Eat soybeans to prevent diseases

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Soybeans contain high levels of several health-beneficial compounds including tocopherols, which have antioxidant properties. These molecules can be used in the development of functional foods, which have specific health-beneficial properties and can be used in the treatment or prevention of diseases. Tocopherols exist in four forms (α, β, γ, and δ) of which γ-tocopherol is found in greatest concentration in soybeans.

However, α-tocopherol has the greatest antioxidant activity, and is the form converted to vitamin E in the human body. Thus, most interest for soybean tocopherols resides in α-tocopherol; however, certain health-properties have also been attributed to other tocopherol forms and interest for these remains. It has been suggested that all tocopherols could play a role in cardiovascular diseases and cancer prevention.

Although few studies have determined soybean tocopherols concentration in a range of genotypes or environments, none has investigated differences among several early-maturing genotypes grown in multiple environments. Such study allows for the determination of the tocopherols concentration range found in soybean, but also to determine how genotypes perform and compare to each other in contrasting environments. Such information is vital for both plant breeders and agricultural producers.

Researchers at McGill University, the Centre de Recherche sur les Grains, and Agriculture and Agri-Food Canada in Quebec have investigated tocopherols concentration and stability, with an emphasis on

α-tocopherol, among early-maturing genotypes grown in multiple environments, and determined the relationship between tocopherols concentration and other important seed characteristics. Their study was funded by research grants from the Ministčre de l'Agriculture, des Pêcheries, et de l'Alimentation du Québec (MAPAQ) and the Natural Sciences and Engineering Research Council of Canada. Results from the study are published in the September-October issue of *Agronomy Journal*. The research was also presented in Beijing, China at the 8th World Soybean Research Conference in August 2009.

Philippe Seguin, who led the study, stated "The large variation observed among genotypes for α-tocopherol, the relatively high stability of genotypes performance across environments, and the lack of negative correlation with other important seed characteristics suggest that selection for high α-tocopherol will be possible. Such characteristics will also help in the development of functional foods, which requires consistency in concentrations of health-beneficial compounds.

Research is ongoing to identify factors affecting soybean tocopherols concentration. Preliminary results suggest that both specific environmental factors and management practices, such as seeding date, could significantly affect concentrations. Getting a better understanding of factors affecting soybean tocopherols concentration will help in the development of a new value-added use for soybean and thus to diversify markets for soybean producers.

More information: The full article is available for no charge for 30 days following the date of this summary. View the abstract at agron.scijournals.org/cgi/cont … /abstract/101/5/1153

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