31ˢᵗ National Nutrient Databank Conference
Turning Concepts into Reality

April 27, 2007

Washington Convention Center
Washington, D.C.

Program and Abstracts Booklet

31st National Nutrient Databank Conference
"Turning Concepts into Reality"

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PROGRAM AND ABSTRACTS BOOKLET
(Revised May 11, 2007)

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Welcome from the Program Co-Chairs

WELCOME TO WASHINGTON, DC AND THE 31ST NATIONAL NUTRIENT DATABANK CONFERENCE:

We offer our thanks to the presenters for contributing and sharing their expertise and research results with the participants of "*Turning Concepts into Reality*". The presenters come from the United States, Canada, Denmark, France, Portugal, and Nigeria. We are especially thankful to the support of our cosponsors – Dr. Suzanne Murphy, Chair of Nutrient Databank Steering Committee; Alanna Moshfegh, Research Leader, Food Surveys Research Group; Joanne Holden, Research Leader, Nutrient Data Laboratory; Dr. Susan Hall, Chair of Department of Health, Nutrition and Exercise Sciences at the University of Delaware; and Dr. Phyllis Stumbo and Dr. Catherine Champagne for moderating sessions. We appreciate the time and support of all the members of the Program Planning Committee and extend a special note of thanks to Jean Anderson for her secretarial support.

Lois Steinfeldt, Marie Fanelli Kuczmarski and David Haytowitz
NNDC Co-Chairs

Conference Program

8:00 AM   Registration

8:30 AM   Welcome
Allison Yates, PhD, RD
Director, Beltsville Human Nutrition Research Center, USDA
Marie Kuczmarski, PhD, RD
Professor of Nutrition, University of Delaware
Suzanne Murphy, PhD, RD
Chair, Steering Committee
Phyllis Stumbo, **PhD, RD**
Session Moderator

9:00 AM   Nutrigenomics: A Promising Future Reality Traversing a Present
Database Quagmire
Jose M. Ordovas, PhD
Senior Scientist and Director, Nutrition and Genomics Laboratory
Jean Mayer -USDA Human Nutrition Research Center on Aging, Tufts
University

Break

10:30 AM   Opportunities and Challenges for Evaluating the Health
Significance of Functional Foods and Their Components
John Milner, PhD
Chief, Nutrition Science Research Group, NCI, NIH

11:30 –
 1:00 PM   **Lunch and Poster Viewing**

1:00 –
 3:00 PM   **International and Special Population Databases**
Session Moderator: Joanne Holden

Quality Systems as a Tool in Validation of Nutrient Data: The
EuroFIR Approach
Isabel Castanheira [1], Susanne Westenbrink[2], Marine Oseredczuk[3], Paul
Hulshof [4], Peter Hollman [4], Jayne Ireland [3], Anders Møller[5], Simonetta
Salvini[6], Hedwig Beernaert[7] , Maria Antónia Calhau[1], Paul Finglas[8]
[1]National Institute for Health Dr Ricardo Jorge (INSA), Portugal; [2]TNO
Quality of Life/NEVO Foundation, the Netherlands; [3]French Food Safety
Agency (AFSSA), France; [4]Wageningen University (WU), The Netherlands;
[5]Danish Food Information (DFI), Denmark; [6]CSPO-Scientific Institute of
Tuscany, Italy; [7]Scientific Institute of Public Health,(IPH) Belgium; [8]Institute
of Food Research (IFR), United Kingdom

The EUROFIR Project - Linking European Food Composition Databases Using the Langual Food Description Thesaurus
  Anders Møller, Danish Food Information, Denmark, Jayne Ireland, AFSSA/DERNS/CIQUAL, France

Upgrading Nigeria's Food Composition Database With Under-Utilised Nigerian Traditional Foods and Recipes
  Isaac Akinyele (BSc, MSc, PhD), Dean, Faculty of Public Health and Professor of Human Nutrition, University of Ibadan, Nigeria

Using the FNDDS to Analyze the Nutrient Content of School Meals
  Mary Kay Crepinsek, MS, RD[1], Patricia McKinney, MS, RD[2], Elizabeth Condon, MS, RD[1], Anne Gordon, PhD[1]
  [1]Mathematica Policy Research,Inc.; [2]Office of Analysis, Nutrition, and Evaluation, Food and Nutrition Service, USDA

Enhancements of the International Life Sciences Institute Crop Composition Database
  William P. Ridley, Ph.D.[1], Raymond Shillito, Ph.D.[2], Marci Levine, Ph.D.[3],
  [1]Monsanto Company, [2]Bayer CropScience, [3]International Life Science Institute (ILSI)

Break

3:15 –
4:45 PM   **New Data for Foods and Food Components**
          Session Moderator: Catherine Champagne

Examining Phytosterols in Nuts and Seeds for the USDA National Nutrient Database for Standard Reference
  Robin Thomas, MS, RD and Susan Gebhardt, MS, USDA-ARS. Beltsville Human Nutrition Research Center, Nutrient Data Laboratory; Katherine Phillips, PhD, Virginia Polytechnic and State University

Agreement between Dietary and Biological Methods in Assessing Folate Status: Updated Folate Database
  A. Shuaibi, MS, G. Sevenhuysen, PhD, & J. House, PhD, Human Nutrition Sciences, University Manitoba, Canada

Innovative Dietary Sources of Omega-3 Fatty Acids
  Jay Whelan, PhD, MPH and Cheryl Rust, MS, Department of Nutrition, University of Tennessee

Guidelines for Voluntary Nutrition Labeling of Raw Fruits, Vegetables, and Fish
  Mary M. Brandt, Ph.D., Food and Drug Administration, Center for Food Safety and Applied Nutrition

4:45 PM   **Closing Remarks and Reception**

Program Abstracts

International and Special Population Databases

QUALITY SYSTEMS AS A TOOL IN VALIDATION OF NUTRIENT DATA: THE EUROFIR APPROACH

AUTHORS: Isabel Castanheira [1], Susanne Westenbrink[2], Marine Oseredczuk[3], Paul Hulshof [4], Peter Hollman [4], Jayne Ireland [3], Anders Møller[5], Simonetta Salvini[6], Hedwig Beernaert[7], Maria Antónia Calhau[1], Paul Finglas[8] [1] National Institute for Health Dr Ricardo Jorge (INSA), Portugal; [2]TNO Quality of Life / NEVO Foundation, the Netherlands; [3]French Food Safety Agency (AFSSA), France; [4]Wageningen University (WU), The Netherlands; [5]Danish Food Information (DFI), Denmark; [6]CSPO-Scientific Institute of Tuscany, Italy; [7]Scientific Institute of Public Health,(IPH) Belgium; [8]Institute of Food Research (IFR), United Kingdom

KEYWORDS : Data Quality; EuroFIR; Quality Assurance

OBJECTIVES One of the key uses of National Food Composition Databanks (FCDBs) in Europe is to provide data, in accordance with international standards, to assist multi-center studies investigating diet and health relationships and nutritional labelling information. As part of the EuroFIR (European Food Information Resource Network of Excellence) activities, the scientific validation and exploitation of food composition data through the development of a quality framework. This abstract outlines the processes, procedures, and experiences during the initial development of this quality framework for both national compilers and laboratories generating new data.

MATERIALS and METHODS EuroFIR's strategic quality objectives are structured around laboratories, national compilers, databank systems and users/stakeholders. In order to implement quality principles, several practices and tools are being developed such as quality management systems, quality control of the compilation process, quality assurance of computerized systems and data assessment systems for quality.

RESULTS The results and findings obtained so far for the proposed quality framework indicate that existing guidelines and standards can be adapted to meet EuroFIR guidelines, especially for laboratories and pre-analytical stages such as sampling procedures. A major activity is to identify each step of the compilation process and prepare Standard Operating Procedures (SOPs) so that compilers can start to assess their overall performance. Pilot testing, especially for the new tools to be developed, will also be an imperative step of the process and plans for testing data quality assessment systems and compilation processes through some form of proficiency testing are underway. Furthermore, interactive training is considered as a keystone to develop, disseminate and to improve quality criteria.

SIGNIFICANCE The development of the EuroFIR quality policy through open and constructive discussions among compilers, laboratories and users strengthens the proposed

introduction and application of quality principles and practices, and are fundamental in assuring improved quality for the exchange of data across Europe and beyond.

THE EUROFIR PROJECT: LINKING EUROPEAN FOOD COMPOSITION DATABASES USING THE LANGUAL FOOD DESCRIPTION THESAURUS

AUTHORS: Anders Møller, Danish Food Information, Borgediget 12, DK-4000 Roskilde, Denmark Jayne Ireland, AFSSA/DERNS/CIQUAL, 27-31 avenue du Général Leclerc, F-94701 Maisons-Alfort cedex, France. On behalf of the EuroFIR Compiler Network

KEY WORDS : Food description, Food composition, Database, Internet, XML.

OBJECTIVE: The EuroFIR (European Food Information Resource Network) project will provide a validated European food composition databank system. LanguaL is used to link the European databases together.

METHODS AND MATERIALS: LanguaL, "Langua aLimentaria" or "language of food", is a multilingual, facetted thesaurus for describing foods. Thesaurus information is used in EuroFIR to link together food composition data sets. Potentially, 27 national food composition databases and some 10-15 European or international specialized datasets are available.

RESULTS: Presently, some 20 national databases have been indexed using LanguaL. For the data interchange, an XML template, the EuroFIR Food Transport Package, has been developed. As a prototype, the online LanguaL search facility can be used to look up food information in LanguaL indexed food composition databases in Europe and USA with online links into the Internet based food composition databases. The use of an XML (eXtensible Markup Language) template is used to demonstrate how to offer specific information to the users in a standard data interchange format.

SIGNIFICANCE: Food composition data have over the most recent years been introduced by national authorities and private enterprises on the Internet - in Europe, 15 food composition databases are presently Internet-based. Their presentations cover a wide range of technical solutions and the layouts are of very diverse appearance. For the user, the EuroFIR approach provides a standardized presentation of validated data. The EuroFIR project and the LanguaL based search system demonstrates the benefits of using standardized systems for linking food composition data from all over the world.

UPGRADING NIGERIA'S FOOD COMPOSITION DATABASE WITH UNDER-UTILISED NIGERIAN TRADITIONAL FOODS AND RECIPES

PRESENTING AUTHOR: Isaac Akinyele (BSc, MSc, PhD), Dean, Faculty of Public Health and Professor of Human Nutrition, University of Ibadan, Nigeria.

KEYWORDS: Food database, Traditional foods, recipes, biodiversity conservation

OBJECTIVES: Identify traditional foods and recipes (available and those becoming extinct), undertake nutrient analyses and undertake an upgrade of the Nigerian food composition database.

METHODS AND MATERIALS: A prospective, descriptive study which shall employ a multi-stage sample selection process. Sample will be drawn across Nigeria's six geo-political zones with twelve states of the federation-representing a third of the total number of states to be selected. Using a developed food listing form, indigenous and traditional foods consumed across the country will be collated. Samples and recipes of the identified traditional foods will be systematically collected and prepared for nutrient analyses. Also other individual and institutional databases of purely Nigerian traditional foods and recipes will be reviewed for valid and repeatable methodologies before inclusion and for upgrading of the latest Nigerian food database of indigenous/traditional foods and recipes.

SIGNIFICANCE: Results and opportunities arising from this study holds huge potentials for nutrition development and for the health of most population segment subsisting on indigenous/traditional foods and recipes. Moreover, the cultural identity of those population segment and that of the country is further preserved thereby engendering biodiversity conservation, especially of traditional foods and recipes discovered to have high nutrient values.

USING THE FNDDS TO ANALYZE THE NUTRIENT CONTENT OF SCHOOL MEALS

AUTHORS: Mary Kay Crepinsek, MS, RD[1], Patricia McKinney, MS, RD[2], Elizabeth Condon, MS, RD[1], Anne Gordon, PhD[1]; [1]Mathematica Policy Research, Inc.; [2]Office of Analysis, Nutrition, and Evaluation, Food and Nutrition Service, USDA.

KEY WORDS: school meals, menu analysis

OBJECTIVE: The School Nutrition Dietary Assessment Study-III used USDA's FNDDS to provide national data on the nutrients in school meals. Although the FNDDS is widely used for 24-hour dietary recalls, it was not designed for analyzing school meals. Challenges encountered include lack of information on pre-prepared foods specially formulated for schools (for example, with less fat), limited flexibility in adapting recipes, and inappropriate defaults for missing data. We describe our approach to these challenges.

METHODS AND MATERIALS: Detailed menu and recipe data were collected from 398 schools during spring 2005. Menus included 1,356 unique pre-prepared foods. We compared nutrient information for 40 key foods (obtained from the web and/or manufacturers) to values for the closest match in the FNDDS.

RESULTS: Since pre-prepared foods were usually entrees and accounted for 14% of all foods in school lunch menus, we determined that use of FNDDS codes for these products would lead to systematic errors in estimates of total fat and calories. Instead, complete nutrient information calculated by ARS for the 100 most common school foods was used to impute values for similar products. Since new recipes could not be added, we developed rules for limited modifications to recipes. Coding rules also were developed to substitute for inappropriate defaults.

SIGNIFICANCE: There is a need for complete nutrient information on specially formulated pre-prepared foods and more flexibility to enter recipes served in school meals.

ENHANCEMENTS OF THE INTERNATIONAL LIFE SCIENCES INSTITUTE CROP COMPOSITION DATABASE

AUTHORS: William P. Ridley, Ph.D.[1], Raymond Shillito, Ph.D.[2],and Marci Levine, Ph.D.[3], [1]Monsanto Company, 800 N. Lindbergh Blvd.,
St. Louis, MO 63167, [2]Bayer CropScience, 2 T. W. Alexander Drive, Research Triangle Park, NC 27709, [3]International Life Science Institute (ILSI), One Thomas Circle, NW 9th Floor, Washington, DC 20005.

KEYWORDS: International Life Sciences Institute (ILSI), crop composition, maize, soybean, cottonseed. Objective: To enhance the existing capabilities of the ILSI crop composition to meet the needs of users worldwide.

MATERIALS AND METHODS: The ILSI database (www.cropcomposition.org) is a compilation of data on the nutrients, anti-nutrients, and secondary metabolites for conventional maize, soybean and cottonseed samples obtained from controlled field trials in multiple worldwide locations covering the years 1995 and 1997-2004. The development and application of the database has been described in the Journal of Food Composition and Analysis, 17, 423-438 (2004). Inclusion criteria require that samples are analyzed using validated analytical methods and that each data point is associated with an analytical method. Version 3.0 of the database, released in April 2006, contains approximately 118,000 data points that may be searched and accessed based upon user-selected queries. The database was developed by an ILSI International Food Biotechnology Committee Task Force composed of representatives from six agricultural biotechnology companies. Enhancements to the database are the responsibility of the Task Force and handled by the ILSI database Curator/Programmer.

RESULTS: Enhancements to the database are planned for Version 4.0 and will broaden the scope of information available by providing alternative units for amino acid and fatty acid data which will be available both as % of Total and % dry weight. The number of values for analytes that were below the Limit of Quantitation (LOQ) will be included in the summary and users will have access to previous versions of the database. Also the database Task Force has initiated a project to encourage partnerships between ILSI and other research institutions that will include the entry of data for food crops such as wheat and rice that are of interest to world populations facing nutrient shortages.

SIGNIFICANCE: The database complements existing food and nutrient databases, such as the USDA Nutrient Database and FAO's INFOODS database and has proven to be an important tool for research and regulatory scientists in many areas such as plant biology, food science and animal nutrition. The database was referenced by the European Food Standards Authority (EFSA) in its journal (EFSA Journal [2004] 99, 1-93) as an important tool for the safety assessment of genetically modified food and feed. Moreover, the entry of existing and new composition data for crops such as rice and wheat will serve as a baseline for the development of nutritionally enhanced crops to help promote global health and well being.

New Data for Foods and Food Components

EXAMINING PHYTOSTEROLS IN NUTS AND SEEDS FOR THE USDA NATIONAL NUTRIENT DATABASE FOR STANDARD REFERENCE

AUTHORS: Robin Thomas, MS, RD and Susan Gebhardt, MS, USDA-ARS Beltsville Human Nutrition Research Center, Nutrient Data Laboratory; Katherine Phillips, PhD, Virginia Polytechnic and State University.

KEYWORDS: Phytosterols, nuts, seeds, nutrient database

OBJECTIVE: The current release of the USDA National Nutrient Database for Standard Reference (SR) includes total phytosterols for 30 of the 128 nut and seed items. Twenty-two of those have values for individual sterols – ß-sitosterol, stigmasterol, and campesterol. The current literature was studied for the purpose of expanding phytosterol data for nuts and seeds in SR.

METHODS AND MATERIALS: Examination of the current phytosterol literature revealed 15 papers with analytical data, 10 of which included 1 or more nuts and seeds. While all ten used gas chromatography to determine sterol content, only 3 applied an additional acid hydrolysis step which enabled the extraction of glycosidic sterols to be included with the total free and esterified sterol forms.

RESULTS: Eight of the 10 nut and seed papers reported more than the 3 types of sterols reported in SR. One paper (Phillips 2005) had the most comprehensive study of nuts and seeds, including 11 nuts and 6 seeds, reporting data for more than 7 individual sterols which included their glycosidic form. The total phytosterol values ranged from 95 mg (Brazil nuts) to 280 mg (pistachio nuts) per 100g of nuts, and 185 mg (poppy seeds) to 400 mg (sesame seeds) per 100g of seeds. The results represent a 25% (hazelnuts) to 108% (poppy seeds) increase over SR values. The inclusion of additional specific sterols (especially Δ-5-avenasterol) and the glycosidic sterol form contributed to these higher values. This review of new data formed the basis for updating nut and seed phytosterol data in SR via evaluation and compilation of available data.

SIGNIFICANCE: Nuts and seeds are major sources of phytosterols in the diet. Enhanced phytosterol data in SR, reflecting current analytical methodology, will provide researchers with more accurate estimates of individuals' intakes, aiding in research of phytosterols' cholesterol-lowering effects.

AGREEMENT BETWEEN DIETARY AND BIOLOGICAL METHODS IN ASSESSING FOLATE STATUS: UPDATED FOLATE DATABASE

AUTHORS: A Shuaibi, MS, G Sevenhuysen, PhD, J House, PhD. Human Nutritional Sciences, University Manitoba, Winnipeg, Canada

KEYWORDS: folate, food composition database, nutritional status.

BACKGROUND: Food composition data needs to be expressed in the same chemical form and units as nutrient intake recommendations for valid assessments of nutritional status.

OBJECTIVE: To develop and validate a folate database for assessing folate status.

METHODS AND MATERIALS: The Canadian Nutrient File (CNF) 2001 was updated to reflect the most recent developments in folate content. In a cross-sectional study, dietary and supplemental intakes for nutrient were assessed, using food choice map (FCM), and 3-day food Record (3DFR). Both methods were validated using methods of triads. A fasting blood sample was obtained to measure serum folate.

RESULTS: Energy adjusted median daily folate intakes were 515.7 and 469.7 ug DFE/day for FCM and 3DFR respectively. Women with folate intake below EAR were 8%, and 11% in FCM and 3DFR, respectively. No women had biochemical evidence of folate deficiency. The Pearson correlation of energy adjusted intake for folate estimated by two methods was (r=0.87, P< 0.001). When serum biomarker data were divided into quartile categories, both the FCM and 3DFR correctly or closely classified 73% of women for folate status. The validity coefficient of the FCM to represent the folate status of the women was 97%.

SIGNIFICANCE: These data suggest that an updated folate database could predict folate nutritional status.

INNOVATIVE DIETARY SOURCES OF OMEGA-3 FATTY ACIDS

AUTHORS: Jay Whelan, PhD, MPH and Cheryl Rust, MS, Department of Nutrition, The University of Tennessee, Knoxville, TN.

KEYWORDS: n-3, omega-3, fatty acids, foods, PUFA, EPA, DHA, fish oil

OBJECTIVE: This paper reviews how innovative technologies are rapidly changing the landscape of foods that contain n-3 PUFA, in particular long chain (LC) n-3 PUFA such as EPA and DHA.

METHODS AND MATERIALS: Food companies from all over the world were contacted regarding production, marketing and composition of novel food sources of LC n-3 PUFA for human consumption. This search was complemented with a PubMed literature review and personal contacts with representatives of food and manufacturing companies.

RESULTS: Fruit juices, pasta, dairy, snacks, and meats are being enriched/fortified with EPA/DHA worldwide. Fatty acid compositions of traditional oils (e.g., canola/soybean) are being genetically modified to deliver these LC n-3 PUFA along with novel microorganisms that produce copious amounts of these fatty acids. Innovative technologies have been developed to protect, stabilize and preserve the integrity of these traditionally unstable fatty acids during processing, cooking and storage.

SIGNIFICANCE: These changes further exacerbate our inability to maintain accurate, up-to-date food composition databases for n-3 PUFA, and further challenge the ability of scientists to ascertain true health risks associated with their consumption. With the ability to provide cheaper and safer sources of LC n-3 PUFA (compared to fish), along with the technological advances that improve palatability and stability, commercial development of non-traditional foods that are enriched/fortified with n-3 PUFA will only increase. Quantifying LC n-3 PUFA consumption in the US diet will become even more daunting.

GUIDELINES FOR VOLUNTARY NUTRITION LABELING OF RAW FRUITS, VEGETABLES, AND FISH

AUTHOR: Mary M. Brandt, Ph.D., Food and Drug Administration, Center for Food Safety and Applied Nutrition

KEYWORDS: nutrition labeling; raw fruits, vegetables, and fish

OBJECTIVE: In July 2006, the Food and Drug Administration published a final rule to amend its voluntary nutrition labeling regulations to update the names and nutrition labeling values for the 20 most frequently consumed raw fruits, vegetables, and fish in the United States and clarify guidelines for the labeling of these foods, which are purchased raw but not necessarily consumed raw. Regulations mandate participants in the voluntary program use these values.

METHODS AND MATERIALS: We applied compliance calculations based on 95 percent prediction intervals to nutrient data and used the resulting means or adjusted values that account for nutrient variability. Data sources included analytical data submitted by US Department of Agriculture (USDA); California Avocado Commission; California Table Grape Commission; California Tree Fruit Agreement; California Cherry Advisory Board; Citrus Research Board; Pear Bureau Northwest; US Apple Association; California Strawberry Commission; Food Research, Inc.; and the USDA National Nutrient Databank.

RESULTS: Updated names of raw fish include tilapia, tuna, and Chinook salmon; there were no changes to the names of raw produce. The new nutrition labeling values for the top 20 most frequently consumed raw fruits, vegetables, and fish are available on the Center for Food Safety and Applied Nutrition website at www.cfsan.fda.gov. *Trans* fat, required on the nutrition label in January 2006, shows 0 grams for all foods.

SIGNIFICANCE: Availability of the updated nutrition labeling values in retail stores and on individually packaged raw fruits, vegetables, and fish will enable consumers to make better purchasing decisions to reflect their dietary needs.

Abstracts for Poster Presentations

METHODOLOGY FOR ESTIMATING ENERGY DENSITY AND COST OF DIETS AMONG LOW-INCOME WOMEN

AUTHORS: Grant J. Aaron BS[1], Jennifer Follett PhD [2], Susan L. Adams MS, RD[3], Pablo Monsivais PhD[3], Dorothy Smith MA, RD[4], Anna C. Martin MA[5], Diane L. Metz BA[6], Catherine L. Lamp MS, MPH, RD[7], Nancy Keim PhD[2], Marilyn Townsend PhD, RD[1], Adam Drewnowski PhD, MA[3]

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KEY WORDS: Poverty, food assistance, obesity, dietary energy density, food costs, food expenditures

Obesity and concomitant metabolic syndromes are leading public health concerns in the United States. Highest rates of obesity and type 2 diabetes occur among those with the highest poverty rates and lowest levels of education. The current study is part of a larger multi-site project that addresses the relationships between dietary energy density, diet cost, and socioeconomic status. Although the issue of food cost has been raised, few studies have reported individual level dietary cost data, or offered the methodology to collect such data in a low-income population.

OBJECTIVE: This study was to determine diet quality and cost among individuals from low-income households.

METHODS AND MATERIALS: The study enrolled 120 low-income women residing in four California counties. Over the study period subjects collected two weeks of grocery store receipts, and completed three non-consecutive 24-hour recalls with trained research staff. To improve the accuracy of estimating food costs, protocols were developed to account for meals eaten away from home, recipes, missing prices, free, and discounted foods.

RESULTS: Preliminary analysis indicated that only 40-60% of foods listed on the recalls were also listed on the receipts, suggesting that the 2-week receipt collection period was insufficient to capture 100% of the foods consumed. Evidence suggests that diets of low-income populations are limited in the number of unique foods; therefore, a second protocol employing mathematical algorithms was developed to estimate prices for missing food cost data.

SIGNIFICANCE: The final model may be used to estimate energy density and cost of diets among low-income individuals.

ADAPTING DATABASES FOR AUTOMATIC CODING OF PORTION SIZE DATA

AUTHORS: Ellen T. Anderson, MS, USDA, ARS, Food Surveys Research Group, Beltsville, MD; Lois C. Steinfeldt, MPH, USDA, ARS, Food Surveys Research Group, Beltsville, MD.

KEY WORDS: Food databases, processing, autocoding

OBJECTIVE: The United States Department of Agriculture's Food Surveys Research Group (FSRG) develops methods that improve the quality and processing of food intake data. Methods that automatically code foods have been in operation at FSRG since 2004. Recently, new software was developed that automatically codes portion sizes of these foods.

METHODS AND MATERIALS: Automatically coding portion size is dependent upon two factors: the systematic collection of food details during the Automated Multiple Pass Method (AMPM) dietary interview, and the translation of these details into values found in the portion size database. During the AMPM interview, respondents are asked the amount consumed for each food reported. Amounts may be reported as common household measures ("cup"; "½ pound"), measures of size ("large"), food models ("bowl"), or descriptive terms ("16 fluid ounce bottle"). The autocoding software looks for a text match of amount details in a translation table which links to the portion size database.

RESULTS: During processing of the dietary data from What We Eat In America, National Health and Nutrition Examination Survey for the year 2006, 53% of foods were automatically coded for portion size.

SIGNIFICANCE: Automatic coding of food details decreases processing time and increases data quality. For this method to be successful, the portion size database must be adapted and maintained with consideration to the matching algorithm.

CHANGES IN AVERAGE PORTION SIZES OF FOODS COMMONLY CONSUMED IN THE U.S.

AUTHORS: Jeannemarie M. Beiseigel, Ph.D., R.D., Alison L. Eldridge, Ph.D., R.D., Ann M. Albertson, M.S., R.D., General Mills Bell Institute of Health & Nutrition

KEYWORDS: dietary intake research, portion size, NHANES

OBJECTIVE: The Dietary Intake Research (DIR) database of the Bell Institute of Health & Nutrition has used portion size estimates derived from data collected in the 1989-1991 and 1994-1996 Continuing Survey of Food Intakes by Individuals (OLD). This project was designed to update portion size estimates using data from the 1999 – 2004 National Health and Nutrition Examination Surveys (NHANES; NEW).

METHODS AND MATERIALS: The 4,891 foods reported in NHANES were collapsed into 362 representative foods based on food type, form, and common use. Mean portion sizes were determined for each of 19 age/gender categories and smoothed. OLD and NEW portion size estimates were compared for several commonly consumed foods. A difference in OLD vs. NEW portion size ± 15% was considered noteworthy.

RESULTS: Portion size estimates for fluid milk beverage and cooked vegetables, such as broccoli or peas, have remained constant or decreased. Portion size estimates for yogurt and several grain products such as breakfast cereals, white bread, and cooked pasta have remained relatively stable, with the exception of an average 36% increase in the portion size of bagels. Average portion sizes of sodas, fruit juices, and fruit drinks have increased > 15% among teenagers and adult males and females.

SIGNIFICANCE: Over the past 15 years, portion sizes consumed of many commonly eaten foods have changed unfavorably and may, in part, contribute to the obesity epidemic.

UNIVERSAL PRODUCT CODES AS A MEANS FOR ASSESSING FOOD AND NUTRIENT AVAILABILITY IN HOUSEHOLDS

AUTHORS: Byrd-Bredbenner, C., PhD, RD, FADA, Rutgers, The State University of New Jersey. Bredbenner, C. The Nutrition Company, Long Valley, NJ

KEYWORDS: UPC, Food Composition, Assessment

OBJECTIVE was to develop a database for conducting home food supply inventories and assessing nutrient availability.

METHODS AND MATERIALS: Universal Product Codes (UPCs) and handheld barcode scanners were identified as an efficient data collection method; however, few databases link UPCs with nutrient data and none permitted the calculation of nutrient content using commercial software. An exhaustive search located two large databases (>10,000 foods) linking UPCs and nutrient data (Gladson Interactive, Lisle, IL; FoodFacts.com, Edison, NJ). These databases were insufficient because many foods lack standard UPCs (eg, those with retailer assigned UPCs like raw meats) or have no UPC (eg, raw produce, homemade foods, premium foods). Thus, USDA Standard Reference data were married with UPC databases and formatted to permit data to be accessed and recorded on a household basis using commercial software (FoodWorks, Long Valley, NJ) modified for this study. Modifications allowed researchers to create home food inventories by scanning UPCs, performing "keyword" searches to locate foods lacking standard UPCs, and expanding the database to include additional UPCs and foods by manually adding Nutrition Facts data or importing data from other sources.

RESULTS: Pilot testing (n=33 households) revealed that of the 5764 foods recorded, 5101 (88%) had standard UPCs; the remainder were selected by keyword or added to the database. Households averaged 175 foods (range = 72 to 283). The average inventory took ~2 hours.

SIGNIFICANCE: UPC databases are an efficient, viable method for gathering household food supply data; however, limited availability and high costs often put these databases out of reach to researchers.

MEASURING VITAMINS AND MINERALS IN DIETARY SUPPLEMENTS

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KEYWORDS: analytically validated dietary supplement database, DSID

OBJECTIVE: Describe 1) why information on vitamin and mineral intakes from dietary supplements is needed for estimating total nutrient intakes in populations 2) the current status and challenges in developing an analytically validated dietary supplement ingredient database (DSID) 3) lessons from pilot studies analyzing multi-vitamin mineral supplements (MVMs) for the DSID and 4) related ODS programs

METHODS AND MATERIALS Because >30% of Americans take nutrient-containing dietary supplements it is difficult to link total nutrient exposures to health outcomes without estimates of total dietary intakes from all sources. Therefore, ODS established collaborations with the ARS/USDA, NCHS/CDC, FDA and NIST to develop analytically validated label databases for dietary supplements and use them in national surveys.

RESULTS: Analytical methods and appropriate reference materials are critical to developing a dietary supplement ingredient database. Laboratories and protocols that performed well in analyzing foods did not always do as well in dietary supplement analyses, so qualified laboratories were identified and revised methods were developed. The first priority for populating the DSID is nutrients of public health significance such as vitamins and minerals. A study of 35 popular adult MVM products revealed that composition and levels varied among products, and no standard compositional profile/formulation of MVM existed. Pilot studies of 35 popular adult MVM products included analyses of 22 vitamins and minerals and comparisons of % DV on labels with analytically determined values. These studies identified numerous challenges, including definition of products, product formulation, sampling preparation, analytical method identification and issues related to comparison of analytical data. Further studies are planned for prenatal MVMs, children's MVMs, and

calcium products. ODS also collaborates in maintaining the NHANES dietary supplement label database and a database of all dietary supplement labels in the USA.

SIGNIFICANCE: The challenge is evident for developing analytically validated databases for dietary supplements**.**

FUNDING DISCLOSURE: ODS, NIH, ARS

THE REAL COST OF NUTRITION: HOW NUTRIENT/PRICE DATABASE DESIGN MAY NEGATIVELY IMPACT NUTRITION AMONG LOW-INCOME POPULATIONS

AUTHORS: Jennifer R. Follett, PhD, USDA, ARS, Western Human Nutrition Research Center, Nancy L. Keim, PhD. RD, USDA, ARS, Western Human Nutrition Research Center

ABSTRACT:
Links between poverty and obesity may be mediated by food purchase decisions. The Food Stamp (FS) Program uses the Thrifty Food Plan (TFP) to support access to nutritious diets on a limited budget. The TFP reflects national dietary recommendations, food consumption, and nutrient values of foods related to a food price component. Within this context, the TFP is historically the primary and most widely used database available to integrate nutrient and price data sets. It also represents challenges faced when integrating conflicting nutrient/price data units and attempting to apply them to low-income populations. This study examined actual market food unit prices required to meet nutrient/price constraints within the framework of the TFP for a family of four. Prices collected at eight markets within four California counties all show the price at purchase the TFP foods would meet or exceed average monthly allotments within 2 weeks due to initial allotments being more reflective of consumed portions. This may impact food purchase decisions to less nutritious sources during the last weeks of the food stamp cycle. Nutrient/price consumption units do provide critical information on the cost of a nutritious diet for an individual based on consumption, but this information should not be considered accurate in determining expenditures required for actual purchase. It is essential for future nutrient/price databases that seek to provide accurate nutritive and expenditure outputs to recognize how conflicting units can negatively impact both monetary allocations and thus access to nutritious foods among low income communities.

A NUTRITION DATABASE INFORMATICS TOOL FOR UTILIZING DATA FROM NATIONAL FOOD CONSUMPTION SURVEYS

AUTHORS: Stephen G. Hull, MS, Westat, Suzanne McNutt, MS, RD, Westat, Thea Palmer Zimmerman, MS, Westat

KEYWORDS: Database, Food Consumption, Survey

OBJECTIVE: National food consumption surveys can provide a wealth of knowledge to nutrition researchers; however, due to the shear volume of available data it is not always easy to access that data in a meaningful way. In order to provide a user-friendly means of accessing the many types of nutrition data available from national surveys, Westat developed a nutrition database informatics tool that provides immediate access to the data from both national food consumption surveys and their corresponding food coding databases.

METHODS AND MATERIALS: The development process included: identifying the types of information needed for the tool; developing a search algorithm to allow searching on the food description as well as any associated descriptions (called "include statements"); incorporating the data into the tool in a useful format; and developing a user interface to provide access to each type of data to the user.

RESULTS: The informatics tool incorporates data from three national food consumption surveys (CSFII 94-96, NHANES 99-00, NHANES 01-02), and three food coding databases (CSFII Technical Support Files, FNDDS 1.0, SR 16-1). Using the national consumption data, we determined the frequency of consumption for each food code from the last three national food consumption surveys based on day of intake and age of respondent. This special dataset was then incorporated into the tool to provide easy access to frequency of food consumption data. Westat is currently using the tool to develop food probes for the NCI Automated Self-Administered 24-Hour Recall (ASA24) instrument.

SIGNIFICANCE: Future releases of NHANES data and FNDDS will be incorporated into the tool once they are made available. This nutrition database informatics tool allows a user to easily search and view food code information including: food descriptions, include statements, recipe ingredients and modifications, nutrient values, available portion sizes, and frequency of consumption from national surveys.

FRENCH FOOD DATA - ONLINE

AUTHORS: Jayne Ireland, Laure du Chaffaut & Marine Oseredczuk
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KEYWORDS: Food composition, Database

OBJECTIVE: The last update of the French food composition table was published in printed format in 1995. The table needs to be updated for the recent INCA-2 national food consumption survey. Moreover, in order to comply with users' demands and participate actively in the EuroFIR (European Food Information Resource Network) project, it was decided to publish the new food composition table on the Internet.

METHODS AND MATERIALS: The French national nutrient data bank team belongs to the Food Safety Agency (AFSSA). AFSSA is a government agency having no direct regulatory pressure on industry, but governmental recommendations (e.g. salt, added sugar, trans fatty acids) and emerging regulations encourage industry to participate in the database. Companies were contacted in 2005-2006 directly or via joint-trade organisations. Contracts were written between AFSSA and companies to assure confidentiality of industry data.

RESULTS: Fifty companies (including one retail chain) participated in the project and provided data on their products in simple spreadsheet format: more than 6000 values. A specific quality rating scheme was created with trade organisations to document and evaluate industry data. Additional new data came from subcontracted analyses in 2004-2006 (40 to 90 foods per year) on an AFSSA budget.

SIGNIFICANCE: By June 2007 the new French food composition database will be assessable on the web site of the French Food Safety Agency (http://www.afssa.fr). The database will cover 40 components and 1200 foods selected from the latest French food consumption survey.

INDEXING FOODS IN EUROPEAN FOOD COMPOSITION DATABASES WITH THE LANGUAL FOOD DESCRIPTION THESAURUS

AUTHORS: Jayne Ireland, French Food Safety Agency (AFSSA), 27-31 avenue du Général Leclerc, F-94700 Maisons-Alfort, France, Anders Møller, Danish Food Information (DFI), Borgediget 12, DK-4000 Roskilde, Denmark
On behalf of the EuroFIR Compiler Network

KEYWORDS: Food description, Food composition, Database

OBJECTIVE: The aim of the EuroFIR (European Food Information Resource Network) project is to provide a validated European food composition databank system. However, a questionnaire on European nutrient databases revealed great differences in food identification: food names in different languages, in-house food classification methods, incomplete taxonomic information. In order to have a uniform way of describing foods, it was decided to use LanguaL to link foods in the databases.

METHODS AND MATERIALS: Originally developed in the US, LanguaL is a multilingual, facetted thesaurus for describing foods. In order to facilitate food indexing, the EuroFIR project has developed a Food Product Indexer software incorporating the thesaurus and a number of already indexed data sets. In November 2005, the LanguaL thesaurus and FPI software were presented at a two-day food indexing course, attended by food composition data compilers from 20 countries.

RESULTS: By the end of 2006, nearly all of the compilers in the EuroFIR network had delivered indexed food sets, with an average of 1000 indexed foods per national database. The result of the food indexing was thus a set of about 20 000 indexed foods able to be searched in the EuroFIR network. A second course in March 2007 extended the indexing with 8 new European countries.

SIGNIFICANCE: Standardized food description allows foods to be linked and compared across borders and language barriers. EuroFIR's LanguaL-based search system demonstrates the benefits of using standardized systems for linking food composition data from all over the world.

FOOD SOURCES OF CHOLINE IN THE DIETS OF U.S. OLDER ADULTS: NHANES, 1999-2004

AUTHOR: Debra R Keast, PhD. Food & Nutrition Database Research Consulting, Okemos, Michigan

KEYWORDS: Choline, food composition, intakes, food sources, older adults, NHANES

BACKGROUND: Choline is important for brain function, and might lower serum homocysteine in older adults. DRI recommendations include Adequate Intake (AI) levels for choline, but choline is not currently in the food consumption survey databases used to produce nationally representative intake estimates. Objective: To assess intakes and sources of choline in diets of U.S. adults >50 years.

METHODS: USDA Standard Reference, Release 19, food composition data were accessed to complete a choline database. Total choline and amounts from sources of choline contained in survey foods were calculated using this database and USDA Food and Nutrient Database for Dietary Studies 2.0 recipes. Choline intakes (mean ± SE) from foods among gender, age, and race-ethnic groups were estimated using SUDAAN for adults >50y in the 1999-2004 NHANES 1-day sample (n=6,243).

RESULTS: Intakes for men vs. women were 378±7 vs. 326±4, and 311±7 vs. 241±5 mg/day for those age 51-70 and >70y, respectively. Choline intakes were lower in blacks than whites of all gender-age groups. For 51-70-yr-olds, intakes from meat/poultry/fish, eggs, legumes/vegetables/fruits, and dairy products were 32, 20, 15, and 15% of total choline for whites, and 38, 23, 14, and 8%, respectively, for blacks. For >70 years, these 4 food groups contributed 29, 18, 17, 18% and 34, 24, 17, 12% of total choline intakes in whites and blacks, respectively.

SIGNIFICANCE: Choline intakes from meat/poultry/fish and eggs decrease with age in older adults. Eating recommended amounts of these foods will be important to meet the AI for choline in adults >70 years.

USDA CHOLINE DATA FOR BABY FOOD

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KEY WORDS: choline, brain development, baby foods

OBJECTIVE: Choline, a dietary component occurring naturally in high-protein and high-fat foods (e.g., eggs, meat, fish, nuts, legumes and human milk), contributes to normal development of brain cell (Zeisel et. al, 2004). It is an important nutrient for brain development and function in infants and young children, especially during sensitive periods of growth. The Food and Nutrition Board, Institute of Medicine recommends an adequate intake (AI) of 125-150 mg/day for infants and 200 mg/day for very young children (IOM, 1998).

METHODS AND MATERIALS: Choline data are now generated through the USDA National Food and Nutrient Analysis Program for the USDA National Nutrient Database for Standard Reference (SR). Choline values were determined by LC-ESI-IDMS for approximately 20 baby foods, which will be released in SR20 (2007) and SR21 (2008).

RESULTS: Provisional values for choline in baby foods (per 100 g food) range widely within and among types of entrees: beef products (30-50 mg); chicken products (25- 40 mg); lamb (40-60 mg); turkey (30-40 mg); vegetable (10–30 mg); and vegetables and beef (~20 mg). National composites across brands showed dry (unprepared) baby oatmeal averaged 32 mg/100 g and whole milk, recommended for children under the age of two years, averaged 14.3 mg/100 g. Manufacturers' data, which will also be included in the SR, show infant formulas range from 8-10 mg/100 g.

SIGNIFICANCE: This is the first national analytical choline dataset for baby foods, the most significant source of nutrition for very young children. These and other USDA data are available to researchers, health professionals, nutrition policy makers, the food industry and consumers.

WHOLE GRAIN INTAKE, DEFINITION AND DATABASE DEVELOPMENT: THE BALTIMORE LONGITUDINAL STUDY OF AGING

AUTHORS: Janice E. Maras[1], BA; P. K. Newby[1], ScD, MPH, MS; P. J. Bakun[1], BS; Luigi Ferrucci[2], MD; and Katherine L. Tucker[1], PhD

[1] J.E. Maras is Dietary Data Manager, P K. Newby is Scientist III, P.J. Bakun is Nutritional Data Analyst, and K.L. Tucker is Professor and Director of the Dietary Assessment and Epidemiology Research Program, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA.

[2] Luigi Ferrucci is Director of the Baltimore Longitudinal Study of Aging, Baltimore, MD.

KEY WORDS: whole grains, database, fiber

OBJECTIVE: To identify major dietary sources of whole grains, show changes in intakes over time, and describe the construction of a database of whole grain content of foods.

METHODS AND MATERIALS: Dietary data were collected using 7-d diet records during four time periods (1961-1965; 1968-1975; 1984-1991; and 1993-present). All foods or mixed dishes containing grains were identified. The Pyramid Servings database and CSFII recipe ingredients database were then used to calculate both servings and gram weights of whole grain intakes.
SUBJECTS: Men and women in the Baltimore Longitudinal Study of Aging, mean age 62.1 ± 16.0 years, who participated in the dietary assessment portion of the study (n = 1579).
*STATISTICAL ANALYSES***:** We divided our sample according to decade of visit and calculated mean intakes of whole grains, refined grains, and total grains for each time period. We also calculated the frequency of intake for major whole grain food groups and the whole grain content for each group.

RESULTS: Intakes of whole grains increased from 14 g/d in the 1960s to 34 g/d in the 2000s. Top contributors of whole grain were "other" high fiber cereal (other than oat or bran cereals), oat/bran cereal, and multi-grain bread.

CONCLUSIONS: Our data suggest that despite modest increases in the use of whole grains over the past four decades, intakes remain low. While more research is clearly needed to better understand the benefits of whole grains in promoting health and preventing disease, the development of research tools, including databases to accurately assess whole grain intake, is a critical step in completing such research.

DO PHOSPHORUS CONTAINING FOOD ADDITIVES IMPAIR THE ACCURACY OF NUTRIENT DATABASES? IMPLICATIONS FOR RENAL PATIENTS

AUTHORS: Catherine M. Sullivan, MS, RD, LP, Janeen B. Leon, MS, RD, LD, Ashwini R. Sehgal, MD, From the Division of Nephrology, Center for Reducing Health Disparities, MetroHealth Medical Center, Case Western Reserve University, Cleveland Ohio.

KEY WORDS: phosphorus, food additives, end stage renal disease, nutrient databanks, nutrition facts label

OBJECTIVE. End stage renal disease patients must limit dietary intake of phosphorus to 800-1000 mg/day. However, phosphorus containing additives are increasingly added to food products. We sought to determine the potential impact of these additives.

METHODS. We purchased a variety of chicken products, prepared them according to package directions, and performed laboratory analyses to determine their actual phosphorus content. We also used ESHA Food Processor Software to determine the expected phosphorus content of each product.

RESULTS. We found that 35 of 38 chicken products (92%) had phosphorus containing additives listed among their ingredients. For every category of chicken products containing additives, the actual phosphorus content was greater than the content expected from nutrient databases. For example, actual phosphorus content exceeded expected phosphorus content by an average of 84 mg/100g for breaded breast strips. There was also a great deal of variation within each category. For example, the difference between actual and expected phosphorus content ranged from 59 to 165 mg/100g for breast patties. Two 100 g servings of additive containing products would provide an average of 440 mg of phosphorus, or about half the total daily recommended intake for renal patients.

SIGNIFICANCE. Phosphorus containing additives significantly increase the amount of phosphorus in chicken products. Available nutrient databases do not reflect this higher phosphorus content, and the variation between similar products makes it very difficult for consumers and health professionals to accurately estimate phosphorus content. We recommend that phosphorus content of food products be included on nutrition facts labels.

BEVERAGE GROUPING STRATEGIES FOR DENTAL CARIES ANALYSES

AUTHORS: Kathleen Tharp[1], PhD, MPH, RD, Teresa Marshall[1], PhD, RD, John Warren[1], DDS, MS, Karin Weber-Gasparoni[2], DDS, PhD,
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[2] Pediatric Dentistry, University of Iowa

KEYWORDS: beverages, sweetening agents, dental caries

OBJECTIVE: High consumption of sugar sweetened beverages (SSB) has been implicated as a risk factor for dental caries. Infrequently consumed beverages are often grouped for analytic purposes. We examined the effects of different grouping strategies on relationships with the outcome measure, caries.

METHODS AND MATERIALS: A longitudinal study on risk factors for pediatric dental caries development was conducted at an Iowa WIC clinic. Participants were children aged 6 to 24 months at baseline. Validated beverage frequency questionnaires were administered at five contact points throughout the 18 month study. Each beverage item was individually analyzed for its relationship with caries incidence. Beverage items were then grouped based on the nature of sweetener: sugar sweetened, non-sugar sweetened, natural, and/or added sugar. Results from the grouped and averaged items were compared to identify differences with outcome measures.

RESULTS: Individual beverage items significantly associated with dental caries included regular soda pop ($p<.0001$), sugar-sweetened beverages from powder ($p=<.0001$), and sports drinks ($p=.008$). Neither 100% juice nor juice drinks were significant. Three SSB combined groups were significantly associated with dental caries. When 100% juice and juice drinks were excluded from groups, associations became stronger. When diet and regular pop were combined into one category, the association with caries was decreased compared to regular pop alone.

SIGNIFICANCE: Collapsing beverage groups of naturally sweetened beverages into groups with added-sugar sweetened beverages can dilute associations with dental caries.

CELLPHONE-BASED NUTRITION E-DIARY

AUTHORS: Weimo Zhu, PhD, Department of Kinesiology and Community Health, Mark Hasegawa-Johnson, PhD, Department of Electrical and Computer Engineering, Karen Chapman-Novakofski,PhD,[1] Department of Food Science and Human Nutrition, & Arthur Kantor, MS, Department of Computer Science, University of Illinois, Urbana, IL 61801.

KEYWORDS: text classification, cell-phone, diary

The **OBJECTIVE** of this feasibility study was to extend a recorder-based, physical activity (PA) E-diary system (Zhu et al, 2006) to a cellphone-based nutrition E-diary to automatically collect and analyze nutrition information.

METHODS AND MATERIALS: A single-line calling center was first developed for the study. Thirty-nine 24-hour food recall records were randomly selected from a survey study and 22 subjects were instructed on how to call and read these records. Text data were coded by three raters, and coded using USDA National Nutrient Database.

RESULTS: Of 681 records obtained; 614 records were used for training (i.e., develop a text classification model using Support Vector Machines) and 70 records were used for testing (i.e., cross-validation of the model). The number of uniquely used classes (kinds of food) was 315, which is triple that of PA diaries. Misclassification (54% error rate) included 23 (32.86%) "misprediction" and 15 (21.43%) "no prediction given" indicating better training/prediction is needed. The relatively low accuracy results were somewhat expected since: (a) training sample size was very small and (b) classifier is developed based on PA diaries. For the PA system, 71% accuracy of the text classification, which is similar to human raters, has been achieved.

SIGNIFICANCE: With a large sample of food records, a food diary based classifier, narrowing of food selections in the database, and better training, a classification accuracy similar to PA diaries will be achievable.

Additional Abstracts for Poster Presentations

The following abstracts for poster presentations were not included in the Program and Abstract book distributed at the meeting.

COMPARISON OF THE NUTRIENT CONTENT OF LAMB BETWEEN DIFFERENT COUNTRIES

AUTHORS: Salomina M van Heerden, Ph D, ARC:LBD, Human nutrition and sensory analysis, Hettie C Schönfeldt, PhD University of Pretoria, Rozanne Kruger, Ph D University of Pretoria, Marie F Smith, ARC, Biometry Unit

KEYWORDS: Food composition, meat

The **OBJECTIVE** of this study is to illustrate differences in nutrient content of lamb and mutton between South Africa and other countries.

METHODS AND MATERIALS: A food composition literature study was conducted to compare food composition data between countries. Data on nutrient composition of red meat are available in food composition tables and databases. According to Williamson et al. (2005:325) there are more than 150 food composition tables worldwide of which meat and meat products form part of although different values are likely to be found in different versions from different countries.

The **RESULTS** obtained through this study showed that almost all foods vary somewhat in nutritional value, especially in meat and meat products. Red meat contains high biological quality protein and micronutrients, all of which are essential for good health throughout life. The greatest differences observed between the values were for moisture, protein, total fat, ash, energy, some minerals as well as some of the fatty acids between countries. The nutrient content of meat can be influenced by amount of fat, the more fat meat contains, the higher the energy content. Protein is comparable, but fat content varies considerably. Therefore the variation in nutrient content values between tables may be due to a number of reasons e.g. breed, age, cut, type of feeding, different sampling techniques and classification specifications.

SIGNIFICANCE: To conclude, comparing data with other countries show that the use of non-local data sources can produce differences in the assessment of the nutrient composition and may cause conflicting interpretation of dietary intake.

NUTRIENT CONTENT OF DIFFERENT CULTIVARS
ORANGE-FLESHED SWEET POTATO

AUTHORS: Leighton CS[1], Schönfeldt H.C[2], Kruger, R[2], & Smith M.F[1].

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KEYWORDS: Nutrient content, orange-fleshed sweet potatoes

OBJECTIVE: The aim of this poster is to illustrate the nutrient content of different cultivars of orange-fleshed sweet potato in South Africa.

METHODS AND MATERIALS: Different OFSP cultivars were selected on the basis that it formed part of the vitamin A vegetable garden initiative of the Agricultural Research Council-Roodeplaat in South Africa. All cultivars were sampled at approximately the end of the growth season (June-July). The cultivars selected were Resisto, W119, Jewel and A15. OFSP were analysed raw and cooked for comparison purposes. Cooked samples were prepared by boiling it in the skin until soft. Samples were cooled, peeled, mashed and thoroughly mixed. Raw samples were prepared by peeling the OFSP, grating and mixing it thoroughly. Nutrient analysis was conducted

RESULTS: The result obtained from the nutrient analysis confirmed that OFSP is an excellent source of beta-carotene and cultivars with a lower beta-carotene, remains a valuable source. A 100g portion OFSP can provide up to 6528µg beta-carotene, which is approximately 136% of the RDA for vitamin A for children 4-8yrs. OFSP is also a valuable source of vitamin C, calcium, magnesium and zinc. A 100g cooked OFSP can contribute up to 28% of the vitamin C requirements of a child between the ages of 4-8 years per day. It further contributes up to 13% of the daily requirements for calcium, 18% magnesium and 38 % zinc of their daily requirements.

SIGNIFICANCE: OFSP is an excellent source of beta-carotene and energy and could be cultivated and used as a valuable food-based approach to address vitamin A deficiency.

NEW ANALYSED SOUTH AFRICAN DAIRY DATA

AUTHORS: Louwrens E Smit, D.Tech, ARC-LBD: Animal Production, Beulah Pretorius, MSc. ARC-LBD:Animal Production & Hettie C Schönfeldt, PhD University of Pretoria

KEYWORDS: Dairy, composition

The **OBJECTIVE** of this study was to analyse South African milk and milk products for their exact nutritional composition. This forms part of a comprehensive study, which started in 1990 and information on 12 milk products are reported.

METHODS AND MATERIALS: The revised edition of the food composition tables of the Medical Research Council (1991) contains only 18% values of South African origin. More data was added to the 1999 supplement, which increased the South African analysed product fro 18% to 41%. Milk powder, condensed milk, fresh cream, evaporated milk, UHT milk and drinking yoghurt were sampled in five different regions in big supermarkets in the packaging normally presented to the public. Butter and whey powder were collected from three different factories and goat milk from three different farms. The products were analysed for the following nutrients: Proximates, amino acids, fatty acids, cholesterol, minerals, fat soluble vitamins and water soluble vitamins. All the analyses were performed at the laboratories of the ARC-Irene Analytical Services.

The **RESULTS** obtained through this study showed that there are small differences between the 1999 data and the analysed data. There are no data available in the 1991 and 1999 editions of the MRC for fresh cream, butter (salted), butter (unsalted), UHT milk (low fat) and UHT (fat free).

SIGNIFICANCE: The data of these 12 products will therefore be value added to the MRC's food composition tables.

HIGHLIGHTS FROM THE CANADIAN COMMUNITY HEALTH SURVEY 2.2 – NUTRITION

AUTHORS : Maya Villeneuve RD, Doris Miller, Michel Vigneault, Rong Huang, Xiaojun Nie, Food Directorate, Health Canada

KEYWORDS: survey, Canadians, food, nutrition, intake

OBJECTIVE: The goal of the Canadian Community Health Survey – Nutrition (CCHS 2.2) was to provide reliable, timely information about dietary intake, nutritional well-being and their key determinants in the Canadian population.

METHODS AND MATERIALS: Thirty five thousand participants of all ages took part in this survey in 2004. Participants were asked to answer questionnaires on food intakes, nutritional supplements, height and weight, household food security, health conditions, socio-economic and demographic characteristics.

RESULTS: One-quarter of Canadian adults are obese, and 36.1% are overweight. These numbers were substantially higher from 1978/79, when Canada's obesity rate was 13.8%. It was also found that 26% of Canadian children and adolescents are overweight; 8% are obese. Over one-quarter of Canadians aged 31 to 50 obtain more than 35% of their total calories from fat. Seven out of 10 children aged 4 to 8, and half of adults, do not eat the minimum of 5 servings of vegetables and fruit recommended by Canada's Food Guide. More than one-third of children aged 4 to 9, 83% of teenage females and 61% of teenage males do not meet the minimum recommendation of servings of milk products per day. Approximately one-quarter of the energy and fat intakes of Canadians is contributed by foods not included in the 4 Food Guide groups classification.

SIGNIFICANCE: More detailed analysis of results will be made as detailed 24-hour recall information is collated and made available. This new information will guide programs, policies and activities of federal and provincial governments and local health agencies.

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Announcement of 32nd NNDC and Future Meetings

2007
The 7th International Food Database Conference (IFDC) will be held in Sao Paolo, Brazil on 22-24 October 2007, pre-conference workshop on 21 Oct 2007. Details are available at: http://www.fcf.usp.br/7ifdc/

2008
32nd National Nutrient Databank Conference, Ottawa-Gatineau Canada
May 7-9, 2008

2009
Hosts are needed for the 33rd and future NNDC. If you are interested, please contact Suzanne Murphy or a member of the NNDC Steering Committee.

Please visit the NNDC web site at: http://www.nal.usda.gov/fnic/foodcomp/conf/ for updated information on these meetings.

Abstract Index (by presenting author's name)

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Map of Washington Convention Center and Surrounding Area
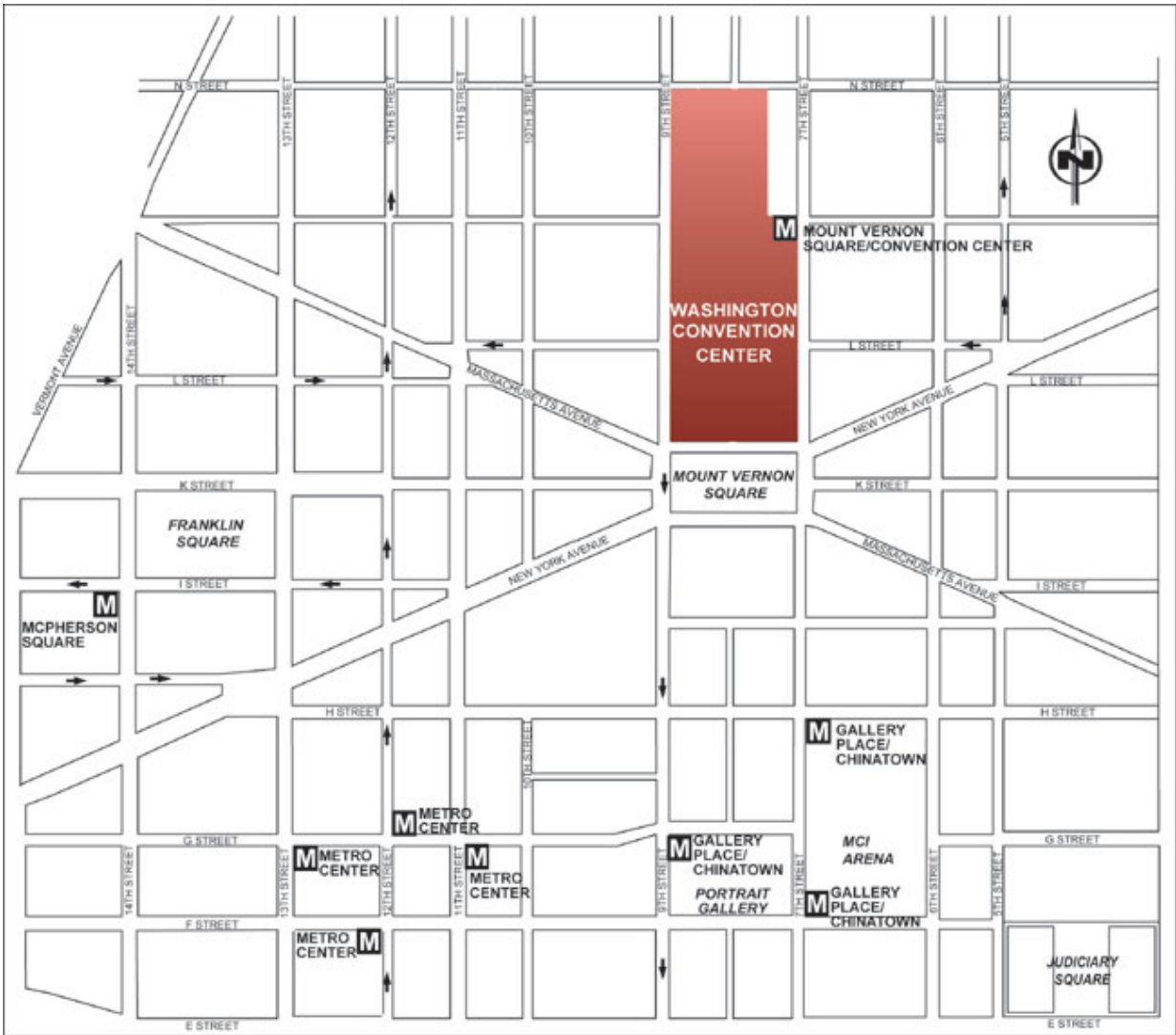
MAP LEGEND

M METRORAIL STATION ENTRANCE.

→ INDICATES DIRECTION OF ONE-WAY STREET.