USDA's Updated Approach to Food Composition Data Systems

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BHNRC/MAFCL
Overview

- Introduction to FoodData Central (FDC)
- Explanation of FDC datatypes
- Overview of FDC application
- Branded Foods Presentation
- Future of FDC
WHY IS CHANGE NEEDED?

- Food supply has exploded
- Need for understanding of interrelationships between dietary intake and health is greater than ever
- Rapid evolution of technology & communication
- Demand for transparency and easy accessibility to data has skyrocketed
- Food systems are global and impact food security, the environment, and public health
FoodData Central: USDA’s Response to Pressing Need

- Centralizing Food Composition Data
- Research focus-linking production of food to products to health outcomes
- Addresses variability in food components (inherent, environmental, processing, preparation)
FoodData Central (Launched in April 2019)

• FoodData Central is an integrated, research-focused data system that provides expanded data on nutrients and other foods components as well as links to sources of related agricultural, food, dietary supplement, and other information.

• FoodData Central can be used by, and has benefits for, a variety of users, including researchers, policy makers, academicians and educators, nutrition and health professionals, product developers, and others.
Pre-FDC Datasets

Standard Reference
• Historic comprehensive list of values for food components, including nutrients derived from analyses, imputations, and the published literature.

Food and Nutrient Database for Dietary Studies
• Data on the nutrient and food component values and weights for foods and beverages reported in the What We Eat in America dietary survey component of the National Health and Nutrition Examination Survey.

Branded Food Products Database (Branded Foods)
• Data from a public-private partnership that provides values for nutrients in branded and private label foods that appear on the product label.
• Information in Branded Foods is received from food industry data providers.
5 Datatypes

- Foundation Foods
- Experimental Foods
- Standard Reference (SR) Legacy >30 years at USDA
- Food & Nutrient Database for Dietary Studies (FNDDS) NHANES survey “What We Eat in America”
- Global Branded Foods Database (BFPD) label data provided by food industry as PPP
Individualized Sampling

- Individual samples
- Capture more extensive metadata on individual samples
- Capture dates of sample acquisition and analysis
- Because of branded data, focus on single commodity foods and single commodity-derived foods

Foundation Foods
Foundation Foods

- Values derived from analyses for food components, including nutrients

- Extensive underlying metadata, such as: the number of samples, sampling location, date of collection, analytical approaches used, and agricultural information such as genotype and production practices.

- Foundation Foods data can provide valuable insights into the many factors that influence variability in nutrient and food component profiles.
Research Focused

• Move beyond reference foods
• Add focus on food composition research
• Understand the Food System
  • Agricultural impact on food composition
  • Food composition impact on health

Experimental Foods
Experimental Foods

• **Foods produced, acquired, or studied under unique conditions**, such as alternative management systems, experimental genotypes, or research/analytical protocols.

• The data in Experimental Foods may include (or link to) variables such as genetics, environmental inputs and outputs, supply chains, economic considerations, and nutrition research.

• These data will allow users to examine a range of factors used that may affect the profiles of food components, including nutrients and resulting dietary intakes as well as the sustainability of agricultural and dietary food systems.
FoodData Central is an integrated data system that provides expanded nutrient profile data and links to related agricultural and experimental research.

FoodData Central is managed by the Agricultural Research Service and hosted by the National Agricultural...
FDC API/Download

Download Data

Get an API Key

API Guide
Foundation Foods

- Data for food components including nutrients derived from analyses, and metadata for a range of single foods and ingredients providing insights into variability. Foundation Foods highlight information on samples and acquisition details.

2 results

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# FDC Foundation Food Sources

## Beans, Dry, Pinto, 805

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FoodData Central Statistics

**Data**
- 140 Foundation Foods
- 1,982 Foundation Food Samples
- 11 Experimental Foods
- 368,686 Branded Foods
- 7,083 Survey Foods
- 7,793 SR Foods

> 6 Million Nutrient Values

**Usage**
- #1 API usage for USDA dataset on data.gov
- Average of 3 million calls to our API every month
- Over 3 million unique users to the FDC Website
- 43% of our users are outside the United States

From FDC Launch, April 2019
Global Branded Foods Partnership
An Updated Technology Approach

Graph Database
Knowledge Systems
Ontology Development
Graph Database

- What is Graph?
- It is NOT tabular:

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Graph Database

• Nodes and Edges:
Graph Database

- Flexibility of data entry
- Splitting data by multiple domains (location, growing conditions, processing, genotype, etc.)
- AI to help us understand our data
- Visualization
- Linking of ontology systems
Knowledge Systems

• Lexicon
• Dictionary
• Taxonomy
• Thesaurus
• Ontology
Ontology

- Adding knowledge layer to information
- Classification and categorization of food and components
- Descriptive relationships between defined terms
- Help in understanding our data
- Be integrated into a search for more intelligent search results
- Promote linkages with other datasets and ontologies
Linkages

• Data Organization Linkages
  • Between Foundation and Experimental
  • Between FDC foods and external databases

• Data Knowledge Linkages
  • Between FDC and the ontology
  • Inside ontology and outside ontologies
FoodData Central, Future Releases

- Major software and data updates, twice a year in April and October
- Expansion of Experimental Foods
- Integration of ontology and mappings to various controlled vocabulary systems
- New website and API functionality
- New food data types (Animal Feed)
- Higher resolution of component data (Carbohydrate fractions, stronger fiber analysis, full amino acid and lipid profiles, phytochemical components)
- Branded Food Global (New Zealand, Canada, Costa Rica)
Questions?

FoodData Central
https://fdc.nal.usda.gov

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