

New Values for Vitamin D in Foods

Vitamin D is essential for maintaining strong bones. And researchers continue to explore additional ways that vitamin D is important to human health. Now the scientific community is focusing attention on the need to assess the dietary intake of vitamin D in the United States.

To determine how much vitamin D folks are getting in their diets, experts must know how much is in foods and beverages. At the ARS Beltsville Human Nutrition Research Center (BHNRC), researchers are working to provide new analytical values for foods believed to be good sources of vitamin D in the U.S. diet.

The vitamin D project team consists of researchers from two groups at BHNRC—the Nutrient Data Laboratory (NDL), headed by Joanne Holden, and the Food Composition and Methods Development Laboratory, headed by James Harnly.

First, the BHNRC team worked with other expert analysts to identify methods for analyzing vitamin D in a variety of food types. Existing vitamin D methods were tested by BHNRC chemist Craig Byrdwell, and improvements were made to procedures.

The BHNRC team next prepared a list of foods to be sampled and analyzed. The list of foods included 20 species of raw fish and many types of foods that may be fortified with vitamin D during manufacturing or processing, such as milk, orange juice, ready-to-eat breakfast cereals, yogurt, and some margarines.

After review and acceptance of data, the resulting vitamin D values will be incorporated into NDL's nutrient databank system. From there, the data will be released through the NDL-managed USDA National Nutrient Database for Standard Reference, or SR22, which will be launched in 2009. These and other nutrient data products can be accessed by going to www.ars.usda.gov/main/site_main.htm?modecode=12-35-45-00.

The new vitamin D values will also be part of the Food and Nutrient Database for Dietary Studies, or FNDDS. The BHNRC's Food Surveys Research Group uses FNDDS to process and estimate people's nutrient intakes based on results from

Assessing the dietary intake of vitamin D

national dietary survey data collections.

Project papers have been published in the *American Journal of Clinical Nutrition* and the *Journal of Food Composition and Analysis*.—By **Rosalie Marion Bliss**, ARS.

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The Poultry Pantry: Plums, Probiotics, Safflower, and Tea

Agricultural Research Service immunologist Hyun Lillehoj has been working with colleagues in the agency and around the world to find ways of strengthening the poultry immune system with dietary supplements.

Boosting bird health helps poultry ward off the effects of avian coccidiosis, a disease estimated to cost producers worldwide more than \$1.2 billion every year. Chickens and other birds develop the disease after becoming infected with the parasite

Eimeria. As drug-resistant strains of the pathogen evolve, producers are anxious to find alternative control methods to current drug protocols.

Lillehoj works at the ARS Animal Parasitic Diseases Laboratory in Beltsville, Maryland. She was one of several researchers to collaborate on the first study that assessed the use of green tea

to improve poultry health.

Lillehoj and Seung Jang, an immunologist at South Korea's Gyeongsang National University College of Veterinary Medicine, found that chickens that consumed ground green tea for 2 weeks before parasitic infection produced significantly fewer fecal *E. maxima* oocysts than the control group. Since these oocysts transmit the parasite from infected birds to healthy birds, this finding could help reduce the spread of infection in poultry houses.

Working with ARS visiting molecular biologist Sung-Hyen Lee and Imagilin Tech LLC, in Frederick, Maryland, Lillehoj evaluated the effects of adding commercial probiotics to poultry diets. They found that chickens eating diets supplemented with *Pediococcus*-based probiotics reduced their oocyte production, upped production of cytokines essential for a strong immune response, and gained weight.

A combination of *Pediococcus* and a yeast-based commercial probiotic product had similar benefits for the chicken immune system. In addition, chickens that consumed a probiotic combination of lactic acid bacterium and yeasts showed a significant antibody response to parasite infection.

Lillehoj, Lee, Jang, and other colleagues from South Korea collaborated with scientists at the Rural Development Administration—South Korea's national agricultural research organization—to assess the use of other phytonutrients. They found that plum powder supplements stimulated spleen immune cell production and killed tumor cells. Infected poultry fed with the supplement also gained weight and shed fewer parasites. Supplements of safflower, which have been used by traditional Chinese practitioners for thousands of years, were found to be similarly beneficial.—By **Ann Perry**, ARS.

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