# National Food and Nutrient Analysis Program

The National Food and Nutrient Analysis Program (NFNAP) is a dynamic research program that is achieving long-sought improvements in the nutrient values for foods in the National Nutrient Databank System (NDBS) as well as supporting initiatives in development of dietary supplement databases. The project, directed by the Nutrient Data Laboratory (NDL), Agricultural Research Service, USDA, was initiated in 1997 and renewed in 2010 as a collaboration with the NIH National Cancer Institute, the Office of Dietary Supplements, and other supporting NIH Offices and Institutes, the Centers for Disease Control and the Food and Drug Administration. The primary outcome of the program has been a body of nutrient data with unprecedented analytical quality and which is nationally representative of the U.S. food supply. Research activities comprise five linked components, or Specific Aims:

1. **Institute a monitoring program for Key Foods and critical nutrients**
   Key Foods are those frequently consumed foods and ingredients, which contribute, collectively, more than 75% of the intake of any specific nutrient for the U.S. population. Under NFNAP, foods are sampled and analyzed according to a multi-stage probability-proportional-to-size, nationally representative sampling plan, official analytical methods and a rigorous quality control program. To date, over 1,600 generic foods have been sampled; most foods have been analyzed for 50 to 75 nutrients and other dietary components, depending on the food item; some foods have been analyzed multiple times. A focus on nutrients of public health importance (critical nutrients) drives the selection of foods and ingredients. Nutrients identified by the 2010 Dietary Guidelines Advisory Committee as "shortfall" and "excess intake" nutrients and recently-reviewed IOM DRI nutrients are targeted.

   Monitoring programs employ methodology for developing and updating estimates for specific foods, their nutrients and food components as well as sources of a specific nutrient. Highly consumed foods (agricultural commodities as well as complex, processed or formulated foods) which may change rapidly in response to changes in consumer preferences, nutrition and fortification policies, food technology are monitored under NFNAP. Most recently, elevated sodium intakes have been identified as a serious national health concern; therefore, the sodium contents of foods expected to contribute significant amounts (e.g., commercially processed foods) are included in the monitoring efforts for 2010 and beyond. Monitoring will also continue on vitamin D, sugars and *trans* fats as manufacturer's reformulations and changes in fortification continue in the U.S. food supply.

2. **Conduct a comprehensive analysis of selected Key Foods**
   This principal aim will concentrate on those new or reformulated foods, which have been identified as major sources of sodium and other nutrients of public health significance in the U.S. diet. These include a variety of processed and prepared foods, both from retail outlets and fast food and full service restaurants.

3. **Develop databases for high priority foods and important nutrients consumed by U.S. ethnic subpopulations**
   Since Asian Americans are oversampled in the current 2011-12 WWEIA-NHANES, attention is being given to the traditional Asian foods that are reported by this population group. Another important research focus is foods consumed by children and the relationship between these foods and childhood obesity. In prior years, foods consumed by Latinos -- one of the fastest growing minority groups in the U.S. -- as well as traditional foods consumed by American Indian/Alaska Natives have been added to SR.

4. **Develop and expand databases for selected bioactive components**
   Selected bioactive components are of increased interest to the scientific community due to their potential role in diet and health as well as the lack of current compositional data to support intake assessments and nutrition research. Current efforts will focus on the following components:

   Flavonoids Database.—Release 3.0 of the "USDA Database for the Flavonoid Content of Selected Foods" was disseminated on the NDL's web site (www.ars.usda.gov/nutrientdata) in September 2011. A comprehensive review of the international scientific literature yielded 100 new articles which contain acceptable data on flavonoids; data quality was evaluated using USDA's data quality evaluation system. Approximately 115 new foods have been added since the last release. The newly revised database contains values for five subclasses of monomeric flavonoids (flavanols, flavonols, flavones, flavanones and anthocyanidins) for approximately 500 foods from 300 research publications. The individual data points and related information will be provided in Release 3.1 of the database, which will be available later in 2012. The individual glycosides reported in the literature before mathematical conversion and/or summing to estimate the mean aglycone values will also be included. During FY12, with support from the Office of Dietary Supplements, missing values for the aforementioned subclasses of flavonoids as well as isoflavones will be imputed for the SR subset of foods provided for use in the Food and Nutrient Database for Dietary Studies (FNDDS).

5. **Develop a validated database for ingredients in dietary supplements**
   NDL, in collaboration with the Office of Dietary Supplements, has developed a Dietary Supplement Ingredient Database (DSID) to evaluate levels of ingredients in dietary supplement products. Ingredients in nationally representative adult and children's multivitamin/mineral (MVM) products have been chemically analyzed and the results compared to labeled levels. Results predicted by regression for the mean percent differences from label and standard errors have been published in the 2012 DSID-2 release. The DSID-2 release includes data tables, data application tables to NHANES, research summaries and on-line MVM calculators. New studies are planned to provide analytical measurement and statistical evaluation of ingredients in over-the-counter prenatal MVMs, fish oil and plant oil products and botanically-based supplements. The results from the DSID can be used in population studies to more accurately assess ingredient intake from supplements to determine their impact on public health. The DSID is available to the public at http://dietarysupplementdatabase.usda.nih.gov.

**Summary**

Nearly 1,600 items, representing over 88,000 nutrient values, in the USDA National Nutrient Database for Standard Reference (SR; http://www.ars.usda.gov/nutrientdata) have been either added or updated, using NFNAP-generated data. NDL has added and maintained data on individual carotenoids, vitamin K, vitamin D, α-tocopherol and individual fatty acids, including *trans,* and omega-3 fatty acids to SR. Improved estimates of the mean nutrient content of foods and dietary supplements as well as variance indicators will permit more accurate assessment of total nutrient intake by individuals. This will improve the ability to detect etiologic relationships, delineate biologic mechanisms, assess time trends in nutrient intake, and define populations at nutritional risk.

USDA, Agricultural Research Service
Beltsville Human Nutrition Research Center
Nutrient Data Laboratory
10300 Baltimore Ave.
Bldg 005, Rm 107 BARC-West
Beltsville, MD 20705-2350

For food composition information, access:
**www.ars.usda.gov/nutrientdata**

Or contact NDL by
telephone: 301-504-0630
fax: 301-504-0632
e-mail: ndlinfo@ars.usda.gov

March 2012