

Compiling food nutrient information for consumer labeling

May 30 2016, by Helene Ragovin

Next time you're in the supermarket checking out the nutrition facts panel on a product or entering what you ate for lunch into a fitness app, you can thank researchers at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts. They are among the scientists all over the country who figure out what, exactly, is in our food.

"If you go into Whole Foods right now and find the bagged kale, they have the vitamin K content advertised right on the bag—and that came from here," says Sarah Booth, a senior scientist and director of the center's Vitamin K Laboratory. In fact, any nutritional data that includes vitamin K owes that information to Booth's lab, the only one in the country that analyzes vitamin K content for the U.S. Department of Agriculture.

The work is part of the National Food and Nutrient Analysis Program, which systemically samples food from across the country for its nutritional composition. The results are entered into the [USDA food composition database](#), a virtual treasure trove of nutritional information.

While this information is undoubtedly of interest to health-minded consumers, it also serves much broader purposes. "The activities we do have far-reaching impact, for clinical use and public policy, in addition to research activities," says Booth.

It is the statistical foundation for all national and local dietary assessments—for instance, it's the bedrock of the mammoth National

Health and Nutrition Examination Survey (NHANES), which collects data about what Americans are eating. Dietitians use the database in clinical settings to develop diets for their patients; policymakers use it to estimate the nutritional content of school lunches or to help formulate the national nutritional standards.

It's also a vital tool for nutrition researchers, particularly those doing epidemiological work that examines the dietary patterns of large populations.

Jeffrey Blumberg, a senior scientist in the Antioxidants Research Laboratory, is another HNRCRA researcher who contributes data to the USDA. In his work, which focuses on phytochemicals—chemical compounds found in plants—he often conducts nutrient analyses, especially when he's doing a dietary intervention study.

"I need to know exactly what I'm feeding someone—exactly what's in that fruit or vegetable or whole grain," he says. The nutritional composition of plant foods varies based on growing conditions, and for intervention studies, in which Blumberg investigates the effects of specific amounts of nutrients on specific biological markers, a database average is not precise enough.

After Blumberg obtains this data, he will often share it with the USDA. It is only in the last 15 to 20 years that the USDA has included nutrient categories like the carotenoids and flavonoids that Blumberg studies.

So how exactly do scientists ferret out the individual nutrients? Each food works somewhat differently, Booth says, but basically, the foods are broken down through a series of physical processes and chemical interactions.

In the case of a thick, leafy bunch of emerald-colored kale in Booth's

lab, for example, the chain starts with a simple mortar and pestle, and ends, many steps later, with a pencil-thin, pale green line of vitamin K captured in a test tube. Then it's ready to be measured by the scientists—and, later, touted by the marketers on the front of a bag.

Provided by Tufts University

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