlooked source of antioxidants**

*Mark T. Sampson*

Although researchers haven't come up with a foolproof way to avoid the indelicate side effect of beans, they have found yet another reason why you should eat more of them. In addition to their high fiber and protein content, a new study finds that beans, particularly black ones, are a rich but overlooked source of antioxidants and may provide health benefits similar to some common fruits, including grapes, apples and cranberries.

The study, which researchers say is the first to link bean color to antioxidant activity, is scheduled to appear in the Dec. 31 issue of the *Journal of Agricultural and Food Chemistry*, a peer-reviewed journal of the American Chemical Society, the world's largest scientific society.

The researchers tested the antioxidant activity of flavonoids - plant pigments - found in the skin of 12 common varieties of dry beans. Antioxidants destroy free radicals, which are highly active chemicals whose excess has been linked to heart disease, cancer and aging.

Black beans came out on top, having more antioxidant activity, gram for gram, than other beans, followed by red, brown, yellow and white beans, in that order. In general, darker colored seed coats were associated with higher levels of flavonoids, and therefore higher antioxidant activity, says lead investigator Clifford W. Beninger, Ph.D., a research associate at the University of Guelph in Ontario, Canada.

"Black beans are really loaded with antioxidant compounds. We didn't know they were that potent until now," says Beninger, formerly a researcher with the USDA's Sugarbeet and Bean Research Unit, located at Michigan State University in East Lansing, where he worked on the project under the leadership of co-author George L. Hosfield, Ph.D., a geneticist who recently retired from the USDA.

The study found that one class of compounds in particular, anthocyanins, were the most active antioxidants in the beans. Based on a previously published study of the anthocyanin content of black beans, Beninger found that the levels of anthocyanins per 100 gm serving size of black beans was about 10 times the amount of overall antioxidants in an equivalent serving size of oranges and similar to the amount found in an equivalent serving size of grapes, apples and cranberries.

Beninger acknowledges that some of the healthy antioxidants in beans will be lost in water upon cooking, but says that antioxidant levels will still remain high. Although dry beans were used in this study, frozen or canned beans may have similar antioxidant activity, he adds.

Human studies are still needed to confirm the link between bean antioxidants and health and until then, no one knows how many beans one must eat to obtain maximum health benefits, Beninger notes. But the finding adds antioxidants to a growing list of healthy chemicals found in the popular legume, which is also rich in protein, carbohydrates, folate, calcium and fiber. The researchers hope to use information gleaned from this study to help develop new varieties of beans that pack even more disease-fighting power.

U.S. consumers gobble up an estimated 8 pounds of beans per person each year, with pinto beans and navy beans being the most popular. Red beans also enjoy immense popularity, particularly during colder months, as a staple of chili. Although not as popular in the U.S. as other varieties, black beans are a main ingredient in many international dishes. Funding for this study was provided by the USDA and the Michigan Bean Commission.

**American Chemical Society news release**