Issues Related to Increasing Brand Names in the Survey Nutrient Data Base

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There is a demand for increasing the amount of brand-specific nutrient data in some food groups. However, we are approaching this task cautiously because we know the limitations of the nutrient data that are currently available. We are concerned that people may assume that if nutrient profiles are listed by brand name, the accuracy of the nutrient data base is automatically increased. That is not necessarily true. Based on our experience with nutrient data, we believe that in many cases a generic profile based on a large number of samples analyzed by well-documented, approved analytical methods using quality control materials is more representative of the food than data of unknown quality for many individual brands.

Currently the food groups on the Survey Nutrient Data Base in which we have nutrient data by brand name are breakfast cereals, candies, and infant formulas. There are two reasons why these products have separate nutrient profiles by brand name. The first is identification. It is practically impossible to describe breakfast cereals and candy bars generically. Flaked cereal made from corn, oats, wheat, and rice describes both Team® and Product 19®. Milk-chocolate-coated, peanut-flavored crisped rice with caramel bar is a WHATCHAMACALLIT® Candy Bar. The second reason is differences in nutrient profiles. Candies are developed to give a unique product, and the brand names identify the unique combination of ingredients and the resulting nutrients. Even in this food group, some items such as milk chocolate do have a generic profile.

In breakfast cereals a range of vitamins and minerals may be added at very different levels. Table 1 shows two cereals containing the same grain ingredients. The protein, fat, and carbohydrate content are similar, but because of fortification there are large differences in the content of vitamins and minerals. These value are presented per 100 grams so the values seem quite high.

In discussions with HNIS, many agencies said that they do want additional brand information in the data base, but it is not always clear why—for identification purposes or for specific nutrient profiles. If they need names for identification, additional food codes can be attached to a generic nutrient profile, as described in the previous paper "Brand Names in USDA Survey Food Coding Data Base" in this proceedings.

The following issues are related to providing specific nutrient profiles connected to brand name food items.

Currently, 28 nutrients plus energy and cholesterol are listed in the Survey Nutrient Data Base (Table 2). Individual fatty acids will be added soon. Values for all of these nutrients must be provided for the data base. If analytical data are not available, values must be calculated.

Our sources of nutrient data are the scientific literature (including the FDA Total Diet Study), trade associations, companies, and our own contracts.

Scientific literature—Journal articles usually contain data for only one or two nutrients that are being studied, such as only total dietary fiber data or different forms of a nutrient such as vitamin C. Rarely are all nutrients that we need for the survey data base reported in an article. Also, articles usually do not report brand names of the samples analyzed.

In the Total Diet Study, the Food and Drug Administration reports minerals in individual foods, but they do not identify brand names. In fact, several brands may be composited before analysis, losing the brand identity. A good example is the iron value for corn flakes. Companies fortify this nutrient at different levels, so when several brands are composited for analysis the resulting iron value is not representative of any particular brand and will vary depending on how the brands are composited.

Trade associations—We have received much valuable nutrient data from trade associations representing non-brand-name products such as produce and meat. We also get nutrient data from trade associations representing brand-name products such as snack foods, but this information is often coded so that a specific company's data can not be identified by name.

Company data—Food specialists contact companies and request that they send us the results of nutrient analyses on their food products. There is absolutely no regulation or requirement that companies must send us any information. It is strictly voluntary. We ask for a detailed description of the product, individual nutrient values or the mean plus standard deviation and number of samples included in the mean, the reference for the method of analysis used for each nutrient, and a description of their quality control procedures. It is time consuming for a company to supply all of the information that we have requested. Many companies are unwilling or simply unable to supply this information, so we get varying degrees of responses.

On occasion a company will send us all of the information that we request. However, rarely do we get analytical data for all of the 28 nutrients plus cholesterol and energy that are in the nutrient data base.

Sometimes companies send us analytical data for some of the nutrients but without indication of variability or the method of analysis.

We have received data from one company that reports values for practically all of the nutrients we need but they state that some of the values are the result of analytical analyses and others are calculated. Unfortunately, they won't identify which values are analytical.

Other companies send us a brochure that lists nutrition labeling information. The nutrient values are per serving, proximates are rounded to whole numbers, vitamins and minerals are given as percentage of U.S.RDA and compliance procedures have been applied to the original analytical data.

And finally, we may get no response to our request at all.

If the information we receive is in the Nutrition Labeling format (and we have no other information), we have to back-calculate the nutrients to grams or milligrams per 100 grams of food. One company gave us their original analytical data and the nutrition labeling profile that they developed from those data. In Table 3 uses that information to illustrate the hazards of back-calculating data from the label. First we would calculate the gram weight of a serving by dividing the weight of the package (340 g) by the number of servings (13) for a weight of 26.2 g per serving . Column 2 shows the fat and magnesium values calculated to the 100 g basis. When we compare the original analytical values in column 3 to the values calculated from the nutrition label we see that

the analyzed fat value is 1.5 g lower than the calculated value and the analyzed magnesium value is 12.2 mg higher.

If we get nutrient data from information that was generated for nutrition labeling, either original analytical data or data back-calculated from the label, the maximum required labeling nutrients that we would currently get are indicated in Table 2 . With the recent changes in nutrition labeling regulations, data for saturated fat, cholesterol, and total dietary fiber should now be available, but data for thiamin, riboflavin, and niacin are no longer required. Data would be lacking for the other nutrients on the survey nutrient data base. Even if we receive data for most of the nutrients needed for the survey data base, if a few values are missing they have to be estimated—they cannot be left blank.

A procedure frequently used is an optimization technique using linear programming to estimate the proportion of each ingredient in the mixture. The information needed is (1) ingredient information from the label, listed in order of predominance, (2) any available nutrient values for the mixture, and (3) a data base of nutrient values of individual food ingredients per 100 grams. This program has been invaluable in helping us estimate complete nutrient profiles for many products, but it does have limitations. If analytical values were not available for some of the nutrients, label values would have to be back-calculated and, as was shown in the chocolate chip cookie example, back-calculating introduces error into the procedure. Also, many unconventional ingredients, such as cellulose gum and polydextrose, are now being used and the lack of complete nutrient profiles for these ingredients presents new problems in calculating proportion of ingredients.

The final way that we get nutrient data is through contracts that we sponsor to analyze nutrients in specified foods. Offerers have to analyze test samples for the types of nutrients that will be required for the contract in order to demonstrate their ability before the contract is awarded. During the contract they are required to use quality control materials, such as Standard Reference Materials for minerals, and analyze monitoring samples (previously characterized foods) that we send them to ensure the validity of the contract results. It costs us approximately $2,000 to analyze proximate components, total dietary fiber, 9 vitamins, 9 minerals, individual fatty acids and their geometric isomers, cholesterol, and vitamin E in one sample of a food under our contracts. If we had to analyze three brands of a frozen lasagna dinner, we would ideally want to analyze more than one sample of each. Analyzing three samples of each of the three brands of the products would cost $18,000 for complete survey nutrient profiles of one type of product.

In Table 4, examples of actual data we receive are illustrated by the fat values for chocolate chip cookies. Values for brands 1 through 4 were received from manufacturers. Only the data for company 1 gives any indication of the variability of fat content for the brand, and the range of values for the product are fairly wide. The last brand cannot be determined because the data came from the literature.

There are other considerations in providing nutrient data by brand name for additional products:

> In the past some companies have given us data with the understanding that their data would be averaged with other data in a generic nutrient profile and would not be identified by brand name.
>
> Because of differences in the way we report some nutrients versus the way they are reported for nutrition labeling, some companies do not want their product identified in our data base with one value and a different value appearing on their label. An example is calorie content. We use Atwater factors, but in addition to the use of Atwater factors, several other procedures for calculating calories are allowed for nutrition labeling.

When products are listed by brand name, there is additional pressure to keep the nutrient profile current; however, and frequent product reformulations resulting from changes in the cost of ingredients makes this a time consuming process.

"Food Product Development" reports that in 1991, 12,196 new products were introduced. The groups with the largest number of new products were bakery products, with 1,631 introductions; beverages, with 1,367 new introductions; and dairy products, with 1,111 introductions. It would be a formidable task to do specific nutrient profiles for all brands within these groups.

We are talking to representatives of various food companies, about sending us nutrient data by brand name. Discussions are in the initial phase. Many of the issues presented in this talk, such as a complete description of analytical methodology, have been brought up for discussion. It is important that expectations be clarified on both sides. USDA needs to know the types and amounts of nutrient data to expect, and industry needs to know the kind of data that is needed and how it will be used.

We are optimistic that we will be able to increase brand-specific nutrient data in the survey nutrient data base for certain food groups, but we realize that not all data for all nutrients will be analytical and the size and complexity of the data base will greatly increase.

NUTRIENT PROFILES

per 100 g

	PRODUCT 19®	TEAM® FLAKES
Protein (g)	9.6	8.1
Fat (g)	1.2	2.2
Carbohydrate (g)	84.7	84.7
Iron (mg)	63.49	28.57
Sodium (mg)	1,129	635
Zinc (mg)	52.91	1.06
Ascorbic acid (mg)	211.6	52.9
Niacin (mg)	70.55	17.64
Vitamin B_6 (mg)	7.06	1.76

Table 1

BACK-CALCULATING NUTRIENT VALUES FROM A NUTRITION LABEL

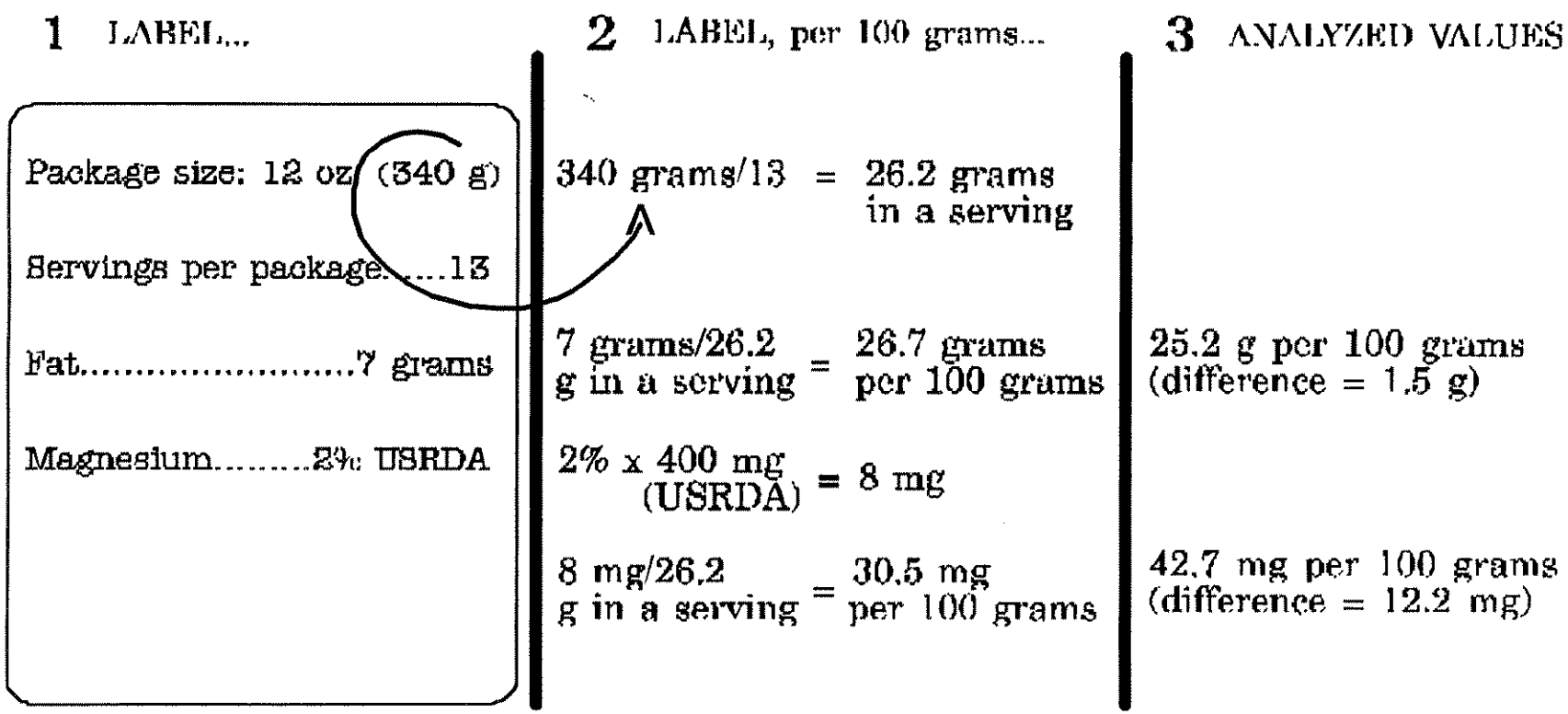

Table 2

NUTRIENTS REQUIRED FOR NUTRIENT DATA BASE

(● = Currently Included on Nutrition Label)

- ● Energy
  Moisture
- ● Protein
- ● Total fat
- ● Saturated fat*
  Monounsaturated fat
  Polyunsaturated fat
- ● Cholesterol
- ● Carbohydrate
- ● Total dietary fiber
  Alcohol

- ● Vitamin C
  Thiamin
  Riboflavin
  Niacin
  Vitamin B_6
  Folate
  Vitamin B_{12}
- ● Vitamin A (IU)
  Vitamin A (RE)
  Carotene (RE)
  Vitamin E

- ● Calcium
- ● Iron
  Magnesium
  Phosphorus
  Potassium
- ● Sodium
  Zinc
  Copper

* Individual fatty acids will be added.

Table 3

FAT IN CHOCOLATE CHIP COOKIES

Grams per 100 grams

	Mean	*n*	*Low*	*High*	*S.D.*
BRAND 1	22.6	67	18.3	24.0	0.8
BRAND 2	25.2	2	25.1	25.3	--
BRAND 3	21.3	1	--	--	--
BRAND 4	24.7	1	--	--	--
BRAND ?? *(literature)*	21.9	1	--	--	--

Table 4