



## **Beef Checkoff-Funded Nutrient Database Improvement Research Frequently Asked Questions**

### **1. Who is USDA NDL?**

USDA NDL (Nutrient Data Laboratory) is responsible for the USDA National Nutrient Database for Standard Reference (SR). The SR is the premier nutrient database in the US and is the foundation of most nutrition databases in the US. It is used in the development of food policy, research and monitoring nutrient intake of Americans. Specifically, the nutrient data in SR is often utilized with nationwide food consumption surveys and the results are used to determine program policies and regulatory decisions within the USDA, EPA, FDA, HHS and other government agencies. The impact goes even beyond the United States with many international databases, including those of Canada and Mexico, adopting the nutrient information in SR as the core of their databases. The USDA Food Safety and Information Service (FSIS), the regulatory arm for food safety and labeling policies for meats, recognizes SR as the authoritative source of nutrient content of meat. SR data is also used by research scientists, dietitians, and the public to better plan their diets. With this broad impact, currency of the nutrient composition of beef is of the utmost importance.

### **2. Why is collecting data for USDA NDL so complex?**

There are many factors to consider in order to develop a sampling plan that will meet USDA NDL standards. First, NDL requires that the sample population of beef carcasses is the best possible representation of all beef cattle in the U.S. Therefore, beef product is selected to represent the proper proportions of quality grade, yield grade, gender, breed and demographic location in the U.S. Furthermore, utilizing the appropriate number of animals to represent all of these factors is critical in order to produce statistically sound data. As a result, the number of beef samples required to produce accurate and representative nutrition composition data is large. Each sample undergoes tedious dissections and processing in preparation for nutrient analysis. Therefore, a tremendous amount of labor and expertise is required to handle the product. Additionally, nutrient analyses are quite expensive.

### **3. Can this process be simplified and expedited by collecting individual beef samples and sending to a private lab to generate data?**

Nutrient data must meet the highest level of research standards to be included in the USDA Nutrient Database for Standard Reference (SR). The USDA National Food and Nutrient Program (NFNAP) establishes study procedures for obtaining, processing, and disseminating data on food composition and nutrient content of foods commonly consumed in the US. The cornerstones for this program reside with sampling and data quality. Sampling strategies are statistically based and provide for selection of products that represent the product mix present in the market place. For beef cuts, this means incorporation of such factors as quality grade, yield grade, marbling scores, gender, and genetics. A sampling limited to a few sources would not likely represent the product mix available to the US public. Preparation of the product

requires standardized protocols for such functions as dissection, weighing, cooking, homogenization, compositing, storage, and shipping. NDL assists cooperating laboratories in establishing those protocols for processing. NDL also establishes requirements for data quality. During the analytical phase, NDL evaluates the various laboratories wishing to conduct these analyses for use of appropriate methodology, and for precision and accuracy through the use of blind duplicates and certified reference materials. Based on the performance of these laboratories for each nutrient of interest, a laboratory may be validated to perform said analyses. In general, multiple laboratories need to be validated in order to have a full complement of nutrients assayed. Once data is received from validated laboratories, the quality control team evaluates both the results from the control materials and from the samples. Data must fall within specified ranges or be repeated. NDL provides continuous monitoring of data and procedures.

NDL also tracks changes in products and the market place to maintain currency. Data present in SR are viewed by FSIS as authoritative for use in labeling. As part of the NFNAP process, additional aliquots of samples are archived for possible future use. NDL monitors the state of nutrient research in order to identify emerging nutrients of interest to public health. The archived samples are used to analyze for these nutrients thus expanding the scope of the nutrient content data available well after the original studies have ended.

#### **4. What are the requirements for laboratories producing nutrient data for the SR?**

NDL evaluates laboratories for use of appropriate methodology and for precision and accuracy through the use of blind duplicates and certified reference materials. Based on the performance of the laboratories for each nutrient of interest, a laboratory may be validated to perform analyses. In general, multiple laboratories need to be validated in order to have a full complement of nutrients assayed. Once data is received from validated laboratories, the quality control team evaluates both the results from the control materials and from the samples. Data must fall within specified ranges or be repeated. NDL provides continuous monitoring of data and procedures.

#### **5. What data will this study produce?**

This study has been designed to obtain specific beef nutrient data along with the nutrient retention and cooking yields. The following is a complete list of nutrients that will be analyzed.

- Total fat, moisture, protein and ash
- Complete fatty acid profile (including long chain fatty acids, omega 3 and 6)
- CLA
- Total Cholesterol
- ICP Minerals
- Selenium
- B-Vitamins
- Amino Acids
- Retinol
- Choline
- Vitamin E
- Vitamin D

## **6. What cuts are currently being analyzed to update or place into the SR?**

Nutrient data will be collected for beef retail cuts from each primal of the carcass. As of September 2008 the following chuck cuts had been collected and sample preparation for nutrient analysis is ongoing. The next phase of the study will include collection and analysis of the identified cuts from the Beef Rib and Plate.

- Beef, Brisket, Flat Half, 0" Raw
- Beef, Chuck, Shoulder Roast, 0", Raw and Cooked
- Beef, Chuck, Shoulder Steak, 0", Cooked
- Beef, Chuck, Beef for Stew, 0", Raw and Cooked
- Denver Cut (Serratus Ventralis Steak), 0", Raw and Cooked
- Boneless Country Style Beef Ribs, Raw and Cooked
- America's Beef Roast, Raw and Cooked
- Chuck Eye Steaks, Raw and Cooked
- Beef, Chuck, Under Blade Steak, 0", Raw and Cooked
- Beef, Chuck, Top Blade Steak, Boneless, 0", Raw and Cooked
- Beef, Chuck, Mock Tender Steak, 0", Raw and Cooked
- Beef, Chuck, Short Ribs, 0", Raw and Cooked

## **7. How were the cuts selected to be analyzed?**

The following factors were used to identify priority beef cuts for analysis:

- Beef cuts that are included on the FSIS mandatory labeling list were given elevated priority, especially when data for a listed cut is not available or does not represent what is currently sold at retail.
- Cuts that represent the greatest percentage of beef retail sales were given priority.
- A beef cut was determined to be high priority when the current data in the database represented a greater fat trim level (ie: ¼" data in SR, but Market Basket Survey showed 0" or 1/8" is actually marketed).
- Any new Value Added Beef Cut created by Beef Checkoff-funded research was given high priority because, in many cases, no data exist for these cuts.
- As the industry has developed new cutting and marketing technologies to increase the value of beef, some beef cuts are not currently represented in the database. These cuts were given priority status.

## **8. What benefits will the industry see from this data?**

This research will allow the most accurate and up-to-date beef nutrient data to be available in the SR, which will have many positive implications for the Beef Industry. Data in the current SR shows a 20% decrease in beef cut fat content since the early 80's. Because the fat content of beef has significantly decrease over the past 30 years due to closer trim and reduced internal fat of the carcass, some data in the current SR does not accurately represent the beef cuts that are available in today's market place. The completion of this project will generate data need to more accurately represent Today's lean beef. Making this new data available to the nutrition

community will significantly improve the perceived healthfulness of beef and will benefit the industry in the following areas:

- New and updated data to be used on beef nutrient labels in the meat case, which will provide opportunity for on-pack nutrient claims.
- The most accurate nutrient data for beef cuts that are most often marketed in the retail case.
- New data will be linked from SR to other nutrient databases used in nutrition monitoring and in nutrition research studies, to allow Beef's best nutrition story to be told.

## 9. SR 21 Statistics

- SR 21, released in September 2008, contains nutrient data on 7,412 different food items
- There are approximately 636 beef cuts and beef products in SR21.
  - Within each beef cut there are variations based on different aspects such as grade level, trim size, components (meaning lean only or lean and fat), raw or cooked and within cooked cuts there can be different cooking methods. For example: Beef, tenderloin
    - i. Beef, tenderloin, 0" or 1/8"
    - ii. Beef, tenderloin, choice, select or all grades
    - iii. Beef, tenderloin, separable lean only or separable lean and fat
      - 1. Separable lean meaning the meat only minus refuse such as bone, fat, connective tissue, etc. Separable lean and fat is the cut put back together; the meat from the cut with the fat added back in.
    - iv. Beef, tenderloin raw
    - v. Beef, tenderloin, cooked, broiled or roasted
- So after all of these variations are applied, the number of beef items for this cut can increase greatly.\*
  - Beef, tenderloin, separable lean only, trimmed to 0" fat, choice, raw
  - Beef, tenderloin, separable lean only, trimmed to 0" fat, select, raw
  - Beef, tenderloin, separable lean only, trimmed to 0" fat, all grades, raw
  - Beef, tenderloin, separable lean only, trimmed to 1/8" fat, choice, raw
  - Beef, tenderloin, separable lean only, trimmed to 1/8" fat, select, raw
  - Beef, tenderloin, separable lean only, trimmed to 1/8" fat, all grades, raw
  - Beef, tenderloin, separable lean and fat, trimmed to 0" fat, choice, raw
  - Beef, tenderloin, separable lean and fat, trimmed to 0" fat, select, raw
  - Beef, tenderloin, separable lean and fat, trimmed to 0" fat, all grades, raw
  - Beef, tenderloin, separable lean and fat, trimmed to 1/8" fat, choice, raw
  - Beef, tenderloin, separable lean and fat, trimmed to 1/8" fat, select, raw
  - Beef, tenderloin, separable lean and fat, trimmed to 1/8" fat, all grades, raw

\* The same repeated with cooked and each cooking method available.

- There are more than 130 nutrients in the database. Approximately 67 nutrients are required to be listed for the foods in the SR. This includes two nutrients that will be added soon, Vitamin D (IU) and Vitamin D (mcg).

## 10. What is the projected timeline for the future updates of beef nutrient data?

| Time*          | Event                                  |
|----------------|--|
| December, 2009 | Phase IB- chuck data complete          |
| December, 2010 | Phase II – Rib and Plate data complete |
| 2011           | Phase I data in SR                     |
| December 2011  | Phase III data complete                |
| 2012           | Phase II data in SR                    |
| December 2012  | Phase IV data complete                 |
| 2013           | Phase III data in SR                   |
| 2014           | Phase IV data in SR                    |

\*All times are estimates and depend on approval of funding along with other limiting factors (e.g., data completed right before a new SR release will not be published in SR until the next year due to the validations and approvals required before publication)

### Abbreviation List

| Acronym | Definition   |
|---------|--|
| SR      | USDA National Nutrient Database for Standard Reference |
| NFNAP   | USDA National Food and Nutrient Program                |
| NDL     | USDA's Nutrient Data Laboratory                        |
| FSIS    | Food Safety and Inspection Service                     |

### Resource List

| Site Descriptor        | Site Address  |
|------------------------|---|
| USDA NDL Site          | <a href="http://www.ars.usda.gov/main/site_main.htm?modecode=12-35-45-00">http://www.ars.usda.gov/main/site_main.htm?modecode=12-35-45-00</a>               |
| Ground Beef Calculator | <a href="http://www.nal.usda.gov/fnic/foodcomp/cgi-bin/measure.pl?MSRE_NO=23999">http://www.nal.usda.gov/fnic/foodcomp/cgi-bin/measure.pl?MSRE_NO=23999</a> |
| SR 21 Search           | <a href="http://www.nal.usda.gov/fnic/foodcomp/search/">http://www.nal.usda.gov/fnic/foodcomp/search/</a>   |
| Beef Research          | <a href="http://www.beefresearch.org/">http://www.beefresearch.org/</a>   |

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| Ground Beef Calculator | <a href="http://www.nal.usda.gov/fnic/foodcomp/cgi-bin/measure.pl?MSRE_NO=23999">http://www.nal.usda.gov/fnic/foodcomp/cgi-bin/measure.pl?MSRE_NO=23999</a> |
| SR 21 Search           | <a href="http://www.nal.usda.gov/fnic/foodcomp/search/">http://www.nal.usda.gov/fnic/foodcomp/search/</a>   |
| Beef Research          | <a href="http://www.beefresearch.org/">http://www.beefresearch.org/</a>   |