

USDA Nutrient Data Base Update

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The Human Nutrition Information Service (HNIS) is responsible for the preparation of food composition tables and computerized data bases representing foods consumed in the United States. Agriculture Handbook No. 8 (AH-8) and its corresponding computer data set, the USDA Nutrient Data Base for Standard Reference, represent one of the largest compilations of food composition values in the world--a compilation that must continue to expand and improve to meet the challenges presented by nutrition monitoring and foods research. This paper provides information about nutrient data releases and related activities at HNIS since we reported last year at the Fifteenth National Nutrient Data Bank Conference.

Nutrient Data Bank Bulletin Board

Last year at the Nutrient Data Bank Conference we announced the installation of an electronic bulletin board, and this year we are pleased to announce its success. Its purpose is two-fold. First, it provides a ready source of information about nutrient data releases, upcoming Nutrient Data Bank Conferences, and relevant publications and activities. Second, it serves as a mechanism for making small nutrient data and other computer files available quickly and inexpensively.

These small nutrient data files include updates to the Standard Reference Data Base as they become available. For example, when the revised Agriculture Handbook No. 8 section on beef was released and the Standard Reference Data Base updated last year with those values, the newer values for beef were placed on the bulletin board. Instructions were included for updating the Standard Reference Data Base by replacing the older beef values with the new values.

Agriculture Handbook No. 8

Since the meeting last year, we have published the

1990 Supplement to Agriculture Handbook No. 8. The series of annual supplements began in 1989 to make selected updates to foods within food groups that do not need an overall revision. It contains replacement pages for foods that have had data updates and insertion pages for foods that are being added to the handbook. The 1990 Supplement includes information for 10 different food groups. The 1991 Supplement is in preparation and will include revisions to fresh pork items, reflecting leaner pork now on the market.

The complete section on Snacks and Sweets, AH-8-19, is currently being prepared for printing and is expected off press this fall. It contains approximately 300 items.

The section on Baked Products, AH-8-18, which contains over 400 items, will be sent to food companies who submitted data in July. Companies are asked to review data for their products and to identify those food items that have changed recently. This type of review usually results in a few updates to values even before they are published. The Baked Products section has been one of the most complicated to complete in the entire AH-8 series because of the complexities of the foods and also because of the large number of foods involved.

USDA Nutrient Data Base for Standard Reference

The computerized data set corresponding to the AH-8 series is the USDA Nutrient Data Base for Standard Reference. It includes data for all food groups and is updated approximately once a year to reflect any updates that have been published since the previous release. The current version, release number 9, became public in 1990. It contains the latest published data for each food group, but does not yet include the data from the 1990 Supplement. Release 10 will be available either later this year or early in 1992. It will reflect updates from the 1990 Supple-

ment, the 1991 Supplement, and AH-8-19 on Snacks and Sweets.

We are very pleased to announce that since last year our systems staff have begun development of three computer programs for use with the Standard Reference Nutrient Data Base. The first program, "Standard Reference--Nutrient Analysis Tool (SR-NAT)," is a nutrient analysis program using a menu system for food identification and selection. SR-NAT uses the abbreviated version of the data base for microcomputers as the food and nutrient data base. This abbreviated version contains 21 specific nutrients.

The second program is called "SR-NAT plus." SR-NAT plus uses the full version of the data base for microcomputers, allowing the user to select up to 30 of the 81 nutrients that are present.

The third program, "Leveler," is a utility program for converting the Standard Reference data base into a format that can be used with data base management programs. Eventually, these programs will be placed on our bulletin board.

Survey Nutrient Data Base

The Survey Nutrient Data Base is maintained especially for analysis of nationwide dietary intake survey data and is used not only by USDA but also by the Department of Health and Human Service's National Center for Health Statistics (NCHS) for the National and Hispanic Health and Nutrition Examination Surveys. Different releases of the data base, specific for the time period, are used for the different surveys conducted by HNIS and NCHS. A new release of this data base is awaiting final clearance and should be available shortly.

Many of the values on this data base have been calculated based on recipes for food mixtures. Food mixtures containing fat as an ingredient and fried foods have been calculated in several ways. First, they are calculated using a fat considered common for the specific food item. This set of values is referenced as the default values; they are used when survey respondents cannot designate the type of fat used in food preparation. Those mixtures are also calculated several additional times using different types of fats, and those resulting values are used when respondents can be specific about the fat used in food preparation.

Likewise, items with salt as an ingredient are calculated both with and without the salt. The values containing salt are considered the default values. All sets of values from these various calculations are placed on this data base and are included on the version released to the public through the National Technical Information Service.

A special version of the Survey Nutrient Data Base has been created for the bulletin board. First, it includes only the default values for items containing fat as a component. For example, the data for "green beans, cooked with fat added," represent green beans with margarine added. Second, it includes two sodium values for some items. For items with salt as a component, one sodium value will represent the default value. The second sodium value will represent the recipe calculated by omitting the salt ingredient. For example, the recipe for green beans with fat added includes salt:

Green beans, cooked
Margarine
Salt

The two sodium values are:

Sodium - default = 253 mg/100 g
Sodium - salt omitted from recipe = 36 mg/100 g

Food Intake Analysis System

A food intake analysis system using the Survey Nutrient Data Base has been developed jointly by HNIS and the University of Texas School of Public Health. This system also includes and gives users access to several other data files that form the technical support system for the survey. These include the Manual of Food Codes and Descriptions for Individual Intakes, the Primary Data Set used for basic ingredient data in the recipe calculations, the Primary Data Set description file, a file of nutrient retention factors, and the recipes used by HNIS for calculating food mixtures. Several of these files were enhanced by graduate students assigned to this project to make the files easier to use. For example, the descriptions used in the various files were tested for comparability and made consistent from one file to another. In addition, a new file was created to represent moisture and fat changes during cooking based on data from our recipe file and Agriculture Handbook 102, "Food Yields at Different Stages of Preparation." The moisture and fat changes are accessed and used by the recipe calculation feature of the system. This system is ready and awaiting our final release of the Survey Nutrient Data Base.

Food Composition Data Working Group

Several food composition activities related to nutrition monitoring are under way and will effect future food composition research and data bases. In 1989 the Food Composition Data Working Group was formed by the Interagency Committee on Nutrition Monitor-

ing, since renamed the Interagency Board for Nutrition Monitoring and Related Research. The working group's purpose is to identify food composition data needs for the National Nutrition Monitoring System, to propose options and priorities for improving the utility of food composition data for nutrition monitoring and related research applications, and to facilitate coordination among member agencies in the area of food composition measurement and research. Members of the working group are:

Betty Perloff, Human Nutrition Information Service, Co-Chair
Gary Beecher, Agricultural Research Service, Co-Chair
Ruth Matthews, Human Nutrition Information Service
Ronette Briefel, National Center for Health Statistics
Margaret McDowell, National Center for Health Statistics
Jean Pennington, Food and Drug Administration
John Vanderveen, Food and Drug Administration
Betsy Frasao, Economic Research Service
Susan Pilch, National Institutes of Health

The working group has identified several issues needing attention and specified activities to be undertaken to address those issues:

o *Develop criteria for establishing overall quality of a data base for priority nutrients.*

The working group has identified four criteria to be factored into an evaluation scheme: (1) adequacy of analytical method for various categories of foods at different levels; (2) representativeness of the data base with respect to numbers of samples upon which individual values are based; (3) representativeness of the data base with respect to amount of analytical versus estimated values; and (4) adequacy of data from standpoint of how recently the individual values have been updated or re-evaluated. Further development of these four criteria into a workable systematic model for data base evaluation is in various stages.

o *Using the criteria developed from the previous activity, evaluate quality of food composition data base for priority nutrients.*

o *Establish criteria for developing, documenting, and using a food composition data base for trend analysis.*

This is an important issue because of the need to compare nutrient intake data over several years. As food composition values improve, adjustments may have to be made to nutrient intake data from previous years so that comparisons from one time period to another are comparable. For example, the cholesterol

value for eggs was lowered in 1989 as a result of improved analytical methods. Previously, in 1985, the intake of cholesterol by women 19 to 50 years of age was 280 milligrams per day as reported in the Continuing Survey of Food Intake by Individuals. The newer cholesterol value for eggs would lower that estimate by about 9 percent, and an adjustment should be made when future cholesterol intake estimates are compared with the 1985 estimated intake.

The working group has agreed upon a basic design for a data base for trend analysis that will be a modification of the current Survey Nutrient Data Base. It will contain multiple sets of nutrient values for foods when necessary to reflect food changes that have occurred. Included with each set of values will be a starting and ending date reflecting the effective time period covered by the values, with the earliest beginning time period set at 1985. For example, the iron content of Grape Nuts changed during 1988 from 9.53 mg/100 g to 28.6 mg/100 g. The data base for trend analysis will include both values with appropriate starting and ending dates for each. Values that change because of data improvements will be replaced by the new values. For example, the newer cholesterol values for eggs will replace the older value and be used retroactively. When it becomes necessary to recalculate previous years' nutrient intake estimates, values appropriate for the specific time period can be used.

The system files that are used to create the data base, i.e., the primary data set and recipe file, will be coded to indicate whether changes occur because of changes to foods, such as the iron in the breakfast cereal, or because of improvements in data, such as the cholesterol in eggs.

o *Establish criteria which constitute satisfactory documentation of food composition data base.*

Documentation requirements are being considered currently by the working group, and a special session to receive input from data base users about their documentation needs is being held during this conference. Written comments, are also welcomed and may be sent directly to me at HNIS.

o *Identify foods and other items for which more information is needed, i.e., ethnic foods, recipes, retention and yield factors.*

o *Identify the needed specificity of food item descriptions, e.g., homemade versus commercial foods.*

- o *Identify needed improvements of measurement systems for nutrients in foods, i.e., methods, quality control materials, etc.*
- o *Develop criteria for estimating data (imputing) for foods for which there are no analytical values.*

Summary

In summary, work continues at HNIS on the continual revision of Agriculture Handbook No. 8, the Nutrient Data Base for Standard Reference, and the Survey Nutrient Data Base, as well as research activities to strengthen and expand the data base. Three new utility programs for use with the Nutrient Data Base for Standard Reference are being developed, and food composition activities related to the nutrition monitoring legislation are expanding. We look forward to increasing the utility of our Nutrient Data Bank Bulletin Board and have added several items at the request of users. Comments and suggestions for addition of new items or information are always welcome.