Researcher focuses on pros, cons of antioxidants from fruits and vegetables

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Nutrition: It's not just the four basic food groups any more. Researcher Dr. Susanne Mertens-Talcott of Texas A&M University is looking into how plant-based phytochemicals, including antioxidants and herbal supplements, can be useful in the promotion of health and prevention of chronic diseases.

This field is still growing. In the U.S. more than $20 billion was spent on dietary supplements in 2005, said Talcott, who is in a joint research and teaching position with the department of nutrition and food science and the department of veterinary physiology and pharmacology.

"Over $7 billion was spent on herbal dietary supplements in 2005." These supplements are plant-based, including grape seed extract, St. John's wort, ginseng and biloba extract, she added.

"In addition to that there is the segment of so-called 'functional foods,' including antioxidant foods – for example, fruit juices and beverages and grain-based products," Talcott said.

The amount spent on these foods each year "has increased drastically; however, we do not know yet how efficacious these different antioxidants really are in the prevention of chronic diseases such as cardiovascular disease and cancer," she said. "We also do not know very much about the mechanisms, which appear to include antioxidant and anti-inflammatory effects of these phytochemicals."

This can be important to health since these reactive oxygen species or 'free radicals' may play a role in some diseases, including Alzheimer's, cancer and atherosclerosis, she said.

"However, other mechanisms, including the prevention of chronic inflammation and interaction with intracellular mechanisms, may be as important in the prevention of chronic diseases," she said. But are they safe? Are they efficient? How much is required? And how much is too much? Talcott is looking for the answers to these questions through her research.

"My overall goal is to find out more about the safety and efficacy of phytochemical dietary supplements," she said. Because these items are already popular with consumers, "we need to follow up with research. We know very little about (dose) recommendations and how safe (they are)."

Phytochemicals, also called secondary plant compounds – including antioxidants – have been defined as chemicals found in plants that have protective or disease-fighting properties (http://phytochemicals.info/).

Pomegranate juice and extract have been the focus of much of her studies. Because these are used in different food products, they are found as ingredients in many different items in supermarkets, Talcott said.

She has also done research on the properties of muscadine grapes and acai, a palm fruit from Brazil, as well as isolated compounds including quercetin and ellagic acid, which are also sold as dietary supplements.

The results of some of her studies were published in the Oct. 13, 2006, edition of the Journal of Agricultural and Food Chemistry. The article was titled "Absorption, Metabolism and Antioxidant Effects of

Pomegranate (Punica granatum L.) Polyphenols after Ingestion of a Standardized Extract in Healthy Human Volunteers."

In addition to her research, Talcott teaches a class on "Special Topics in Phytochemicals of Fruits and Vegetables" for students who are majoring in nutrition and food science. Many of the students are planning to enter medical or pharmacy school, she added.

"It is my goal to give students as much relevant information, which they directly can apply in their desired profession," Talcott said. "Consumers and patients have many questions about herbal dietary supplements, and health care professionals and (members of the) food industry are and will be even more confronted with these questions."

For example, Dr. Joseph M. Betz was a recent guest lecturer in Talcott's class. Betz is the director of the Dietary Supplement Methods and Reference Materials Program Office of Dietary Supplements at the National Institutes of Health in Bethesda, Md. He discussed Food and Drug Administration rules as to the differences between foods and drugs and how each must be labeled. With regard to herbal supplements, this can sometimes be a little tricky, he said.

During the question and answer period at the end of his talk, one of the students asked about a recent study on antioxidants. According to news reports, the study seemed to find that antioxidants – especially vitamins A and E – don't have the beneficial properties they are thought to have and may even increase mortality.

Talcott offered this clarification in regard to the study: "This study statistically analyzed many different clinical studies with vitamins A, E (and) C, beta-carotene and selenium. The performed statistical analysis indicated that vitamin A and E and beta-caraotene may increase mortality in some of the selected studies. The meaning of this study

currently is being discussed."

The study looked at synthetic antioxidants, she said, which are not the same compounds that she is researching.

"Even though we still have a lot to learn about the efficacy, safety and dosing recommendations for herbal supplements and antioxidant foods, we can be confident to recommend a healthy balanced diet according to the food-pyramid rich in fresh fruits and vegetables. I also would not see a problem with the intake of reasonable amounts of standardized high-quality antioxidant dietary supplements," she said

"It is my long-term goal to see science-based intake recommendations developed for those herbal plant compounds which have a proven potential in the promotion of health and prevention of chronic disease."

Source: Texas A&M University