35th National Nutrient Databank Conference

A Healthier Food Supply: Public-private Partnerships for Food and Nutrient Databases

April 8, 2011

Marriott Bethesda North Hotel & Conference Center

Bethesda, Maryland

#

Table of Contents

Committees of the National Nutrient Databank Conference

NNDC Executive Committee:
Susie McNutt, Chair
Lisa Jahns, Chair-Elect
Julie Gilmore, Treasurer
Rose Tobelman, Past-Chair

NNDC Steering Committee Members:
Carol Boushey, Purdue University, IN
Barbara Burlingame, FAO, Rome, Italy
Catherine Champagne, Pennington Biomedical Research Center, LA
Rena Sue Day, University of Texas, TX
Josephine Deeks, Health Canada, ON
Rachel Fisher, NIH, Bethesda, MD
Lisa Harnack, University of Minnesota, MN
David Haytowitz, ARS, USDA, Beltsville, MD
Joanne Holden, ARS, USDA, Beltsville, MD
Marie Kuczmarski, University of Delaware, DE
Diane Mitchell, Penn State University, PA
Alanna Moshfegh, ARS, USDA, Bethesda, MD
Suzanne Murphy, Hawaii
Ramkishan Rao, NIFA, USDA, Washington, DC
Laura Sampson, Harvard School of Public Health, MA
Suzanne Sanders, Coca Cola, GA
Phyllis Stumbo, University of Iowa, IA
Thea Zimmerman, Westat, OH

35th National Nutrient Databank Conference Planning Committee:
Program Co-Chairs: Jaspreet KC Ahuja and Patty Packard
Program Committee Members: David Haytowitz, Pamela Pehrsson

35th National Nutrient Databank Conference Local Arrangements Committee:
David Haytowitz, Pamela Pehrsson

Message from the Executive Committee Chair:

Welcome to the 35th National Nutrient Databank Conference (NNDC) in Bethesda, Maryland. The theme for this year's conference - *A Healthier Food Supply: Pubic-Private Partnerships for Food and Nutrient Databases*--addresses some of the opportunities and challenges, as well as the accomplishments, that we as a nutrition community are experiencing from a database perspective, in order to provide a healthier food supply to our nation. The conference brings together a host of global experts in government, industry, and academia to share their thoughts, vision, and hopes for the future. It also offers you the opportunity to share knowledge and interact with colleagues with similar interests.

Clearly, it *takes a village* to present a conference of this caliber. The Program Co-Chairs, Jaspreet Ahuja and Patty Packard and their committee members worked tirelessly to put together this outstanding program; and David Haytowitz negotiated the local arrangements to provide optimal conditions for us to listen and learn, as well as eat and drink! Lastly, my fellow Executive Committee members – Lisa Jahns, Rose Tobelmann, Julie Eichenberger Gilmore, Suzanne Murphy, and Phyllis Stumbo -- provided expert guidance and support to ensure the conference would be a success.

Please enjoy the day and all that it offers.

Susie McNutt

Message from the Program Committee Co-Chairs:

Welcome to the 35th National Nutrient Databank Conference! We would like to extend a warm welcome to participants who have come from all over the country and the world. A special thanks to Dr. Catherine Woteki and all our invited speakers, who took the time out of their busy schedules to present us with their perspectives and advances in the field. Hope you enjoy your stay in the nation's capital.

With the many changes occurring in the food marketplace with respect to sodium, whole grain, Healthy Weight Commitment pledge, etc, we believe a public – private partnership is needed to face the challenge of keeping nutrient databases current. We hope this meeting will provide a platform for further explorations into these partnerships. True to our theme, "*A Healthier Food Supply: Public-private Partnerships for Food and Nutrient Databases* ", we have speakers from the private and public arenas, and the program co-chairs represent those arenas.

We would like to acknowledge the time and effort of all the other members of the program committee, and the Executive Committee for their support and help throughout the planning process. This conference would not have been possible without their efforts.

Jaspreet KC Ahuja and Patty Packard

The National Nutrient Databank Conference wishes to acknowledge the generous support of its sponsors!

35th National Nutrient Databank Conference

A Healthier Food Supply: Public-private Partnerships for Food and Nutrient Databases

April 8, 2011 – Bethesda, MD

Conference Program

7:30 – 8:30	Registration and Continental Breakfast
8:30 – 8:40	Welcome Address *Allison Yates, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA*
8:40 – 9:10	Keynote Address *Catherine Woteki, Under Secretary for Research, Education and Economics, USDA*

Session 1: A Healthier Food Supply: Accomplishments and Challenges
Session Chairs: Jaspreet KC Ahuja, Food Surveys Research Group, Agricultural Research Service, USDA and Patty Packard, ConAgra Foods

9:10 – 9:25	What's Shakin' on Sodium? *Rose Tobelmann, General Mills*
9:25 – 9:40	Nutrition Innovation at ConAgra Foods *Patty Packard, ConAgra Foods*
9:40 – 9:55	Nestle's Approach to Nutrition Health and Wellness *Mark Nelson, Nestle USA*
9:55 – 10:10	The Marketplace: Controlling Calories While Preserving Nutrition *Lisa Gable, Executive Director of the Healthy Weight Commitment Foundation*
10:10 – 10:25	Question and Answer Session
10:25 – 10:45	Break/Posters

Session 2: Monitoring Changes in the Food Supply
Session Chairs: David B. Haytowitz and Pamela R. Pehrsson, Nutrient Data Laboratory, Agricultural Research Service, USDA

10:45 – 11:00	CDC's Role in Monitoring Changes in the Food Supply *Robert Merritt, Division for Heart Disease & Stroke Prevention, Center for Disease Control*
11:00 – 11:15	ARS/USDA Progress in Monitoring Levels of Added Sodium in Processed and Prepared Foods *Joanne Holden, Nutrient Data Laboratory, Agricultural Research Service, USDA*
11:15 – 11:30	Monitoring Dietary Sodium Intake of the U.S. Population *Alanna Moshfegh, Food Surveys Research Group, Agricultural Research* Service, *USDA*

11:30 – 11:45	Data Sources for Modeling Food Additive Exposures to Inform Regulatory Decisions and Impact Public Health *Dennis M. Keefe, on behalf of the Food and Drug Administration Sodium Initiative Team*
11:45 – 12:00	Question and Answer Session
12:00 – 12:10	Award Presentation to Dr. Jean Pennington
12:10 – 1:40	Buffet Lunch/Posters
1:40 – 2:00	**Impact of Dietary Guidelines for Americans 2010 on Database Needs** *Sue Krebs-Smith, National Cancer Institute, NIH*

Session 3: Global Perspective
Session Chair: Marie Kuczmarski, University of Delaware

2:00 – 2:15	Maximizing by adopting and adapting – the Israeli experience in maintaining a nutrient database *Judith Spungen, Ministry of Health, Israel*
2:15 – 2:30	Prevalence of Phosphorus Containing Food Additives in Grocery Stores *Catherine M. Sullivan, Case Western Reserve University*
2:30 – 2:45	Estimation of micronutrient intake of Korean adults using a compiled database from Japan and USDA *Young-Hee Park, National Academy of Agricultural Science, Korea*
2:45 – 3:00	Question and Answer Session
3:00 – 3:20	Break/Posters

Session 4: Innovations
Session Chair: Lisa Jahns, Grand Forks Human Nutrition Research Center, Agricultural Research Service, USDA

3:20 – 3:35	Update on the Development of the National Cancer Institute (NCI) Automated Self-Administered 24-hour Dietary Recall (ASA24) *Suzanne W. McNutt, Westat*
3:35 – 3:50	Beyond Glycemic Index: New Food Insulin Index *Laura A. Sampson, Harvard School of Public Health*
3:50 – 4:05	Database development to assess the nutritional impact of food fortification, enrichment, and dietary supplements using USDA nutrient composition and consumption survey data *Debra R. Keast, Food & Nutrition Database Research, Inc.*
4:05 – 4:20	Question and Answer Session
4:20 – 4:30	Closing Remarks

Poster Presentations

Data Quality, Variability, and Bioavailability

1. **Outliers and Non-Quantifiable Data in Food Composition - Measuring Zero**
   Josephine Deeks, Rita Klutka, Nutrition Research Division, Health Canada.

2. **Recipe Protocol Project: Evidence-Based Standards for Ingredient Components and Amounts**
   Carrie Martin, MS, RD, Jaspreet Ahuja, MS, Grace Omolewa-Tomobi, BS, Staci McGonigal, MS, RD, Alanna Moshfegh, MS, RD, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD.

3. **Iron Bioavailability Estimation Based on Assigned Heme Factor in the Canada National Food Intake Survey and Nutrient Database**
   Ying Qi, W.Y. Wendy Lou, University of Toronto, Canada; Marcia Cooper, Bureau of Nutritional Sciences, Health Canada, Mary R. LâAbbe, University of Toronto, Canada.

4. **Accuracy of Stated Energy Contents of Chain Restaurant Foods in a Multi-site Study**
   Lorien E. Urban, Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA, Megan A. McCrory, Department of Foods and Nutrition, Department of Psychological Sciences and Ingestive Behavior Research Center (IBRC), Purdue University, West Lafayette, IN; Gerard E. Dallal, Sai Krupa Das, Edward Saltzman, Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA; Judith L. Weber, Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR, Susan B. Roberts, Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA.

Analytical Methods and Food Sampling

5. **Collaborative Study on Modified Cholesterol Determination Method for Meat and Poultry Using Gas Chromatography: Preliminary Data**
   Thu T. N. Dinh, Leslie D. Thompson, Michael L. Galyean, J Chance Brooks, Department of Animal and Food Sciences, Texas Tech University, Lubbock, TX; L Mallory Boylan, Department of Nutrition, Hospitality, and Retailing, Texas Tech University, Lubbock, TX; Kristine Y. Patterson, Joanne Holden, Nutrient Data Laboratory, United States Department of Agriculture, Beltsville, MD; Terry E. Engle, Karen S. Sellins, Department of Animal Science, Colorado State University, Fort Collins, CO; Anthony Fontana, Jerrold J. Leahy, Silliker, Inc., Chicago Heights, IL.

6. **A Simplified Chloroform-Methanol Method for the Quantitative Determination of Total Lipids in Meat and Poultry**
   Ana Marie Luna, Leslie D. Thompson, J. Chance Brooks, Jerrad Legako, Jennifer Martin, Tyson Brown, Thu Dinh, Samantha Stephenson, Texas Tech University, Animal and Food Sciences, Lubbock, TX; Kristine Patterson, Joanne Holden, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, MD.

7. **Sample Processing Methods for the National Food and Nutrient Analysis Program**
   Amy S. Rasor, Nancy A. Conley, Katherine M. Phillips, Virginia Tech, VA.

New Data for Foods and Food Components

8. **Nutrient Composition and Antinutritional Factors Present in Amaranthus Cruentus Grains and Amaranthus Hybridus Leaves**
   Isaac O. Akinyele PhD, Sunday O Oladiran Bsc, University of Ibadan.

9. **The Nutrient Contribution of Brachystegia Eurycoma and Detarium Microcarpum to the Preparation of Ugu Soup and Some Antinutrient Factors in these Soup Thickeners**
   Isaac O Akinyele PhD, Grace Umemneku Bsc, University of Ibadan.

10. **Updated USDA Database for the Flavonoid Content of Selected Foods**
    Seema Bhagwat, David Haytowitz, Joanne Holden, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

11. **Nutrient Databank Values for the Phytochemical and Antioxidant Content of Tree Nuts**
    Bradley W. Bolling, PhD, Department of Nutritional Sciences, University of Connecticut, Storrs, CT; Oliver Chen, PhD, Diane McKay, PhD, FACN, Jeffrey Blumberg, PhD, FACN, CNS, Antioxidants Research Laboratory, Jean Mayer, USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA.

12. **Conversion of Australian Food Composition Data from AUSNUT1999 to 2007 for the Measurement of the Long Chain Omega-3 Content of Fish and Seafood**
    Elizabeth Neale, Yasmine Probst, Rebecca Thorne, Qingsheng Zhang, Jane O'Shea, Linda Tapsell, Smart Foods Centre, University of Wollongong.

13. **USDA Updates Sodium Values for Selected Processed Foods**
    Melissa S. Nickle, Pamela R. Pehrsson, PhD, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

14. **Re-evaluation of Mineral Composition in Hawaiian Grown Leafy Green Vegetables**
    Antonio P. Perfecto, Joannie Dobbs, Michael A. Dunn, University of Hawaii at Manoa.

15. **Sterol Composition of Shellfish Commonly Consumed in the United States**
    K.M. Phillips, D.M. Ruggio, K.R. Amanna, Virginia Tech; K.Y. Patterson, J. Exler, USDA Nutrient Data Laboratory.

16. **Nutrition Profile of Foods Meeting Sodium Reduction Targets**
    Alyssa Schermel, BSc, Mary R. L'Abbé, PhD, Department of Nutritional Sciences, University of Toronto.

17. **Nutritional Composition of Raw and Cooked Dark Chicken Meat**
    Samantha Stephenson, B.S., Texas Tech University, Animal and Food Sciences;
    Kristine Patterson, Ph.D., Joanne Holden, M.S., Nutrient Data Laboratory; Ana Marie Luna, B.S., Leslie Thompson, Ph.D., Texas Tech University, Animal and Food Sciences.

18. **Chemical Composition and Hydrogen Cyanide Content of Flour and Meal made from Three Bitter Cassava Cultivars as affected by Traditional Processing Method**
    Florence Uruakpa, PhD, Department of Nutrition & Dietetics, University of North Dakota, Grand Forks, USA; Ijeoma Osuji, MS, Eze Ogonna, BS, Department of Food Science & Technology, Federal University of Technology, Owerri, Nigeria.

19. **Screening Antioxidant Activity for Raw Materials Commonly Used in Chinese Functional Foods**
    Zhu Wang, Shengsheng Zhou, Xuesong Xiang, Yuexin Yang, National Institute for Nutrition and Food Safety, China CDC.

20. **Updates of Sodium Values for Pork Products**
    Juhi R. Williams, Juliette C. Howe (Retired), Joanne M. Holden, Nutrient Data Laboratory, BHNRC, ARS, USDA; Ceci Snyder, Philip Logfren, National Pork Board.

Databases for Dietary Supplements

21. **Selective Survey of Vitamin K2 (Menaquinone-7) in Commercially Available Dietary Supplements in USA**
    Sneh D. Bhandari, Silliker Laboratories; Anselm de Souza, Dilip Mehta, Synergia Life Sciences; Kiran Krishnan, Nu Sciences Trading.

Data for Special Population Groups

22. **Household Emergency Preparedness: Estimating Changes in Household Food Supplies During Times of Crisis**
    C. Byrd-Bredbenner, Rutgers, The State University of New Jersey, C. Bredbenner, The Nutrition Company.

23. **Selected Vitamins and Minerals in U.S. Infant formulas**
    Mona Khan, Pamela R. Pehrsson, Kristine Patterson, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

Advances in Using Food Composition Data for Dietary Assessment

24. **Estimation of Grain Equivalents in Foods: A Critical Review of Methodology**
    Shanthy Bowman, James Friday, John Clemens, Alanna Moshfegh, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

25. **Common Alternatives for Portion Size**
    R. Sue Day, Amber D. Owens, Deirdre D. Douglass, University of Texas School of Public Health; W.S. Carlos Poston, C. Keith Haddock, Sara A. Jahnke, Institute for Biobehavioral Health Research, National Development and Research Institutes.

26. **Building a USDA Commodity Foods Nutrient Database for Analysis of Food Distribution Programs**
    Deirdre Douglass, Thea Palmer Zimmerman, Sujata Dixit-Joshi, Joan Benson, Suzanne W. McNutt, Westat.

27. **A Modern Catalog for the Indexing and Retrieval of Information on Foods, Meals and Dietary Supplements**
Gig Graham, Benetta Corporation; David Haytowitz, Joanne Holden, Nutrient Data Laboratory, Beltsville Human Nutrtion Research Center, Agricultural Research Service, USDA, Beltsville, MD.

28. **Use of Archival Versions of a Food and Nutrient Database to Track Trends in the Nutritional Quality of Foods in the Marketplace: A Case Study**
Lisa Harnack, Michael Oakes, Simone French, Janet Pettit, Denise King, University of Minnesota.

29. **Determining MyPyramid Equivalents Data for a New Diet Assessment Tool**
Kristin L. Koegel, Patricia Britten, Kevin J. Kuczynski, Center for Nutrition Policy and Promotion, USDA.

30. **Realignment of Vegetable Subgroups: 2010 Dietary Guidelines Food Pattern Modeling Analyses**
Kevin Kuczynski, MS RD, Linda Cleveland MS RD, Kristin Koegel, MBA RD, Patricia Britten PhD, Center for Nutrition Policy and Promotion, USDA.

31. **A Simple Dimension of Food Useful in Preventing Omega-3 Imbalances**
Bill Lands, ASN Fellow (Retired).

32. **The USDA Automated Multiple-Pass Method Accurately Assesses Sodium Intake**
Donna G. Rhodes, Theophile Murayi, John C. Clemens, Alanna J. Moshfegh, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

33. **What We Eat in America, NHANES 2007-2008: Meal and Snack Patterns of Adults**
Donna G. Rhodes, Meghan E. Olesnevich, John C. Clemens, Alanna J. Moshfegh, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

34. **Application of Urinary Sucrose and Fructose as an Indicator Biomarker for Identifying Low, Medium, and High Adolescent Consumers of Dietary Sugars**
Tusa Rebecca E. Schap, Purdue University, Bethany L. Daugherty, Purdue University, Deborah A. Kerr, Curtin University of Technology, Carol J. Boushey, Purdue University.

35. **Applying the EPA Pesticide Data Program Pesticide Residue Database to 24-hour Dietary Recall Data**
Thea Palmer Zimmerman, MS, RD, Sujata Dixit-Joshi, PhD, MPH, David Marker, Sigurd Hermansen, Suzanne W. McNutt, MS, RD, Westat.

Database Technology (software, Internet, information dissemination)

36. **A Web-based Informatics Tool to Demonstrate the Potential Value of an Electronic Grocery Transaction Database in Dietary Assessment Studies**
Philip J. Brewster, PhD, Kristina Thomas, BS, John F. Hurdle, MD, PhD, University of Utah.

37. **EuroFIR eSEARCH – A Valuable Tool for Design of Food Frequency Questionnaires and Quantification of Nutrient Intake**
Pedro Camacho, Department of Science and Technology of Functional Assessment and Therapy Intervention, Scientific Area of Orthoptic, School of Health Technology of Lisbon (ESTeSL), Lisbon, Portugal, Ana Sofia de Matos, UNIDEMI, Faculty of Sciences and Technology, New University of Lisbon, Portugal; Mark Roe, Paul Finglas, Institute of Food Research (IFR), Norwich, UK; Isabel Castanheira, Department of Food and Nutrition, National Institute of Health Dr. Ricardo Jorge (INSA), Lisbon, Portugal.

38. **Phytosterol, Flavone, Saponin and Alkaloid Databank in 149 Herbs**
He Mei, Wang Zhu, Yang Yuexin, National Institute for Nutrition and Food Safety, China CDC.

Abstracts

Oral Presentations

<u>Session 1: A Healthier Food Supply: Accomplishments and Challenges</u>

WHAT'S SHAKIN' ON SODIUM? Rose Tobelmann, General Mills, Inc.

General Mills is committed to public health via continuous improvement and small change approach. The company has set forth a significant and aggressive sodium reduction goal that spans the entire product portfolio. General Mills continues to make a significant investment in sodium reduction identifying alternate ingredients to provide the same necessary functionality in their food products as sodium containing ingredients. The company monitors and tracks progress toward the aggressive goals and have data to show the progress.

NUTRITION INNOVATION AT CONAGRA FOODS. Patty Packard, ConAgra Foods.

Dietary guidance for Americans has evolved with the needs of the population. The First guidance in the 1940's was geared towards preventing nutrient deficiencies and today we are focused on nutrient excesses. In response to public health need and consumer demand, ConAgra Foods products have also evolved. In today's environment, developing foods to help consumer's manage body weight, hypertension and cardiovascular disease is paramount. For example, over 20 years ago, ConAgra Foods introduced the Healthy Choice brand to provide consumers convenient, portioned meals low in saturated fat and controlled in sodium for heart healthy eating. Since 2004, ConAgra Foods has removed more than 2 million pounds of salt from the food supply from such brands as Chef Boyardee, Orville Redenbacher's, and Kid Cuisine. Today, ConAgra Foods continues to innovate with a focus on health and nutrition as exemplified by: reformulation of foods to improve their nutrition profile, a portfolio wide sodium reduction goal of 20% by the year 2015, and continued expansion of the Healthy Choice brand.

NESTLE'S APPROACH TO NUTRITION HEALTH AND WELLNESS. Mark Nelson, Nestle USA.

As part of the world's largest food company, Nestlé USA recognizes the importance of providing information and products that contribute to healthy living. Nestlé has global policies governing public health sensitive nutrients like sugar and sodium, and has introduced basic nutrition training for all employees worldwide. Because consumers look to Nestlé products to meet their needs for all life stages from infancy to old age, Nestlé USA is dedicated to helping consumers create a healthy diet in a variety of ways, including: 1) renovation of existing products to reduce nutrients like sodium and saturated fat, as evidenced by the recent commitment of the Nestlé Prepared Foods company to reduce sodium by 10% by 2015, 2) renovation to increase ingredients like whole grains, fruits and vegetables, 3) creation of new products with high quality and positive ingredients like Stouffer's Farmer's Harvest, which features whole grains and vegetables, 4) offering packaging solutions like the wide range of portion controlled options available within the Nestlé Ice Cream portfolio, and 5) communication about health and wellness to consumers through tools like the Nestlé Nutritional Compass, a dedicated space on the back of each Nestlé product for each brand to share nutrition, health and wellness information directly with the consumer.

THE MARKETPLACE: CONTROLLING CALORIES WHILE PERSERVING NUTRITION. Lisa Gable, Executive Director, Healthy Weight Commitment Foundation.

Lisa Gable will be speaking about *The Healthy Weight Commitment Foundation* (HWCF), a business-led, non-profit membership organization, and its mission - to help reduce obesity, especially childhood obesity, in the United States. Ms. Gable will explain how HWCF members are providing and promoting solutions that can help people achieve a healthy weight through an energy balance approach – balancing calories consumed as part of a healthy diet with calories expended by physical activity.
She will further relate the HWCF approach, which is to provide consumers with lower-calorie and healthier food options and nutrition information in the marketplace; invest in and support nutrition and physical education in schools; and help member corporations' employees develop and maintain a healthy lifestyle in the workplace.
Ms. Gable will then discuss the plan for Georgetown Economic Services' role to measure the calorie-reduction performance of the companies of the HWCF as they work toward their goals to reduce 1 trillion calories a year by 2012 and 1.5 trillion by 2015.

Session 2: Monitoring Changes in the Food Supply

CDC's ROLE IN MONITORING CHANGES IN THE FOOD SUPPLY. Robert Merritt, Division for Heart Disease & Stroke Prevention, Centers for Disease Control.

CDC is working to strengthen surveillance systems for tracking sodium intake and consumption, which is critical for monitoring cardiovascular health and the impact of public health/preventive policies and programs, including development and implementation of a national surveillance plan. CDC's sodium surveillance efforts are in collaboration with other Federal agencies including FDA, USDA, and NIH/NHLBI. Key areas to monitor include:

- The amount of sodium in the food supply (processed and restaurant foods) and how that changes over time.
- The amount of sodium consumed (using both dietary and biomarker data).
- Policy changes at the Federal, State, and local levels.
- Knowledge, attitudes, and behaviors pertaining to individual sodium intake.

CDC's sodium surveillance plan is broad and includes accessing multiple databases, developing new data elements and collection systems where necessary, and incrementally improving surveillance capacity at the national, State and local level. CDC is working on strategies to monitor the amount of sodium in restaurant and processed foods and reductions in sodium in these products.

ARS/USDA PROGRESS IN MONITORING LEVELS OF ADDED SODIUM IN PROCESSED AND PREPARED FOODS. Joanne Holden, Nutrient Data Laboratory, Agricultural Research Service, USDA.

Objective: In response to concerns on impact to public health, ARS/USDA has developed a plan to monitor the level of sodium in highly consumed prepared and processed foods. The first phase was to identify which foods were the primary contributors to sodium intake.
Materials and Methods: NDL scientists working with scientists in ARS/USDA's Food Surveys Research Group identified and ranked highly consumed multi-component processed foods and ingredients responsible for 80% of the added sodium intake assessed during the 2007-2008 cycle of the WWEIA.
Results: Approximately 250 foods were defined and ranked. The resulting list included a number of popular multi-component foods (e.g., cheese pizza) and items were distributed across numerous food categories defined for the FNDDS. Approximately 15 generic foods contributed 25% of the added sodium intake from all processed food categories in the WWEIA 2007-08, while a total of 60 generic foods contributed up to 50%. The second phase of the plan includes updating the highest ranking foods by chemical analysis. To assess where major changes have occurred in lower ranking foods, mean sodium values will be calculated from label claim and/or industry-provided values and compared to existing values in SR.
Significance: Accurate and current data for sodium in processed foods will support the assessment of any changes in the intake of sodium by the U.S. population in the years ahead. The new data will be released in the SR. Plans include focusing on other nutrients, including potassium and trans fatty acids, as well.
Funding disclosure: ARS/USDA, CDC, FDA, & NIH.

MONITORING DIETARY SODIUM INTAKE OF THE U.S. POPULATION. Alanna J. Moshfegh, Joseph D. Goldman, Jaspreet K.C. Ahuja, Deirdra N. Chester, M. Katherine Hoy, Carrie L. Martin, Donna G. Rhodes, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA.

Background: Major food companies recently unveiled plans to gradually reduce sodium in their products; therefore, it is critical that national food composition databases reflect these changes. Nutrient values in USDA's Food and Nutrient Database for Dietary Studies (FNDDS), used to process intakes from What We Eat in America (WWEIA), NHANES are based on the USDA National Nutrient Database for Standard Reference (SR). About a third of foods in FNDDS are directly linked to single SR items. The remainders are multi-component foods for which nutrients are derived by recipe calculations.
Objective: The Food Surveys Research Group (FSRG) has initiated a methodical strategy to assess food categories and their sodium contribution for monitoring diets of the U.S. population.
Description: Using one day dietary data from WWEIA, NHANES 2007-2008, the sodium contribution to daily intakes was assessed for the 7000+ foods, arranged by major food groups, in FNDDS 4.1. Weighted to reflect the population, food groups were ranked by percentage contribution to total sodium intake and by individuals reporting. Within each group, individual foods were ranked for sodium contribution to the group; additionally, both sodium per 100g and per reported intake were estimated. The percentage of reports obtained at commercial food establishments such as restaurants was also assessed. This strategy allows FSRG to identify priority foods to monitor and track, and to identify food codes more likely to be commercial products.
Conclusion: Evaluating sodium reduction strategies and monitoring sodium consumption by Americans is enhanced by tracking priority foods and updating food composition databases.

DATA SOURCES FOR MODELING FOOD ADDITIVE EXPOSURES TO INFORM REGULATORY DECISIONS AND IMPACT PUBLIC HEALTH. Dennis M. Keefe, PhD, Antonia Mattia, PhD, Andrea F. Fus, PharmD; on behalf of the Food and Drug Administration Sodium Initiative Team.

Key Words: Intake assessment, Food additive, *Trans* fatty acids, Sodium, Regulation
Background: Excessive dietary sodium is a significant risk factor for cardiovascular and other disease. Dietary Guidelines for Americans 2010 recommends limiting sodium to 1500 mg/day for over half the United States (U.S.) population, with a 2300 mg/day Upper Limit; the mean sodium intake for Americans aged > 2 years is ~3400 mg/day. Almost 80% of dietary sodium comes from salt added to processed foods; other sources include naturally occurring sodium or salt added by the consumer. FDA is exploring new options to address sodium in the U.S. diet.
Objective: To use databases and software tools to monitor the U.S. food supply and take scientifically-sound actions regarding added ingredients with potential adverse health effects.
Description: Federal (e.g., Total Diet Study, Food and Nutrient Database for Dietary Studies) and commercial databases provide qualitative and quantitative composition values, Nutrition Facts information, ingredient statements, consumption, sales and other data used to estimate levels and intake of elements or compounds in food. Menu-labeling legislation for food establishments will provide additional information. Analytical software tools are applied to data files to create exposure estimates and trends for dietary components of interest, and to inform the need for regulation. *Trans* fatty acids and sodium share recent concern for cardiovascular health, and stakeholders (i.e., Institute of Medicine) suggest the need for mandatory limits or rulemaking. Technical attributes of ingredients, product reformulation, and new manufacturing technologies are considered in creating policies affecting food additives.
Conclusion: High quality, timely databases and software tools can provide a foundation of knowledge supporting scientifically-based decisions to ensure public health.

IMPACT OF DIETARY GUIDELINES FOR AMERICANS 2010 ON DATABASE NEEDS. Susan M. Krebs-Smith, PhD, National Cancer Institute.

Keywords: Dietary Guidelines, databases
Background: The Dietary Guidelines for Americans 2010 are notable for their inclusion of guidance that targets individuals as well as strategies to encourage environmental change.
Objective: To describe changes needed to existing databases and new databases that are required to evaluate conformance to dietary recommendations at the individual and the environmental levels of the food system.
Description: Existing databases for individual-level monitoring represent ready-to-eat foods and include variables that facilitate Guidelines-based analyses, but enhancements would make them more useful and timely. Those databases also can be used for monitoring food outlets, such as and fast-food and other restaurants, because foods offered in such outlets are also ready-to-eat. Available databases for characterizing the aggregate food supply represent raw agricultural commodities and include both nutrients and Guidelines-based food groups; however, these databases also could benefit from refinements. There are no databases for evaluating the unprepared foods, such as condensed soup and cake mixes, supplied by manufacturers or offered at grocery stores.
Conclusion: The emphasis of the 2010 Guidelines on the environment as well as the individual supports the need for monitoring and evaluating the entire flow of foods, from the US food supply to manufacturers, grocery stores and outlets, households and finally to the consumer. Characterizing diets , food offerings, and food supplies relative to the Guidelines at these various levels requires databases that reflect the particular forms of food at each level (raw, processed, or prepared and ready-to-eat) and that provide information on the dietary components emphasized in the Guidelines.

Session 3: Global Perspective

MAXIMISING BY ADOPTING AND ADAPTING—THE ISRAELI EXPERIENCE IN MAINTAINING A NUTRIENT DATABASE. Rebecca Goldsmith MPH, RD, Nutrition Department, Public Health Services, Ministry of Health, Israel, Judith Spungen MS, RD, Exponent, Washington DC, and independent consultant.

Keywords: Nutrient database, nutrient composition

Background: The Nutrition Department of the Israeli Ministry of Health maintains a local nutrient composition database (BINAT). BINAT enables the nutrient analyses of the Mabat national health and nutrition surveys, and is used by researchers, dietitians, food industry and others. Though the amount of local data is constantly increasing, the resources for creating and maintaining BINAT are limited, so foreign data were investigated as a potential source of nutrient data.
Objective: The objective was to provide full nutrient profiles for most foods, especially widely consumed ones (bread, dairy products, humus), to maximize BINAT's usefulness.
Description: The USDA databases and other foreign nutrient databases were reviewed to identify matches for local foods. Recipe formulations were reviewed as part of this process. Nutrient values for many key foods could not be adopted from foreign databases as-is; most local manufacture is based on Kosher (ritual dietary) laws, the fats used differ, milk powder use is limited, fortification is limited, and many local ethnic foods are not reported in foreign databases.
Foreign data for the closest food matches were adapted to substitute for or augment limited local data. One crucial step in this process was "defortification" of flour and all flour-containing foods. The flour content of many manufactured items is often unknown, so data were optimized to estimate flour content. Where imputations were carried out using data from a foreign database, possible contributions of milk powder were removed, milk powder rarely being used in manufacture of baked goods and composite foods. About one-third of the current BINAT database is adopted "foreign" data and another third, local foods with nutrient values added through adaptation of "foreign foods".
Conclusion: Despite the disadvantages, currently limited amounts of local data can be augmented by selective adaptation and inclusion of foreign data, creating a comprehensive, useful nutrient database.

PREVALENCE OF PHOSPHORUS CONTAINING FOOD ADDITIVES IN GROCERY STORES. Catherine M. Sullivan, MS, RD, LD, Janeen B. Leon, MS, RD, LD, Srilekha Sarathy-Sayre, MS, RD, LD, Julie Pencak, Michael Ivers, BA, Marquisha Marbury, AS, Ashwini R. Sehgal, MD, MetroHealth Medical Center, Case Western Reserve University.

Keywords: phosphorus, food additives, nutrient database, kidney disease
Background: Approximately 26 million people in the United States have kidney disease and must limit their dietary intake of phosphorus to avoid hyperphosphatemia-associated morbidity and mortality. Furthermore, emerging evidence suggests that increased serum phosphorus levels may also predict morbidity and mortality in the general population, even within normal laboratory ranges. The increasing use of phosphorus containing food additives in processed and convenience foods may exacerbate these concerns.
Objective: We sought to determine the prevalence of phosphorus containing food additives in grocery stores.
Description: Using 2009-2010 Nielsen grocery sales data for Northeast Ohio, we identified the top selling branded products within 15 food categories. We examined product ingredient labels to identify the presence of phosphorus containing food additives and found that 1,043 of the 2,394 top-selling branded products (44%) contained phosphorus additives. The food categories with the highest prevalence of phosphorus additives were prepared frozen foods (72%), prepared food dry mixes (70%), and packaged meats (65%).
Conclusion: Phosphorus containing food additives are widely prevalent in a wide array of food products. Since such additives alter the accuracy of nutrient databases and make it difficult for clinicians and patients to estimate phosphorus content of foods, we recommend that manufacturers report the phosphorus content of foods on product labels.

ESTIMATION OF MICRONUTRIENT INTAKE OF KOREAN ADULTS USING A COMPILED DATABASE FROM JAPAN AND USDA. Young-Hee Park, Jin-Young Lee, Min-Sook Kang, Jung-Sook Choi, Yang-Suk Kim, Haeng-Ran Kim, National Academy of Agricultural Science.

Keywords: Korean NHANES, food composition tables, nutrient intakes
Estimation of micronutrient intake of Korean adults using a compiled database from Japan and USDA
Objective: To estimate the intake of nutrients not listed in the Korean Food Composition Table (FCT) in the Korean population.
Materials and Methods: 694 foods coded in the 2007~08 Korean NHANES were matched with food name and preparation status from SR23 and FNDDS 4.1 of USDA and the 5th Japan Standard Table of Food Composition (STFC); 454 foods were identical in food name and preparation. Codes for the remaining foods were substituted based on different preparations of the same foods or similar foods according to biological classification. Nutrient intakes of men and women over 20 years old (n = 6562) from 24-h dietary recalls in Korean NHANES were compared with Korean DRIs. Correlation of nutrient intake listed in Korean FCT with the intake value from compiled FCT was evaluated.
Results: Average intake of dietary fiber was 20.8g, 93% of Korean AI. Mean intake of Cu and Mg was higher than Korean RNI. The proportion with intakes <75% of AI for vitamins E and D was >60% and higher in women. Correlation of macronutrients between Korean FCT and compiled FCT was > 0.9. Correlation of most minerals and vitamins was in acceptable range (> 0.8) except for vitamins A and C and iron.
Significance: The compiled database can be used to investigate an association between nutrient intake and health risk factors in Korean studies. In this evaluation, low intakes of vitamins E and D were prevalent in Korean adult population.

Session 4: Innovations

UPDATE ON THE DEVELOPMENT OF THE NATIONAL CANCER INSTITUTE (NCI) AUTOMATED SELF-ADMINISTERED 24-HOUR DIETARY RECALL (ASA24). Suzanne W. McNutt for the Westat ASA24 Development Team* (Westat), Nancy Potischman (NCI, NIH), Frances E. Thompson (NCI, NIH), Sharon Kirkpatrick (NCI, NIH), Gordon Willis (NCI/NIH), Amy F. Subar (NCI, NIH).

Keywords: ASA24, 24-hour recall, usual intakes, user interface
Background: ASA24 is an innovative web-based software tool developed by the National Cancer Institute (NCI) that enables automated and self-administered 24-hour dietary recalls. A beta version is currently in use by researchers, clinicians, and educators, with applications including a number of large studies and both cross-sectional and longitudinal data collection efforts. A full version, which will include additional features, enhanced graphics, and a more interactive design, is scheduled for release in summer 2010.
Objective: To demonstrate ASA24, describe its use of databases, and highlight potential implications of its adoption among the research community for database developers.
Description: The format and design of ASA24 are modeled on the USDA Automated Multiple Pass Method (AMPM). Drawing upon the Food and Nutrient Database for Dietary Studies (FNDDS) and the MyPyramid Equivalents Database (MPED), ASA24 features automated analyses of nutrient intakes and MyPyramid Equivalents, and also provides component data for calculation of the Healthy Eating Index (HEI). An optional module, available in the full version, will collect dietary supplement intake data based on the NHANES Dietary Supplement Database (NHANES-DSD).
Significance/Conclusion: This automated system makes feasible the administration of multiple days of recalls in a variety of studies in which collection of recall data would not be possible otherwise. As a result, ASA24 will enhance investigators' ability to assess usual dietary intakes. Widespread use of ASA24 is expected to increase demand for timely data from FNDDS, MPED, and NHANES-DSD.

BEYOND GLYCEMIC INDEX: NEW FOOD INSULIN INDEX. Laura A. Sampson, Mary Franz, Harvard School of Public Health.

Keywords: Food Insulin Index, Nutrient Database
Objective: Develop a database of food insulin index (FII) values for a semi-quantitative food frequency questionnaire.
Background and Methods: The recently developed food insulin index (II) directly quantifies the postprandial insulin secretion of a food. It is calculated by feeding 1000 kilojoules of a food and measuring the area under the insulin response curve following sequential blood draws, using white bread (FII = 100%) or glucose (FII= 75%) as the reference food. FII was analyzed for approximately 100 foods. FII values were imputed, calculated, or recipe-derived from analyzed values for some 600 foods and breakfast cereals. Specific algorithms were developed for assigning different food groups and include adjustment for carbohydrate per 1000 kilojoules (grains, cereals, baked goods, dairy products), dry weight and fiber ratios (fruits, vegetables), and direct imputation (fats, beef, poultry, fish). FII values for mixed dishes were derived using an automated recipe program.
Results: FII is highly variable and dependent on the type and amount of carbohydrate, protein, and fat in foods. Compared to glucose, analyzed FII is lowest for olive oil (2.7) and highest for jelly beans (120.0). Imputed FII values track closely to analyzed data.
Significance: Elevated blood insulin levels are associated with increased risk of metabolic syndrome, Type II diabetes, and other chronic diseases. FII is used to calculate daily insulinogenic load (IL), a measure of total dietary insulin demand; thereby offering investigators a tool for exploring the role of foods in the development of hyperinsulinemia.

DATABASE DEVELOPMENT TO ASSESS THE NUTRITIONAL IMPACT OF FOOD FORTIFICATION, ENRICHMENT, AND DIETARY SUPPLEMENTS USING USDA NUTRIENT COMPOSITION AND CONSUMPTION SURVEY DATA. Debra R. Keast, PhD, Food & Nutrition Database Research, Inc., Okemos, MI.

Keywords: Fortification, enrichment, dietary supplements, nutrient sources, NHANES
Background: Fortification and enrichment of foods is an important public health policy, and practice can prevent nutritional deficiencies. Dietary supplements should also be considered when evaluating nutrient sources.
Objective: Nutrient databases for application to NHANES 2003-2006 were developed to determine percentages of total intake provided by food fortification, enrichment and dietary supplements, and their impact on usual intake in relation to Dietary Reference Intakes.
Description: Existing USDA databases were leveraged to determine amounts of 19 nutrients either added through fortification/enrichment or naturally present in foods. Databases specific to the 2003-2004 and 2005-2006 NHANES include the FNDDS 2.0 and FNDDS 3.0, respectively; the SR-18 and SR-20, respectively; the vitamin D addendum; and the MyPyramid Equivalent Database. Currently, USDA databases include added vitamins B12 and E; and folic acid. Added thiamin, riboflavin, niacin, folic acid, and iron in enriched flour, bread, pasta, and rice were determined by difference from unenriched products. Folic acid content and survey recipes were used to quantify nutrients derived from enriched products contained in foods. Similarly, added vitamins A and D in fortified milk and margarine were determined, and recipe calculations were performed to determine fortification amounts in mixtures. Vitamins C, D, calcium and other nutrients added to fruit juice and drinks, and other fortified foods/beverages were determined using the FNDDS. MyPyramid data were used to quantify nutrients from grains, fruit, and nuts in fortified RTE cereals. The nutrient content of dietary supplements was determined using the Dietary Supplements Database.
Conclusion: Existing food and nutrient databases developed by USDA for use with NHANES are tremendous resources that can be used to assess intake from nutrient sources. Databases were used to separate nutrients that were naturally-occurring in foods from those added to the diet through food fortification/enrichment or dietary supplements.
Funding disclosure: Fortification Committee, International Life Sciences Institute - North America.

Poster Presentations

NUTRIENT COMPOSITION AND ANTINUTRITIONAL FACTORS PRESENT IN Amaranthus cruentus GRAINS AND Amaranthus hybridus LEAVES. Isaac O. Akinyele PhD, Sunday O. Oladiran Bsc, University of Ibadan.

Keywords: proximate composition, anti-nutrition factors
Significance: The significance of this study is to document the nutrient composition of both the leaves and grains of amaranth as very good sources of nutrients for combating malnutrition.
Objectives: Amaranthus cruentus grain and Amaranthus hydridus leaves have not been studied with regards to their usefulness and suitability for improving diet quality which would eventually bring a quantitative and qualitative improvement in local production of these species.This study was carried out to determine the nutrients and antinutritional factors in Amaranthus cruentus grain and Amaranthus hybridus leaves.
Materials and Methods: Fresh leaves of Amaranthus hybridus were purchased from local markets, brought to the laboratory after purchase cleaned and dried in an air oven at 60Âº C for 1 hr before milling into powder, using pestle and mortar. Amaranthus cruentus grains were also purchased,cleaned with water,sieved with a muslin cloth and allowed to dry in air oven at 60ºC for 6 hours before milling into flour with the use of a blender. The Association of Official Analytical Chemists (A.O.A.C) (2005) standard methods were used to determine in triplicate the proximate, mineral, vitamin, and antinutritional factors.
Results: For the grain - Moisture content (4.3%), Ash content (2.1%), Crude fibre (1.5%), Crude fat (7.3%), Crude protein (24.5%), Carbohydrate content (61.8%), Vitamin C (9.6mg/100g), Calcium (120.9mg/100g), Sodium (30.7mg/100g), Magnesium 1875.2 mg/100g), Phosporous (41.09mg/100g), Potassium (374.5 mg/100g), Manganese (4.7mg/100g), Iron (7.9mg/100g), Phytate (0.1%), Tannins (0.08%), Saponins (0.1%). Result for the leafy vegetable contained Gross energy (3.3Kcal), Ash content (2.1%), Crude fibre (0.86%), Crude fat (0.5%), Crude protein (3.3%), Carbohydrate content (12.6), Vitamin C (25.2 mg/100g), Calcium (1775.3mg/100g), Sodium (175.mg/100g) Magnesium (849.8%), Phosporous (75.8mg/100g), Potassium (4519.5mg/100g), Manganese (11.9mg/100g), Iron (48.4mg/100g), phytate (0.28%), tannins (0.14%), saponins (0.62%).
Significance: These results showed that intake of grain will contribute high protein, carbohydrate, and fat for the poor and the rich as well as the undernourished. On the other hand, the result of the vegetable showed that it must be consumed with protein and energy rich diets so that they could provide adequate calorie, protein, vitamins and minerals.

THE NUTRIENT CONTRIBUTION OF Brachystegia eurycoma AND Detarium microcarpum TO THE PREPARATION OF UGU SOUP AND SOME ANTINUTRIENT FACTORS IN THESE SOUP THICKENERS. Isaac O Akinyele PhD, Grace Umemneku Bsc, University of Ibadan.

Keywords: soup thickeners, proximate composition
Significance: The soup thickeners contain high amounts of nutrients for meeting the needs of consumers.
Objective: To determine the contribution of Brachystegia eurycoma and Detarium microcarpum to the soup nutrient content and determine the antinutrient contents in the raw and cooked form of these soup thickeners.
Materials and Methods: The mature dry seeds of achi and ofor were systematically bought from 3 different sellers in Bodija market in Ibadan and brought to the laboratory for analysis. Three (3) different soup preparations were made; soup without thickeners, soup with soup thickener (Achi), soup with soup thickener (ofor). A litre of water was boiled and 3 serving spoons of palm oil were added and was allowed to boil for 10 minutes. The preparation technique did not vary for the soups with soup thickeners except that each ground soup thickeners (2 teaspoon) were added to their respective soups alongside the other ingredients before the vegetables were added. All samples were analysed using the official method of A.O.A.C (Association of Analytical Chemists, 2005).
Results: The gross energy values of the soups ranged from 6.3±2.1kcal/g to 6.5±2.1kcal/g, moisture from 69.4%-65.9 % dry matter, ash content of the soups ranged from 12.4-13.3 % dry matter, crude protein 21.4±0.008 - 25.2% dry matter, high crude fat 22.4-25.8 % dry matter, low crude fat 5.4-6.7% dry matter, and carbohydrate from 36.0-31.2%. The beta-carotene contents of the soup ranged from 1.1-1.2 µg/100g. The vitamin C content ranged from 1.02-1.2mg/100g. The antinutrient contents were significantly higher in the raw forms than in the cooked form. Those of Brachystegia eurycoma (achi) were higher than those of Detarium microcarpum (ofor), except for the oxalate content.
Conclusion: These soup thickeners are good sources of essential nutrients when consumed in appropriate combination with other foods.

UPDATED USDA DATABASE FOR THE FLAVONOID CONTENT OF SELECTED FOODS. Seema Bhagwat, David Haytowitz, Joanne Holden, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

Keywords: Flavonoids, Data quality evaluation
Objective: While a large volume of analytical data has been published in peer-reviewed journals on the flavonoid content of foods, the quality and comparability of such data and ease of access hinders use by nutrition researchers. To provide easy access, the Nutrient Data Laboratory (NDL), USDA updated the Special Interest Database for Flavonoids to include recently published literature sources and changes to USDA's data quality evaluation system (DQES)
Methods: The category "food description" was added to the existing five categories of the DQES: sampling plan, sample handling, number of samples, analytical method, and analytical quality control, and the rating points assigned to each category redistributed in accordance with the significance of the category. About 300 journal articles published since the second release of the Flavonoids Database in January 2007 were reviewed and evaluated for relevant analytical data; this new data and all earlier data in the Database were rated for quality using the modified system.
Results: Of the 300 new articles, 164 had either no analytical data or data that could not be used for various reasons (values on dry weight basis, values for total flavonoids only, etc.). Acceptable data from the remaining articles were converted to the aglycone forms and aggregated with the previous data for inclusion in the third release of the Database. The updated Flavonoids Database with data quality indicators and references for the data sources will be released in April 2011on the NDL's web site (www.ars.usda.gov/nutrientdata) to support scientific investigations of the intake and bioavailability of individual flavonoids compounds.
Funding Disclosure: USDA and NIH.

SELECTIVE SURVEY OF VITAMIN K2 (MENAQUINONE-7) IN COMMERCIALLY AVAILABLE DIETARY SUPPLEMENTS IN USA. Sneh D. Bhandari, Silliker Laboratories; Anselm de Souza, Dilip Mehta, Synergia Life Sciences, Kiran Krishnan, Nu Sciences Trading.

Keywords: Vitamin K2, menaquinone-7, menaquinone-4

Objective: Vitamin K2 menaquinone-7 (mk-7) has been implicated in preventing osteoporosis and cardiovascular diseases and may also help in preventing other diseases such as Alzheimer's and some cancers. The dietary supplement industry is now making the supplements containing this vitamin. A survey of vitamin K2 menaquinone-7 (mk-7) level was performed in selected commercial dietary supplements (USA) which makes a label claim for vitamin K2-7.
Materials and Methods: An accurate and precise HPLC method was developed to monitor the vitamin in ingredients and supplements. The method was used to analyze the vitamin in commercial dietary supplements.
Results: The results will be presented of this study. Many samples met the label claim and many had the amount far above the label claim. Some samples were found to contain very less compared to the label claim. Some samples were also found to have substantial amount of Vitamin K2 menaquinone-4 (mk-4).

NUTRIENT DATABANK VALUES FOR THE PHYTOCHEMICAL AND ANTIOXIDANT CONTENT OF TREE NUTS. Bradley W. Bolling, PhD, Department of Nutritional Sciences, University of Connecticut, Storrs, CT; Oliver Chen, PhD, Diane McKay, PhD, FACN, Jeffrey Blumberg, PhD, FACN, CNS, Antioxidants Research Laboratory, Jean Mayer, USDA Human Nutrition Research Center on Aging at Tufts University, Boston, MA.

Keywords: phytochemicals, polyphenols, tree nuts, antioxidants

Background: Tree nuts are sources of a wide variety of phytochemicals that are incompletely indexed in nutrient databanks.
Objective: To assess nutrient databank values for tree nut phytochemicals and antioxidants.
Description: In addition to being a source of several essential nutrients, fatty acids, and fiber, tree nuts contain an array of phytochemicals. The content of flavonoids, isoflavones, proanthocyanidins, and total phenols in tree nuts are included in Phenol-Explorer (PE) and USDA databases. PE also reports ellagitannins, phenolic acids, naphthoquinones, and stilbenes. The USDA National Nutrient Database (SR-22) provides carotenoid and sterol content. The antioxidant capacity of tree nuts is indexed by the USDA ORAC and University of Oslo FRAP databases. The antioxidant content of tree nuts varies considerably by nut, especially when the pellicle or skin is included in analysis. Total phenols range from 58-1816 mg gallic acid equivalents/100 g. A wide range (in mg/100 g) of polyphenols is also found in oligomeric proanthocyanidins (2-491), flavonoids (0-34), isoflavones (0-4), phenolic acids (0-36), naphtoquinones (0-12), ellagitannins (0-29), and stillbenes (0-0.80). Tree nuts also have significant quantities of phytates (200-2542), sphingolipids (0-613), alkylphenols (0-144), and lignans (0-0.97) that are not presently indexed in databanks. The EuroFir: eBASIS database is under development and is expected to provide a broader array of bioactives for tree nuts.
Conclusion: Tree nuts are rich sources of many phytochemicals. More phytochemical classes need to be included in nutrient databases and the values need to be updated on a more frequent basis.
Funding Disclosure: Supported by the International Tree Nut Council Nutrition Research & Education Foundation.

ESTIMATION OF GRAIN EQUIVALENTS IN FOODS: A CRITICAL REVIEW OF METHODOLOGY.
Shanthy Bowman, James Friday, John Clemens, Alanna Moshfegh, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

Keywords: MyPyramid, Grain Group, Grains, MyPyramid Equivalents
Background: Americans consume considerable amounts of grain-based foods. The MyPyramid Food Guidance System provides an array of consumer-friendly definitions of what counts as one grain-equivalent. The definitions are often based on common portion sizes of foods rather than on gram amounts of the grain components present. This poses a challenge when analyzing MyPyramid grain equivalents for foods, because standard rules cannot be applied across grain foods to simplify the process.
Objective: To better describe this problem, some of the challenges faced in developing grain equivalents for foods were evaluated.
Methods: A sample of foods, including bagels, breads, cornbreads, pancakes, and ready-to-eat (RTE) cereals, from the Food and Nutrient Database for Dietary Studies 4.1 was selected. The MyPyramid grain-equivalents were computed in two ways: (1) using MyPyramid definitions based on the portion sizes of the foods, and (2) using the amounts of grain components present in the foods.
Results: For breads, bagels, cornbreads, and muffins prepared from flour, differences were noted between grain-equivalents computed using MyPyramid portion size definitions and that computed using the rule that 16 grams of flour equals one grain-equivalent. For RTE cereals, using cup weights as MyPyramid portion sizes or using 28.35 grams of grains equals one grain-equivalent also produced different MyPyramid grain-equivalent values.
Significance: These results show the complexity of computing grain-equivalents and the need for careful evaluation of each type of grain food. Study funded by ARS, USDA.

A WEB-BASED INFORMATICS TOOL TO DEMONSTRATE THE POTENTIAL VALUE OF AN ELECTRONIC GROCERY TRANSACTION DATABASE IN DIETARY ASSESSMENT STUDIES. Philip J. Brewster, PhD, Kristina Thomas, BS, John F. Hurdle, MD, PhD, University of Utah.

Keywords: food behavior checklists, electronic grocery databases
Background: A data-sharing agreement with a national retail grocery store chain has allowed us to design exploratory research outlining the potential uses of an electronic grocery transaction database for dietary assessment studies. Our poster is based on work being developed in the context of research for the National Childrenâ ™s Study (NCS).
Objective: Design a web-based informatics tool to serve as a food behavior checklist in dietary assessment studies, reporting electronically stored grocery transaction history as a cross-validation measure for standard self-reported methods.
Description: The tool is intended to report grocery transaction history in the user's choice of an itemized food basket listing or an aggregated item and food group summary view, based on a date stamp or a date range. Secure user access is governed using a customer card number as the primary key for identifying orders and for individualizing grocery transaction queries, to generate a food behavior checklist automatically. The tool will enable study participants and authorized nutritionist-clinicians to review family food shopping history, as an independent means of validating the accuracy of dietary patterns in Food Frequency Questionnaires and other self-reported measures.
Conclusion: This tool may serve as an aide to memory and minimize respondent burden by eliminating the need to track food shopping history manually. Measurement and validation studies of the tool's effectiveness are planned for 2011, to be conducted for the NCS. Future work utilizing this database will build on our related research linking grocery item categories to publicly available nutritional information.
Funding Disclosure: National Library of Medicine Training Grant, National Children's Study Innovative Research Grant.

HOUSEHOLD EMERGENCY PREPAREDNESS: ESTIMATING CHANGES IN HOUSEHOLD FOOD SUPPLIES DURING TIMES OF CRISIS. C. Byrd-Bredbenner, Rutgers, The State University of New Jersey, C. Bredbenner, The Nutrition Company.

Keywords: emergency preparedness, household food supply

Objective: Describe how household calorie availability and nutrient density could change during emergencies (e.g.,disasters, public health crises, national security threats) that disrupt food, water, and/or electricity supplies.
Materials and Methods: One-hundred households' food supplies were inventoried using diet analysis software (FoodWorks) modified to link UPCs with nutrient data (Gladson Interactive). Foods were grouped according to whether they required cooking, refrigeration/freezing, and/or water for preparation. Foods not requiring refrigeration/freezing were further grouped by typical shelf-life. Total calories, fat, saturated fat, cholesterol, sodium, carbohydrate, fiber, sugar, protein, vitamin A, vitamin C, calcium, and iron supplied by each group/household were calculated, divided by their Daily Value to express values as days available at 100% DV, and divided by total family members (children <12years=0.73 adult equivalents) to reflect total household days available at 100%DV (HDA100%DV).
Results: At baseline, mean HDA100%DV for calories was 33.16+21.97SD (range=8.14-125.17) and mean Nutrient Adequacy Ratio was 1.05+0.42SD (range=0.53-3.50). Without water or power disruptions, one-fourth of households would deplete food supplies in 5 days. If water or energy for cooking were unavailable, HDA100%DV for calories would decrease 28% or 35% immediately, or 38% if both were unavailable. HDA100%DV for calories would decrease 27% if refrigeration/freezing were unavailable for >5 days. A >5 day power and water loss would result in 55% reduction in HDA100%DV for calories not including other calories consumed during those days. Nutrient Adequacy Ratios remained fairly constant in all circumstances.
Significance: This study expands home food supply research and provides insights that may have important implications for emergency preparedness policies and procedures.
Funding Disclosure: Funding or in-kind services for this study were provided by the Canned Food Alliance; Gladson Interactive; FoodFacts.com; and The Nutrition Company.

EuroFIR eSEARCH – A VALUABLE TOOL FOR DESIGN OF FOOD FREQUENCY QUESTIONNAIRES AND QUANTIFICATION OF NUTRIENT INTAKE. Pedro Camacho, Department of Science and Technology of Functional Assessment and Therapy Intervention, Scientific Area of Orthoptic, School of Health Technology of Lisbon (ESTeSL), Lisbon, Portugal, Ana Sofia de Matos, UNIDEMI, Faculty of Sciences and Technology, New University of Lisbon, Portugal; Mark Roe, Paul Finglas, Institute of Food Research (IFR), Norwich, UK; Isabel Castanheira, Department of Food and Nutrition, National Institute of Health Dr. Ricardo Jorge (INSA), Lisbon, Portugal.

Keywords: EuroFIR, Food Frequency Questionnaires, Age-Related Macular Degeneration, Data Quality
Objective: Food frequency questionnaires (FFQ) are dietary assessment instruments that can be linked to food composition databases to estimate intakes of food components. In this study the EuroFIR eSearch database was used to prepare a questionnaire to study the relationship between habitual diet and Age-Related Macular Degeneration.
Materials and Methods: The design and construction of the food list and nutrients of interest was based on a literature survey. The EuroFIR eSearch database was used to identify key foods that contain significant amounts of relevant nutrients and was used in combination with food consumption data.
Results: A questionnaire was designed to assess the dietary intake of the following nutrients: Vitamin A, Beta Carotene, Lutein/zeaxanthin, Lycopene, Vitamin E, Folate, Vitamin C, Zinc, Omega 3 fatty acids, Resveratrol. A food list with more than 90 foods including fish, vegetables and fruits was prepared based on the national food composition database and on national food consumption data. Links to food composition databases across the world were obtained through the EuroFIR eSearch database and values were assigned to food components taking into to account the geographic origin of the food and the value in the corresponding national Food Composition Database.
Significance: The EuroFIR eSearch database is a valuable tool that can be used to design food frequency questionnaires and validate food composition data used for nutrient intake calculation. It is particularly relevant to identification and validation of source food composition data for use with customized FFQs.

COMMON ALTERNATIVES FOR PORTION SIZE (CAPS). R. Sue Day, Amber D. Owens, Deirdre D. Douglass, University of Texas School of Public Health; W.S. Carlos Poston, C. Keith Haddock, Sara A. Jahnke, Institute for Biobehavioral Health Research, National Development and Research Institutes.

Keywords: portion size, assessment tool
Background: Nutrition professionals use various methods to prompt recall of portion size when completing dietary assessments. Prompting methods include food models, three-dimensional models, two-dimensional models, food pictures, and commonly known objects such as a deck of cards to represent 3 ounces of meat or a matchbox representing 1 ounce of cheese. Prompts using commonly known objects are useful because dietary assessments are often completed on the phone with limited access to food model prompts. A portion size tool of commonly known objects does not exist, thus we utilized published resources, added new items, and created a new tool called Common Alternatives for Portion Size (CAPS).
Objective: To develop a portion size tool using commonly known objects, Common Alternatives for Portion Size (CAPS), to use with 2-dimensional portion size methods in a study of the nutritional environment of US firefighters.
Description: Commonly known items such as cards, sports equipment, and cell phones can be used to describe portions of food consumed. We calculated the dimensions of each object, volume or surface area, and then multiplied by the appropriate FNDDS gram weight, cubic inch or surface inch, to determine the gram weight represented by each object. CAPS is being used by firefighters frequently in telephone and face-to-face 24 hr recalls with data coded using the Food Intake Analysis System (FIAS).
Conclusion: CAPS allows description of portion sizes of food consumed using pictures of frequently used well known objects. CAPS provides dimensions and/or volume of each object and suggestions for relationships to foods to aid data collectors and coders. CAPS items can be used for many foods and the dimensions entered into nutrient analysis programs to calculate gram weights. CAPS is available from authors by request.

OUTLIERS AND NON-QUANTIFIABLE DATA IN FOOD COMPOSITION – MEASURING ZERO.
Josephine Deeks, Rita Klutka, Nutrition Research Division, Health Canada.

Keywords: Outliers, Limit of Detection, Canadian Nutrient File
Background: The Sampling and Nutrient Analysis Program (SNAP-CAN) generates a large amount of raw nutrient data that must be aggregated into a single profile for each food, prior to entry in the Canadian Nutrient File (CNF). This poster will outline the statistical procedures employed to ensure accuracy and consistency when reviewing and compiling data. Further, we hope to enlighten users to the fact that while we report zeros, it is impossible to measure a true zero below the sensitivity of the instrument.
Objectives: To develop objective criteria for aggregating analytical composite data for entry into the CNF. The data should be statistically and scientifically reviewed to ensure that the variation is reasonable, outliers are properly dealt with and values are consistently treated for trace (<LOQ) and not detected (<LOD) measurements.
Description: The goal is to return a mean value and a standard deviation to indicate the variation. Rules are needed for attaining this goal in the unique environment of a nutrient database where consistency is key, natural variation is expected, there can be true zeros and it is only possible to report one numeric data point for each nutrient. Several techniques were applied to identify potential outliers. A number of criteria were tested to determine the most appropriate cutpoints that would allow the reporting of zero and take into account the uncertainty of data below detection and quantification limits. This approach is different than that of most analytical arenas where is it preferred to instead report non-detectable or <LOD.
Conclusions: This work has allowed us to determine rules which result in the long-term aim to provide a means whereby there can be uniform reporting of data particularly in regard to outliers and non-quantifiable data.

COLLABORATIVE STUDY ON MODIFIED CHOLESTEROL DETERMINATION METHOD FOR MEAT AND POULTRY USING GAS CHROMATOGRAPHY: PRELIMINARY DATA. Thu T. N. Dinh, Leslie D. Thompson, Michael L. Galyean, J Chance Brooks, Department of Animal and Food Sciences, Texas Tech University, Lubbock, TX; L Mallory Boylan, Department of Nutrition, Hospitality, and Retailing, Texas Tech University, Lubbock, TX; Kristine Y. Patterson, Joanne Holden, Nutrient Data Laboratory, United States Department of Agriculture, Beltsville, MD; Terry E. Engle, Karen S. Sellins, Department of Animal Science, Colorado State University, Fort Collins, CO; Anthony Fontana, Jerrold J. Leahy, Silliker, Inc., Chicago Heights, IL.

Keywords: meat, poultry, cholesterol, gas chromatography, collaborative study
Objective: To validate collaboratively a cholesterol determination method for meat and poultry.
Materials and Methods: A 1-g sample was saponified by ethanolic KOH. Cholesterol was extracted by toluene and quantified by GC-FID without derivatization. Fourteen meat and poultry matrices (n = 3 or 8), including a standard reference material (SRM1546, certified value: 67.8 to 82.2 mg/100 g), were analyzed. All samples were blind coded in random order. Data from 3 laboratories (LAB1, LAB2, and LAB3) were collected. The experimental design also allowed for a comparison of method application at LAB1 and LAB2 on 4 matrices (n = 8).
Results: Before the collaborative study, this method was validated in a single-laboratory study. The cholesterol concentrations of the 14 matrices varied from 49.91 to 92.16 mg/100 g. Both within- and between-laboratory variances contributed to interlaboratory reproducibility. The coefficients of variation (CV) for reproducibility ranged from 3.21 to 11.81% with Horwitz ratios of 0.56 to 1.99, which were within the recommended range of 0.5 to 2.0. Fat matrices (cooked and raw) had the largest reproducibility CV compared with other matrices ($P < 0.05$). The concentrations of SRM1546 from LAB1 and LAB3 were within the certified range whereas that from LAB2 was slightly less than the lower level of the range.
Significance: This method decreases labor associated with sample preparation without jeopardizing performance, compared with the AOAC 994.10. After extensive validation, it is now routinely used to update cholesterol content of meat and poultry in the USDA National Nutrient Database for Standard Reference.
Funding Disclosure: USDA and NIH.

BUILDING A USDA COMMODITY FOODS NUTRIENT DATABASE FOR ANALYSIS OF FOOD DISTRIBUTION PROGRAMS. Deirdre Douglass, Thea Palmer Zimmerman, Sujata Dixit-Joshi, Joan Benson, Suzanne W. McNutt, Westat.

Keywords: USDA Commodity Foods
Background: To ensure food security among low-income households, USDA implements several federally funded Food Distribution Programs for children and families. Assessment of the performance of these programs requires comparison of the foods offered and delivered to national nutrition standards.
Objective: To develop one database of USDA commodity foods that includes nutrients, My Pyramid Equivalent values, and Healthy Eating Index values for every commodity food to enable assessment of the USDA Food Distribution Programs.
Description: Westat built a USDA commodity foods nutrient database by first linking every commodity provided in 2009 to a USDA Food and Nutrient Database for Dietary Studies (FNDDS4) food code. This enabled determination of nutrients (from FNDDS4), My Pyramid Equivalents (MPEs) and Healthy Eating Index (HEI) whole fruit equivalents. Next, nutrients and equivalents were adjusted to account for yield factors, as commodity foods are often provided as raw foods and analyses will be based on the nutrients and MPEs available in the foods as eaten. Adjustments were also made to sodium levels to ensure that the sodium content reflected the amount contained in the food alone.
Conclusion: The resulting USDA commodity foods nutrient database contains 420 commodity foods and a total of 97 components: the 65 nutrients provided by FNDDS4, 32 My Pyramid equivalents, and 1 additional whole fruit equivalent provided by the USDA CNPP database for calculation of HEI; all values were adjusted as described above. The database will be used to analyze the nutritional content of foods provided to children by the USDA Supplemental Foods Distribution Programs.

A MODERN CATALOG FOR THE INDEXING AND RETRIEVAL OF INFORMATION ON FOODS, MEALS AND DIETARY SUPPLEMENTS. Gig Graham, Benetta Corporation, David Haytowitz, USDA Nutrient Data Laboratory, Joanne Holden, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD.

Keywords: food composition, formulation, data retrieval, controlled food vocabulary, food additives
Background: Information about foods, meals and dietary supplements is scattered among different databases. Many use unique methods to classify foods. Some have well-defined applications to retrieve information, while others are just files. A controlled food vocabulary implemented in a standardized food catalog with common tools would facilitate the exchange of information about food labels, nutrient composition, food additives, growing and preparation methods, and marketing claims. Common methods and tools also could reduce redundancy, miscommunication, and delays in sharing information needed to solve problems related to food safety and public health.
Objective: The Benetta Corporation and USDA's Nutrient Data Laboratory are collaborating to develop a modern food catalog which will meet the needs of food safety, health promotion, and disease prevention initiatives.
Description: The project uses the USDA National Nutrient Database for Standard Reference along with other databases from USDA, FDA, EPA, and CODEX. The LanguaL Controlled Food Vocabulary is used to provide standardized, multi-faceted food descriptions. Flamenco indexing technology enables easy-to-use search and retrieval procedures. The catalog incorporates the FDA Structured Product Label (SPL) standard to facilitate electronic data interchange.
Conclusion: This new tool provides an integrated approach for defining and retrieving food information from diverse databases. Information in electronic messages is formatted for easy interchange. It should prove useful to government agencies, food companies, and food consumers when identifying and selecting foods, exchanging food data, implementing traceability for food safety, and promoting public health.

USE OF ARCHIVAL VERSIONS OF A FOOD AND NUTRIENT DATABASE TO TRACK TRENDS IN THE NUTRITIONAL QUALITY OF FOODS IN THE MARKETPLACE: A CASE STUDY. Lisa Harnack, Michael Oakes, Simone French, Janet Pettit, Denise King, University of Minnesota.

Keywords: Food Marketplace Trends
Objective: Describe benefits and challenges in using archival versions of a food and nutrient database to examine trends in the nutritional quality of foods in the marketplace.
Methods: Using archival versions of the NCC Food and Nutrient Database, a data set was assembled to examine trends in the calorie content of restaurant menu offerings at 10 leading fast food restaurant chains over a 14 year period (1997-2010).
Results: A major benefit in using archival versions of a food and nutrient database was ready access to historical nutrient composition information. Additional benefits include access to detailed documentation regarding food and nutrient information in various versions of the database and availability of information beyond label nutrients. A number of shortcomings were identified. First and foremost, because each restaurant chain in the database was updated every other year on an alternating schedule, trends had to be examined in seven 2 year time periods (1997-1998, 1999-2000, 2001-2002, etc.) to ensure that all ten restaurants were represented in each period. Other limitations encountered include incompleteness in terms of menu items (e.g. short-term promotional menu items were generally not included in the database) and number of restaurant chains (only 10 chains in database from 1997-2010).
Significance: Most available food and nutrient databases have been developed primarily for use in quantifying the food and nutrient intake of individuals. Consequently, as illustrated in this case study, they may not be perfectly suited for monitoring trends in the food marketplace. Despite shortcomings, however, existing databases may be a valuable resource.

SELECTED VITAMINS AND MINERALS IN U.S. INFANT FORMULAS. Mona Khan, Pamela R.Pehrsson, Kristine Patterson, Agricultural Research Service, Human Nutrition Research Center, Nutrient Data Laboratory, Beltsville, Maryland.

Keywords: Infant formula, Vitamins, Minerals
Objective: Analyze infant formulas in order to update values currently in the USDA National Nutrient Database for Standard Reference (SR). The 1980 Infant Formula Act and subsequent legislation mandated fortification of all infant formulas with specific levels of vitamins and minerals/100 kilocalories. Manufacturers are required to assure these levels in their products. An earlier study of the vitamin D and arachidonic and eicosapentaenoic acid values in infant formulas showed they met or exceeded label claims and fell within allowable ranges, however sampling and analysis for other vitamins and minerals had not been conducted.
Methods: Highly consumed milk- and soy-based, ready-to-feed (RTF), and reconstituted infant formulas (n = 13) were sampled nationally at 12 locations. Vitamins (n = 13) and minerals (n =10) were analyzed by qualified laboratories using valid methods and quality control procedures. Analytical values were compared to values reported by the industry (label values) and values currently stipulated by the Infant Formula Act.
Results: Within analytical uncertainty, the data for all vitamins and minerals met label claims and were within allowed ranges for each formula analyzed.
Significance: Infants must receive a complete range of nutritional needs at every stage of their growth, including vitamins and minerals. At 6 months, 57% and at 12 months 78% of infants are dependent on infant formula and other infant foods (http://www.cdc.gov/breastfeeding/data/reportcard2.htm); this new analysis indicates that vitamins and minerals listed in infant formula are present as described.
Funding: Supported by the USDA as well as an Interagency Agreement between USDA and the NIH.

DETERMINING MYPYRAMID EQUIVALENTS DATA FOR A NEW DIET ASSESSMENT TOOL. Kristin L. Koegel, Patricia Britten, Kevin J. Kuczynski, Center for Nutrition Policy and Promotion, USDA.

Keywords: MyPyramid Equivalents Database, food groups
Objective: To support development of an up-to-date food database for a new interactive diet assessment tool by USDA Center for Nutrition Policy and Promotion, by determining MyPyramid equivalents for a subset of foods from the Food and Nutrient Database for Dietary Studies 4.1 (FNDDS) that were not included in earlier versions of FNDDS.
Methods: New food codes (n=397) not found in the MyPyramid Equivalents Database (MPED) 2.0, for the National Health and Nutrition Examination Survey 2003-04, but which were in the FNDDS 4.1 were identified. The MPED includes cup or ounce equivalents per 100 g of food for each USDA Food Guidance System food group and subgroup. For this project, MPED values were determined for a subset of the 397 new foods. Formulated foods (e.g., breakfast cereals, energy bars), infant formulas, baby foods, and modifications (i.e., different type of fats and milk) made to existing foods in the MPED were excluded, but MyPyramid equivalents for the formulated foods and modifications will be calculated and included in the assessment tool. Calculation methods, including complex mixtures with moisture gains and losses, fat gains, and raw grain ingredients, will be described.
Results: MyPyramid equivalents data were determined for a subset of new foods from FNDDS 4.1.
Significance: The additional data will enhance the new diet assessment tool food database, keeping it current with consumption practices. These data will also be used in the Healthy Eating Index and Food Plans.

REALIGNMENT OF VEGETABLE SUBGROUPS: 2010 DIETARY GUIDELINES FOOD PATTERN MODELING ANALYSES. Kevin Kuczynski, MS RD, Linda Cleveland MS RD, Kristin Koegel, MBA RD, Patricia Britten PhD, Center for Nutrition Policy and Promotion, USDA.

Objective: To determine revisions to MyPyramid vegetable subgroups which would better reflect actual consumption, without compromising the nutrient adequacy of the food patterns.
Methods: All FNDDS 2.0 foodcodes and recipes were examined and all vegetable ingredients were disaggregated into the appropriate MyPyramid subgroups (Dark-Green, Orange, Dry Beans and Peas, Starchy, and Other). Similar vegetable ingredients were assigned to an item cluster within each subgroup. Vegetable intake was calculated using 2-day weighted consumption data from the 2003-2004 National Health and Nutrition Examination Survey. Item clusters were then shifted to create revised vegetable subgroups to help balance the relative consumption amounts among subgroups, while considering similarity of nutrient content. SAS 9.2 was used for all analyses and calculations.
Results: Tomatoes and red peppers were moved out of Other vegetables and combined with Orange vegetables, creating a new Red/Orange subgroup. The proportion of vegetables in the Orange subgroup increased from 4.0% of total vegetable consumption to 26.2% in the new Red/Orange subgroup, giving tomatoes more prominence as well as balancing the subgroups. Butterhead lettuce and bok choy were moved from Other vegetables into the Dark-Green subgroup based on similarity in nutrient composition. This change increased the proportion of Dark-Green vegetables from 5.9 % to 6.0%. As a result of these changes, the proportion of total vegetables in the Other vegetables subgroup decreased from 55.3% to 32.9%.
Significance: Vegetable subgroup shifts help to highlight vegetables of importance and allow recommendations for intake levels that are achievable, without compromising the nutrient adequacy of the patterns.

A SIMPLE DIMENSION OF FOOD USEFUL IN PREVENTING OMEGA-3 IMBALANCES. Bill Lands, ASN Fellow, retired.

Keywords: omega-3, omega-6, fatty acids, USDA Nutrient Database, primary prevention

Background: Many detailed dimensions of the milligrams of dietary 18-, 20- and 22-carbon omega-3 and omega-6 acids that are available in the USDA Nutrient Database can be summarized quantitatively in a single Omega-3 Balance Score for each food item. This single simple value informs personal choices and helps avoid unintended omega-3 imbalances when planning food shopping lists and selecting individual food items at the point of purchase.

Methods & Results: The explicit objective Omega-3 Balance Score can be made by summing differences in 18-carbon n-3 and n-6 nutrients with differences in 20- and 22-carbon n-3 and n-6 nutrients listed in the USDA Nutrient Database. When averaged for the 20-30 different foods consumed per day, the average Score allows estimates of the resultant clinically important health risk assessment (HRA) biomarker, the %omega-6 in tissue highly unsaturated fatty acids (HUFA). A 50 microliter finger-tip blood sample monitors the %n-6 in HUFA, confirms the estimates made with the Omega-3 Balance Score and informs individuals of their likely risk for cardiovascular mortality (CHDdeath = 3 x (%n-6 in HUFA) - 75).

Discussion: Choosing foods that balance n-3 and n-6 hormone precursors has a very broad impact on human health. Growing evidence indicates that relative omega-3 deficits in tissues reflect omega-6 overabundances that give excessive actions at selective receptors on nearly every cell and tissue of the body. Those receptor actions amplify ischemic, thrombotic and arrhythmic cardiovascular events and amplify consequences of intermediate mediators of oxidant stress and inflammation which cause more severe immune-inflammatory and psychiatric disorders, including atherosclerosis, arthritis, asthma, bone loss, cancer growth, length of hospital stays, depression, suicide, classroom disruptions and unproductive workplace behaviors.

Conclusion: When informed people voluntarily choose foods that lower their personal HRA value from the current average level near 80% to 55%, we can predict much lower associated health claim costs. In a corporate wellness program for 100,000 employees, such voluntary behavioral change in food selections may provide savings every year of over $100 million due to lower health claim costs. The simple Omega-3 Balance Score guides consumers toward informed personal choices that can prevent a primary cause of disease, cut financial losses and provide a higher quality of life.

A SIMPLIFIED CHLOROFORM-METHANOL METHOD FOR THE QUANTITATIVE DETERMINATION OF TOTAL LIPIDS IN MEAT AND POULTRY. Ana Marie Luna, Leslie D. Thompson, J. Chance Brooks, Jerrad Legako, Jennifer Martin, Tyson Brown, Thu Dinh, Samantha Stephenson, Texas Tech University, Animal and Food Sciences, Lubbock, TX; Kristine Patterson, Joanne Holden, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, MD.

Keywords: total lipids, meat, poultry, chloroform-methanol

Objective: To conduct an in-house validation of the modified version of the AOAC Official Method 983.23 for the determination of total lipids in meat and poultry using 1:1 chloroform/methanol (vol/vol) extraction.
Materials and Methods: The validation was conducted independently by six analysts using homogenized samples of SRM1546 (meat homogenate from NIST, 19.6 to 22.4% fat, n = 8), and two quality control materials (n = 8), Beechnut Beef Baby Food (BBF, 3.08 to 3.59% fat) and Chicken Baby Food (CBF, 3.40 to 5.38% fat).
Results: This simplified method requires only 1 g of homogenized samples and a single extraction of total lipids by chloroform (8 mL)/methanol (8 mL). All values for SRM1546 were within the certified range with coefficients of variation (CV) of less than 5%. The recovery of total lipids in SRM1546 was 97.90 to 101.56%. Most values for BBF and CBF were within the expected ranges with CV of less than 6.0%. The precision was significantly different among six analysts ($P < 0.05$) with one analyst having CVs of 10.97 (BBF) and 13.37% (CBF). The CVs for reproducibility were 6.58 (BBF), 15.56 (CBF), and 3.75% (SRM1546). The 1-g sample size was sufficient to determine total lipid content of 3 to 70%. An analyst can complete 64 to 100 samples per day with much lower cost as compared with the AOAC 983.23.
Significance: The modification reduces labor intensity and cost, increases productivity, and maintains the robust performance for routine analysis of total lipids in meat and poultry.
Funding Disclosure: USDA and NIH.

RECIPE PROTOCOL PROJECT: EVIDENCE-BASED STANDARDS FOR INGREDIENT COMPONENTS AND AMOUNTS. Carrie Martin, MS, RD, Jaspreet KC Ahuja, MS, Grace Omolewa-Tomobi, BS, Staci McGonigal, MS, RD, Alanna Moshfegh, MS, RD, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service,U.S. Department of Agriculture, Beltsville, MD.

Keywords: recipe protocols, food composition, dietary surveys, WWEIA NHANES

Objective: The Food and Nutrient Database for Dietary Studies (FNDDS) is a database of nutrient values and weights of foods used to analyze dietary intakes from the What We Eat in America, National Health and Nutrition Examination Survey (WWEIA, NHANES). Every two years, the FNDDS is updated to reflect the changing marketplace and dietary trends tied to the most recent WWEIA, NHANES. To improve the utility of analyses utilizing FNDDS, the Food Surveys Research Group at ARS is developing recipe protocols (using a standardized approach) for multi-ingredient foods in the FNDDS.
Materials and Methods: The major steps in recipe protocol development include: (1) identification and review of current recipe sources to identify common ingredients, their amounts, and methods of preparation, (2) development of protocols for use across similar food groupings using ingredient and amount data, and (3) application of protocols to standardize amounts of recipe ingredients in the food groups whenever possible.
Results: Recipe protocols are currently in development for 2300 food codes, which represent approximately one-third of the reported foods in the WWEIA, NHANES. Recipes for the FNDDS 6.0 will be updated using new protocols, taking into account the need for new recipes and frequency of reports.
Significance: The results of the Recipe Protocol Project will enhance the continuous review and updating of foods in the FNDDS by applying a standardized approach to inform decisions and systematically enhance the quality of the database. Published documentation of the recipe protocols will provide transparency of methods of database development for FNDDS users.

PHYTOSTEROL, FLAVONE, SAPONIN AND ALKALOID DATABANK IN 149 HERBS. He Mei, Wang Zhu, Yang Yuexin, National Institute for Nutrition and Food Safety, China CDC.

Keywords: Phytosterol, Flavone, Saponin, Alkaloid, Herbs
Background: In tr***aditional*** Chinese medicine, herbs are widely used in foods for health protection. In order to regulate and guide herbs secured application, in 2002, China Ministry of Health public the 51st bulletin listing herbs name that could be used in functional foods. Some bioactive materials such as phytosterol, flavone, saponin, alkaloid, etc. are taken as main functional components or Identifying markers in these herbs. But till now, the distribution of these components in herbs has not been known.
Objectives: To analyze concentration of functional components in herbs after setting up suitable methods. And establish database for raw ingredients of functional foods.
Description: According to the herbs name list in 51st bulletin, we collected 149 herbs from Tong Ren Tang Chinese-drugstore. After identifying their backgrounds in genus, resource, place of production, and so on, the herbs were analyzed based on AOAC 994.10 method for 3 kinds of phytosterol, aluminum chloride colorimetric assay for total flavonoids, vanillin perchloric acid assay for total saponins, and acid dye colorimetry assay for total alkaloids. It was shown that total flavonoids and total saponins concentration varied largely in herbs, while total alkaloids were varied rather little. Herbs from bud, fruit and leaf were rich in Total flavonoids, leaf contained more total saponins, and root richened by total alkaloids.
Conclusions: Phytosterol, flavone, saponin and alkaloid were widely existed in 149 herbs. The concentration databank would provide great advises for designing, producing, and checking functional foods.

CONVERSION OF AUSTRALIAN FOOD COMPOSITION DATA FROM AUSNUT1999 TO 2007 FOR THE MEASUREMENT OF THE LONG CHAIN OMEGA-3 CONTENT OF FISH AND SEAFOOD. Elizabeth Neale, Yasmine Probst, Rebecca Thorne, Qingsheng Zhang, Jane O'Shea, Linda Tapsell, Smart Foods Centre, University of Wollongong.

Keywords: Nutrient database, fish and seafood, LC omega-3 PUFA
Background: Long chain omega-3 polyunsaturated fatty acids (LC omega-3 PUFA) have been associated with numerous health benefits and are predominantly found in fish and seafood. However, a commonly used Australian food composition database, AUSNUT1999, does not contain LC omega-3 PUFA data for any foods. Measurement of the LC omega-3 PUFA content of diets thus requires matching AUSNUT1999 foods to those from AUSNUT2007, a recently released database which includes LC omega-3 PUFA data.
Objective: To convert clinical trial dietary data from AUSNUT1999 to AUSNUT2007 and measure LC omega-3 PUFA intake from fish and seafood.
Description: AUSNUT1999 diet history data from baseline, three and twelve months in the SMART study (ACTRN12608000425392) was converted to AUSNUT2007 using a number of procedures. Firstly, all available matches presented in FSANZ matching files were made. Secondly, all remaining foods were matched primarily based on conceptual similarities, with nutritional similarities achieved where possible. Finally, for recipes entered into the database, and foods which did not have an appropriate conceptual match, recipes were created. The LC omega-3 content of all fish and seafood products consumed by participants was then determined, and the mean LC omega-3 intake at each time point calculated.
Conclusion: Conversion of clinical trial diet history data from AUSNUT1999 to 2007 allowed for the measurement of LC omega-3 intake from fish and seafood. This process is based on a systematic approach of matching individual foods and recipes, which allows for the quantification of LC omega-3 PUFA content that was previously impossible in earlier nutrient databases.

USDA UPDATES SODIUM VALUES FOR SELECTED PROCESSED FOODS. Melissa S. Nickle, Pamela R. Pehrsson, PhD, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service,U.S. Department of Agriculture, Beltsville, MD.

Keywords: Sodium, Monitoring, Pizza, Soup, Sauce

Objective: Sodium is a nutrient of major public health concern because of the association between sodium intake and cardiac health. Processed and restaurant foods account for 77 percent of U.S. sodium intake. Under the USDA Nutrient Data Laboratory's sodium monitoring program, three different brands of pasta sauce, condensed tomato soup, and two types of pizzas were collected in 12 locations in 1998-99 and again during 2008-09.
Methods: Sample units of these foods were prepared for analysis using USDA National Food and Nutrient Analysis Program protocols. Analytical samples and quality control materials were analyzed by USDA-qualified laboratories using the ICP method.
Results: Sodium values in the same three brands of pasta sauce were compared between 1999 and 2009: Brand A pasta sauce declined 38% (from 635mg to 395mg/100g); Brand B remained constant (493mg/100g and 505mg/100g); and Brand C decreased 21% (from 451mg to 357mg/100g). Sodium levels in a popular brand of condensed tomato soup declined significantly from 551mg/100g (1998) to 380mg/100g (2009). The sodium levels of both types of pizzas (same brand) increased slightly from 1999 to 2008. Rising crust cheese pizza increased from 606mg/100g (1999) to 696mg/100g (2008); rising crust supreme pizza increased from 682mg to 712mg/100g. A suggested serving for pizzas ranged from 187-227g.
Significance: These analyses suggest a trend in decreasing sodium levels by product type and provide current, accurate data for important contributors of dietary sodium for USDA databases and are included in the current USDA Nutrient Database (SR 23) permitting tracking of the sodium content of specific foods to estimate impact of changes in the food supply on population intakes.
Funding: ARS/USDA and NIH.

RE-EVALUATION OF MINERAL COMPOSITION IN HAWAIIAN GROWN LEAFY GREEN VEGETABLES. Antonio P. Perfecto, Joannie Dobbs, Michael A. Dunn, University of Hawaii at Manoa.

Keywords: Hawaii, minerals, green leafy vegetables

Objective: Many leafy green vegetables are prepared by boiling and the cooking water is discarded. It is not uncommon for nutrient analysis values for cooked produce to be imputed from fresh produce values. This study objective was to evaluate the mineral content of 10 locally consumed green leafy vegetables.
Materials and Methods: Ten green leafy vegetables consumed by many ethnic groups in Hawaii were evaluated for mineral content. These included: chrysanthemum, sweet potato leaf, ung choy, watercress, amaranth leaf, bitter melon leaf, edible hibiscus, kale, moringa, taro leaf. Produce was purchased from local markets or obtained from local growers and prepared by boiling using typical times. Produce was then drained, homogenized using stainless steel equipment, and freeze-dried. Samples were sent to the LSU Agricultural Center and analyzed using inductively coupled plasma-emission spectroscopy. Minerals were compared with Daily Values (DV) per 85g reference amount.
Results: Bitter melon leaf met the DV definition of good for calcium, copper, iron, magnesium, and manganese. Four additional vegetables would be ranked as high in calcium (amaranth leaf, edible hibiscus, moringa, and taro leaf). Only bitter melon and amaranth provided 10% DV for magnesium. Copper and manganese were good in most produce.
Significance: The choice of plant-based diets is rapidly increasing. Our results present new information on mineral content of Hawaiian-grown boiled produce and this data could be used to improve the nutritional quality of the diet.

STEROL COMPOSITION OF SHELLFISH COMMONLY CONSUMED IN THE UNITED STATES. K.M. Phillips, D.M. Ruggio, K.R. Amanna, Virginia Tech; K.Y. Patterson, J. Exler, USDA Nutrient Data Laboratory.

Keywords: sterols, seafood
Objective: The goal was to obtain quantitative data on the sterol content and composition of shellfish and mollusks commonly consumed in the U.S. to update the USDA National Nutrient Database for Standard Reference, using a nationwide sampling plan and validated analytical methodology.
Materials and Methods: In 2007-8, the USDA sampled raw shrimp and sea scallops; steamed oysters, blue crab, and lobster; and clams (canned) from 12 statistically selected supermarkets across the United States. Raw mussels and clams were sampled locally (Blacksburg, VA). For each species, four composites comprising 3 locations were prepared; shrimp and scallops from 6 single locations were also analyzed. Fourteen sterols, major and minor, were determined in total lipid extracts after saponification and derivatization, using GC-FID for quantitation and MS for confirmation of peak identities.
Results: Crab, lobster, and shrimp contained significant levels (96.2-127 mg/100g) of cholesterol; canned clams and scallops had the lowest concentrations (23.4-30.1). Variability in cholesterol among single-location samples of shrimp was low. The major sterols in the mollusks were brassicasterol/desmosterol (12.6-45.6 mg/100g) and 24-methylenecholesterol (16.7-41.9), with the highest concentrations in oysters. Total non-cholesterol sterols were 46.5-75.6 in five scallops samples, but 107 mg/100 in one, with cholesterol also higher in that sample.
Significance: Crustaceans contain significant amounts of cholesterol and a high ratio of cholesterol/non-cholesterol sterols, while the opposite was found for mollusks. Between-sample variability in sterol content for some species suggests average concentrations may not represent those in specific local samples and demonstrates the importance of a representative sampling plan to obtaining reliable food composition data.
Funding Disclosure: NCI, NIH, FDA.

IRON BIOAVAILABILITY ESTIMATION BASED ON ASSIGNED HEME FACTOR IN THE CANADA NATIONAL FOOD INTAKE SURVEY AND NUTRIENT DATABASE. Ying Qi, W.Y. Wendy Lou, University of Toronto, Canada; Marcia Cooper, Bureau of Nutritional Sciences, Health Canada, Mary R. LâAbbe, University of Toronto, Canada.

Keywords: Absorbable iron, iron bioavailability, absorption factor, Monsen model
Background: Most dietary iron is found in heme and non-heme forms. Heme iron, primarily from meat, fish and poultry (MFP) is highly absorbable in contrast to non-heme iron from other foods. The current Recommended Dietary Allowance (RDA) for iron is calculated based on an estimate that iron in the North American diet is 18% bioavailable.
Objective: Our objective was to develop a SAS program for determining the total absorbable iron from the mixed Canadian diet based on the Monsen model (1978), using food intake records from the Canadian Community Health Survey (CCHS 2.2-Nutrition) conducted in 2004. Such a program can then be built into the National database design.
Description: Heme values for food sources containing MFP were incorporated into the Canadian Nutrient File (CNF) database, which enables heme iron, non-heme iron from such foods at each eating occasion to be calculated. Iron in food with no MFP source was considered to be non-heme iron. Appropriate absorption factors were applied to heme iron, and non-heme iron based on the co-consumption of the amount of enhancers and MFP. Absorbable heme (non-heme) iron is obtained from multiplying the sum of heme (non-heme) iron by the absorption factor for heme (non-heme) iron. Total absorbable iron is the sum of absorbable heme iron and non-heme iron.
Conclusion: Absorbable iron calculated using food intake records provides a more accurate estimate of iron bioavailability in the mixed Canadian diet than just total iron intakes. The approach described has been implemented into then Canadian National nutrient database and allows calculation of absorbable iron.
Funding disclosure: Beef Information Centre.

SAMPLE PROCESSING METHODS FOR THE NATIONAL FOOD AND NUTRIENT ANALYSIS PROGRAM (NFNAP). Amy S. Rasor, Nancy A. Conley, Katherine M. Phillips, Virginia Tech.

Keywords: food analysis, compositing, quality control
Objective: The objective is to report optimal homogenization methods for a wide range of food matrices, developed based on >1000 foods sampled nationally since 1998 for the USDA NFNAP, processed at a central laboratory, then distributed for nutrient analysis, to update food composition data in the National Nutrient Database for Standard Reference (SR).
Materials and Methods: Matrix characteristics including fat content, homogeneity, physical features, and specific nutrients to be analyzed (e.g., trace elements, light-sensitive components) and their stability in the matrix were primary considerations. A tentative protocol was developed for each matrix and a trial composite prepared and dispensed into subsamples. Composite homogeneity was evaluated by visual inspection of particle size and distribution, and analysis of appropriate indicator nutrients at points across in the dispensing sequence.
Results: Optimal homogenization of most foods was achieved using a 6L industrial food processor (Robot Coupe ™ Blixer). Freezing samples with liquid nitrogen was required for many foods, particularly fresh and dried fruits and vegetables. Some foods, such as small seeds and dry rice, were homogenized in small batches using a chopper/grinder mill (Girmi). Examples of homogeneity results are total lipid in frozen pizza, 13.36-13.66 g/100g (0.79% RSD); ash in dried figs homogenized using liquid nitrogen, 1.88-1.95 g/100g (1.04% RSD).
Significance: The use of standardized and validated sample processing methods prior to analysis is critical to achieve accurate nutrient values reported in SR, by minimizing possible bias and variability from the measurement process, leading to a more accurate and precise estimate of nutrient concentrations in the original food samples.
Funding disclosure: USDA.

THE USDA AUTOMATED MULTIPLE-PASS METHOD ACCURATELY ASSESSES SODIUM INTAKE.
Donna G. Rhodes, Theophile Murayi, John C. Clemens, Alanna J. Moshfegh, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

Keywords: sodium, dietary intake, Automated Multiple-Pass Method
Objective: Accurate and practical methods to monitor sodium intake of the U.S. population are critical given current sodium reduction strategies. While the gold standard for estimating sodium intake is the 24h urine collection, few studies have used this biomarker to evaluate the accuracy of a dietary instrument. Our objective was to compare self-reported dietary intake of sodium to 24h urinary excretion obtained in the USDA Automated Multiple-Pass Method (AMPM) Validation Study.
Materials and Methods: The AMPM, used to collect 24h recalls in What We Eat in America, NHANES was validated in a large doubly-labeled water study and shown to reduce bias in the collection of energy intakes in a study population that included 524 volunteers, ages 30-69 years. Using data from subjects (n=465) who completed at least one 24h recall plus collected a complete 24hr urine during the same period, the validity of sodium intake was assessed. Reporting accuracy was calculated as the ratio of reported intake to that estimated from the urinary biomarker (24h urinary Na/0.86). Estimations of sodium intake included salt added in cooking but did not include salt added at the table.
Results: For both males (n=239) and females (n=233), there were no significant differences between dietary sodium and urinary biomarker. Mean (95%CI) reporting accuracy was 0.93 (0.87, 1.00) for males and 0.91 (0.86, 0.98) for females.
Significance: The results of this study demonstrate that the AMPM is a valid measure for estimating sodium intakes at the group level provided food composition databases are routinely updated to reflect changes in the salt content of foods consumed.

WHAT WE EAT IN AMERICA, NHANES 2007-2008: MEAL AND SNACK PATTERNS OF ADULTS.
Donna G Rhodes, Meghan E Olesnevich, John C Clemens, Alanna J Moshfegh, Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, USDA, Beltsville, MD.

Keywords: Meals, snacks, What We Eat in America, NHANES
Objective: In order to investigate current meal and snack patterns of U.S. adults, one-day dietary intakes from What We Eat in America, NHANES 2007-2008, a nationally representative sample, were analyzed.
Materials and Methods: The 5-step USDA Automated Multiple-Pass Method was used in the survey to collect a 24-hour dietary recall from men (n=2662) and women (n=2758), ages 20 years and older and subdivided into the following race/ethnicity groups: non-Hispanic white (NHW); non- Hispanic black (NHB) and Hispanic. During the recall, the name of each eating occasion was self-selected from a fixed list provided in English and Spanish.
Results: Overall, 59% of men and 64% of women reported consuming the standard 3-meal pattern: breakfast, lunch, and dinner/supper. Percentages differed by race/ethnicity; 67% of NHW, 43% of NHB, and 50% of Hispanic reported this pattern. In addition, 51% of those who reported the 3 meals also reported consuming 2 or more snacks.
Despite differences in mean energy intake between men (2507 kcal/d) and women (1766 kcal/d), both genders consumed similar percentages of total daily energy at similar eating occasions. At breakfast, an average of 16% of the total daily energy intake was consumed, 24% at lunch, 36% at dinner/supper and 24% as snacks with Hispanics reporting the highest percentage of energy at breakfast (24%).
Significance: The most commonly reported meal pattern for adults in the U.S. was breakfast, lunch, dinner, and 2 or more snacks. Eating patterns need to be considered in both dietary intake research and intervention strategies.

APPLICATION OF URINARY SUCROSE AND FRUCTOSE AS AN INDICATOR BIOMARKER FOR IDENTIFYING LOW, MEDIUM, AND HIGH ADOLESCENT CONSUMERS OF DIETARY SUGARS. Tusa Rebecca E. Schap, Bethany L. Daugherty, Purdue University; Deborah A. Kerr, Curtin University of Technology, Carol J. Boushey, Purdue University.

Keywords: dietary assessment, biomarkers, adolescents
Urinary sucrose and fructose have been introduced as indicator biomarkers for dietary sugar intake. Although urinary sucrose and fructose are not widely adopted biomarkers, they hold promise for evaluating intake among adolescents given their high intakes of sugars.
Objective: The objective of this study is to compare estimates of total sugar intakes to 24 hour urinary sucrose and fructose.
Materials and Methods: Fifteen adolescents (ages 11-18y) were provided 3 meals and ad libitum sweet snacks over a 24 hour period. Gram weights of served foods and plate waste was recorded and nutrient composition was estimated using The Food and Nutrient Database for Dietary Studies. All adolescents provided complete 24 hour urine collections confirmed by the PABA-check method. Sucrose and fructose concentrations in urine were measured using an enzymatic assay specific for sucrose, glucose, and fructose.
Results: Three total sugar intake levels emerged ($p<0.0001$). Intakes were defined as low (n=5, mean 123 g/d, SD 22), medium (n=7, mean 173 g/d, SD 13), and high (n=3, mean 235 g/d, SD 25). Mean urinary fructose was significantly different at each total sugar intake level ($p=.002$). The mean fructose recovery for each intake level was: low 1.78± 1.69 mg/d, medium 2.70± 1.41 mg/d and high 8.10± 3.47 mg/d.
Significance: These results support urinary sucrose and fructose as indicator biomarkers for stratification of total sugar intakes among adolescents. Notably, urinary sucrose and fructose could be used to identify high consumers of often under-reported sweet snack foods, sugar sweetened beverages, and desserts.

NUTRITION PROFILE OF FOODS MEETING SODIUM REDUCTION TARGETS. Alyssa Schermel BSc, Mary R. L'Abbé, PhD, Department of Nutritional Sciences, University of Toronto.

Keywords: Sodium, sodium reduction targets, FLIP database

Objective: With the 2010 Canadian Sodium Reduction Strategy and the new sodium targets for foods set by Health Canada, our objective was to determine if nutritional trade-offs are being made to reduce the sodium content in foods.

Materials and Methods: We examined the nutritional profiles of Canadian food products from various categories available in the Canadian marketplace from February 2010 to February 2011 using our Food Label Information Program (FLIP) database. Products that met 2012 milestones and 2016 sodium targets were compared to products that did not meet these targets per 100g. Analyses focused on sodium, calories, fat, and sugar.

Results: In the ready-to-eat breakfast cereals category, cereals that met 2012 and 2016 targets were 50% ($P<0.01$) and 58% ($P<0.001$) higher, respectively, in total fat than those that did not meet targets. Crackers and canned vegetables that met 2012 targets were lower in fat ($P< 0.01$) and lower in calories ($P<0.05$), respectively, than those that did not meet targets. No significant differences were seen between canned tomatoes and ready-to-serve soups that met 2012 targets and those that did not.

Significance: In some food categories, other qualities related to "healthfulness" such as calories, fat, and sugar (though not observed in these food categories) may be less healthy in foods that meet sodium reduction targets, while in other categories, levels of other nutrients are "healthier" or remain virtually unchanged. Thus, it is recommended that sodium reduced foods are monitored in terms of their levels of other nutrients.

Funding disclosure: CIHR Public Health Policy Fellowship (AS) and Earle W. McHenry Chair research endowment (MRL).

NUTRITIONAL COMPOSITION OF RAW AND COOKED DARK CHICKEN MEAT. Samantha Stephenson, B.S., Texas Tech University, Animal and Food Sciences; Kristine Patterson, Ph.D., Joanne Holden, M.S., Nutrient Data Laboratory; Ana Marie Luna, B.S., Leslie Thompson, Ph.D., Texas Tech University, Animal and Food Sciences.

Keywords: Chicken, Dark Meat, Composition

Objective: Determine the nutritional composition and nutrient retention of lean meat and skin from raw, braised and roasted chicken thigh and drum to update data entries in the USDA National Nutrient Database for Standard Reference (SR).

Materials and Methods: Ready-to-cook thighs and drums (skin-on) were obtained from twelve retail stores across the U.S. Raw, braised and roasted drums and thighs were each dissected into separable lean, skin, and cartilage and bone. Proximate composition, B vitamins, minerals, fatty acid profiles, trans fat, and cholesterol of the separable lean of the drum and thigh and skin were determined by qualified laboratories using valid methods and quality assurance.

Results: Raw thigh and drum meat, and skin had higher moisture and lower fat, protein, and cholesterol compared to cooked products. Cooking concentrated B vitamins with the exception of B12 in the skin. No differences in B vitamins or Se content were noted among raw, braised, roasted thigh and drum on a wet matter basis. On a total solids basis only about 60% of the B12 was retained in roasted drum. Braising lowered ash, protein, and niacin content in skin compared to roasting. Cholesterol content of braised and roasted thigh and drum meat were similar ($P > 0.05$) with mean cholesterol content in thigh meat of 140.8 mg/100 g and drum of 132.0 mg/100 g. The cooked thigh and drum contained less than 0.05 g trans-fat/100 g lean and about 0.35 g of trans fat/100 g skin.

Significance: Updated nutritional data for dark chicken meat when available in the next SR will support nutrition monitoring, food policy development and education.

Funding Disclosure: USDA/ARS and NIH.

ACCURACY OF STATED ENERGY CONTENTS OF CHAIN RESTAURANT FOODS IN A MULTI-SITE STUDY. Lorien E. Urban, Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA, Megan A. McCrory, Department of Foods and Nutrition, Department of Psychological Sciences and Ingestive Behavior Research Center (IBRC), Purdue University, West Lafayette, IN; Gerard E. Dallal, Sai Krupa Das, Edward Saltzman, Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA; Judith L. Weber, Department of Pediatrics, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR, Susan B. Roberts, Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA.

Keywords: kilocalories, restaurants

Objective: To compare laboratory measured energy values to restaurant stated values in a randomized, multi-site study of chain restaurant foods.

Materials and Methods: We used bomb calorimetry to measure the energy contents of 269 randomly selected foods from chain restaurants in three states.

Results: Overall, measured energy was extremely variable but on average not different from stated values corrected for metabolizable energy factors (+7+43%, P=0.57). In foods obtained from sit-down restaurants, items with low stated energy (<600 kcal) contained more energy than stated compared to those with high energy (>600 kcal) (+5% vs. -8%, P=0.05). In addition, the 10% of foods that had the greatest discrepancy between measured vs. actual energy content were re-sampled and again had a similar discrepancy (54+28% and 44+26%, respectively, both P <0.0001 compared to 0%).

Significance: New government legislation will mandate increased reporting of nutrition information by restaurants but the stated energy values of restaurant foods are frequently inaccurate, and menu choices that are apparently appropriate for weight control tend to contain more energy than stated. These errors may hamper use of restaurant-provided nutrition information for self-monitoring of energy intake for weight control.

Funding disclosure: Tufts University, Purdue University, Arkansas Children's Hospital Research Institute, Arkansas Biosciences Institute.

CHEMICAL COMPOSITION AND HYDROGEN CYANIDE CONTENT OF FLOUR AND MEAL MADE FROM THREE BITTER CASSAVA CULTIVARS AS AFFECTED BY TRADITIONAL PROCESSING METHOD. Florence Uruakpa, PhD, Department of Nutrition & Dietetics, University of North Dakota, Grand Forks, USA; Ijeoma Osuji, MS, Eze Ogonna, BS, Department of Food Science & Technology, Federal University of Technology, Owerri, Nigeria.

Keywords: Cassava cultivars, Flour, Garri, Tubers
Objective: Cassava (Manihot esculanta) tubers provide 30% of total caloric intake in tropical countries. Three new cassava cultivars (TME419, 98/0505, 94/0561) developed by International Institute of Tropical Agriculture, Nigeria are widely distributed in Nigeria and other West African countries to improve its agricultural productivity and availability as food ingredient. This study characterized cassava cultivars based on its chemical and cyanide properties with emphasis on the impact of traditional processing methods.
Materials & Methods: Cassava tubers of the three cultivars were cleaned, peeled, washed, and grated. To obtain the flour, grated cassava mash was dewatered for 10 hrs, milled, sun dried for 32 hrs, sieved with muslin cloth to obtain fine-textured flour. To obtain garri (semolina-like cassava meal), grated cassava mash was dewatered and fermented for 28 hrs; then dried, sieved, dry-fried and cooled. Samples were stored for analysis. Chemical properties were measured using standard AOAC methods while hydrogen cyanide (HCN) content was determined by modified alkaline picrate calorimetric method.
Results: Chemical composition of flour showed that 94/0561 (3.8%) had highest protein content compared to TME419 (2.7%) and 98/0505 (2.5%). Ether extract was highest in 98/0505 (5.1%) followed by 94/0561 (3.3%) and TME419 (2.4%). Carbohydrate content of TME419 was highest (81.5%) compared to 94/0561 (76.4%) and 98/0505 (73.5%). For garri, protein was highest in 94/0561 (3.3%) while ether extract was highest in 98/0505 (3.6%). HCN content did not differ among cultivars, and its concentration was below minimum recommended tolerable level.
Significance: Cassava products processed by traditional method are safe for consumption and can serve as energy-rich and functional food ingredient in various food formulations.

SCREENING ANTIOXIDANT ACTIVITY FOR RAW MATERIALS COMMONLY USED IN CHINESE FUNCTIONAL FOODS. Zhu Wang, Shengsheng Zhou, Xuesong Xiang, Yuexin Yang, National Institute for Nutrition and Food Safety, China CDC.

Keywords: Chinese medicine, herbs, antioxidant activity,
Typical Chinese Medicine theory holds that objects have "four properties" of cold, hot, warm, cool, "five flavors " of acrid, sweet, sour, bitter, salty to describe food-drug characteristics. "Yin"(negative)-"Yang"(positive) theory is the core for evaluation of Chinese drugs healthy effects.
Objective: In this study, we tried to explain something about Yin-Yang by screening antioxidant activity in vitro for raw materials commonly used in Chinese functional foods.
Methods: 170 species of raw materials including plants, animals, mainly sampled from TongRenTang Store, were classified according to their properties, flavors and yin-yang character. A series of high throughput screening methods were introduced in determination of antioxidant activity based on ORAC method and classical DPPH● radical scavenging method. Nutrients, antioxidants such as flavonoids, saponins were synchronously tested.
Results: contrasted to vitamin C, a standard to describe the antioxidant activity, the water-soluble ORAC values for the 170 species were ranged between 0.27 ~ 3579μmol TE/g. Some herbs, such as kudingcha, epimedium, cinnamomum ramulus, dendrobium, vine of multiflower knotweed, were identified as with high value materials. Herbs with Cold property or with bitterness flavor were of higher antioxidant activities than other classification ($p<0.05$). The ORAC values for materials with yin character were significant higher than that with yang character.
Conclusion: It was concluded antioxidant activity might be a useful index to quantify the traditional Yin-Yang theory for Chinese functional foods evaluation.

UPDATES OF SODIUM VALUES FOR PORK PRODUCTS. Juhi R. Williams, Juliette C. Howe (Retired), Joanne M. Holden, Nutrient Data Laboratory, Beltsville Human Nutrition Research Center, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD; Ceci Snyder, Philip Logfren, National Pork Board.

Keywords: Sodium, Pork, Ham, Enhancement
Recent public health reports indicate that excessive dietary sodium intake can lead to stroke, coronary heart diseases, and renal diseases. The Institute Of Medicine has called for a reduction of dietary sodium intake in the US. Scientists at the USDA have initiated a project to monitor changes in the levels of sodium in processed foods.
Objectives: To compare the sodium content of various pork products; including fresh pork cuts, fresh ham, cured ham products and enhanced pork products.
Materials and Methods: Since 2003, various fresh pork products were purchased from 12 retail outlets using the multi-stage nationwide sampling plan developed for the USDA National Food and Analysis Program (Pehrsson, P. et. al, J. Food .Comp. Anal 13:379, 2000). Nutrient values, including sodium were determined for all pork products. Sodium was analyzed by the ICP multi-element method (AOAC, 984.27); Analytical quality control was monitored by the use of duplicate analyses as well as by certified reference materials. Nutrient data for cured ham were statistically evaluated using SAS General Linear Model Procedure (Critical value =$p < 0.05$); ANOVA (Critical level = $p < .05$) was used to conduct comparison between the enhanced pork cuts.
Results: Fresh pork cuts showed an overall decrease in sodium, whereas fresh ham cuts indicated a significant increase in sodium ($p < .0001$) from nutrient data generated in 1963. Enhancement of fresh pork and cured ham products showed a significant increase in sodium concentration ($p < .0001$) compared to non-enhanced pork products.
Significance: These data indicate that different processing methods for selected pork cuts can significantly affect sodium levels in that food.
Funding disclosure: This research has been supported by the National Pork Board and USDA.

APPLYING THE EPA PESTICIDE DATA PROGRAM PESTICIDE RESIDUE DATABASE TO 24-HOUR DIETARY RECALL DATA. Thea Palmer Zimmerman, MS, RD, Sujata Dixit-Joshi, PhD, MPH, David Marker, Sigurd Hermansen, Suzanne W. McNutt, MS, RD, Westat.

Keywords: Pesticide residue
Background: The EPA has developed the Food Commodity Intake Database to provide a link between the USDA Food and Nutrient Database for Dietary Studies and the EPA Pesticide Data Program (PDP) pesticide residue database, allowing for assessment of pesticide intake by individuals. The PDP pesticide residue database is a multi-year database, with only a subset of commodities analyzed in any given year.
Objective: To link 24-hour dietary intake data with the PDP pesticide residue database for determination of pesticide residue intake.
Description: Westat coded 24-hour dietary intake data using USDA Food and Nutrient Database for Dietary Studies (FNDDS) food codes for determination of nutrient intake. We then linked these data to USDA commodity foods using EPA Food Commodity Intake Database (FCID). The 561commodity foods were then matched to 10 years of PDP pesticide residue data. The PDP pesticide residue database contains 106 food commodities for which pesticide residues have been analyzed. We were able to identify PDP pesticide residue matches for 209 of the 561 FCID codes. Using these matches, we calculated estimated pesticide residue consumption for the coded intakes.
Conclusion: We were able to link 209 FCID commodity foods to the PDP pesticide residue database, allowing calculation of pesticide consumption for intake data coded using FNDDS.

Notes

Notes

Continuing Professional Education Certificate of Attendance

35th National Nutrient Databank Conference

A Healthier Food Supply: Public-private Partnerships for Food and Nutrient Databases

8 April 2011, Bethesda, Maryland

Participant Name: ______________________________

Hours awarded for educational session 5.0

CPE Level __2__ CDR Learning Need Code ____________________

Number of Poster hours requested: ________________

Total Number of CPE hours requested: ________________

Provider Signature – Patricia Packard MS, RD, Conference Co-Chair
Issuing Organization – 35th National Nutrient Databank Conference

April 8, 2011
Date

Individual's Copy

Participant Name: ______________________________

Hours awarded for educational session 5.0

CPE Level __2__ CDR Learning Need Code ____________________

Number of Poster hours requested: ________________

Total Number of CPE hours requested: ________________

Provider Signature – Patricia Packard MS, RD, Conference Co-Chair
Issuing Organization – 35th National Nutrient Databank Conference

April 8, 2011
Date

State Copy

Notes

PARTICIPANT LIST

Linda Abbott
U.S. Department of Agriculture
Office of Risk Assessment and
Cost-Benefit Analysis
1400 Independence Ave., SW
Washington, D.C. 20250-3811
Phone: 202 720-8022
labbott@oce.usda.gov

Jaspreet Ahuja
USDA-ARS-Food Sruveys
Research Group
10300 Baltimore Ave., Bldg 005
Beltsville, MD 20705
Phone: 301-504-0178
jaspreet.ahuja@ars.usda.gov

Isaac Akinyele
University of Ibadan
Department of Human Nutrition
Faculty of Public Health
Ibadan, Oyo State Nigeria,
West Africa
Phone: 2348023517157
olu_akins@yahoo.com

Jaswinder Anand
USDA-ARS-Food Sruveys
Research Group
10300 Baltimore Ave.
Bldg. 005, Rm. 237
Beltsville, MD 20705
Phone: 301-504-0181
jaswinder.anand@ars.usda.gov

Karen Andrews
USDA-ARS-Nutrient Data
Laboratory
10300 Baltimore Ave
Bldg. 005, Rm. 112
Beltsville, MD 20705
Phone: 301-504-0710
karen.andrews@ars.usda.gov

Joanne Arsenault
RTI International
3040 Cornwallis Road
Research Triangle Park, NC
27709
Phone: 919-541-8065
jarsenault@rti.org

Regan Bailey
NIH/ODS
6100 Executive Blvd, #3B01
Bethesda, MD 20892
Phone: 301-496-0187
baileyr@mail.nih.gov

Brian Barrows
USDA-ARS-Food Sruveys
Research Group
10300 Baltimore Ave,
BARC-West
Beltsville, MD 20705-2350
Phone: 301-504-0183
Brian.barrows@ars.usda.gov

Linda Kay Benning
Association of Public and
Land-grant Universities
1307 New York Ave., NW
Suite 400
Washington, D.C. 20005
Phone: 202-478-6065
lbenning@aplu.org

Carol Berg Sloan
California Walnut Commission
4212 Boyar Ave
Long Beach, CA 90807
Phone: 562-221-9869
cbsrd@verizon.net

Anne Bernier
NuVal
1A Rex Drive
Braintree, MA 02184
Phone: 781-228-5723
abernier@nuval.com

Ilana Bezerra
State University of Rio de
Janeiro
Rua Pinheiro Machado 301 ap.
302
Laranjeiras, Rio de Janeiro
22.231-090
Phone: 55-21-82297008
ilana.bezerra@yahoo.com.br

Seema Bhagwat
USDA-ARS-Nutrient Data
Laboratory
10300 Baltimore Ave.
Bldg.005, Rm. 202, BARC-W
Beltsville, MD 20705
Phone: 301-504-0696
seema.bhagwat@ars.usda.gov

Stephanie Blake
National Institute of Food and
Agriculture (USDA, NIFA)
1400 Independence Ave, SW
Washington, D.C. 20024-2225
Phone: 202-720-6079
sblake@nifa.usda.gov

Bradley Bolling
University of Connecticut
3624 Horsebarn Road Ext.
Unit 4017
Storrs, CT 06269
Phone: 860-486-2180
bradley.bolling@uconn.edu

Carol Boushey
Purdue University
700 W State Street
West Lafayette, IN 47907
Phone: 765-496-6569
boushey@purdue.edu

Shanthy Bowman
USDA-ARS-Food Sruveys
Research Group
10300 Baltimore Ave, BARC
West
Bldg 005, Rm. 125
Beltsville, MD 20705
Phone: 301-504-0619
shanthy.bowman@ars.usda.gov

Vivian Brake
Children's Hospital of
Philadelphia
1833 Foulkrod St
Phila, PA 19124
Phone: 215-590-4805
vividusa@aol.com

Carl Bredbenner
The Nutrition Company
PO Box 477
Long Valley, NJ 07853
Phone: 908-876-5580
nutrico@mindspring.com

Nga Brereton
Johns Hopkins Institute for
Clinical and Translational
Research
5617 Open Sky
Columbia, MD 21044
Phone: 410-955-9055
nbrereto@jhu.edu

PARTICIPANT LIST

Philip Brewster
Dept of Biomedical Informatics
University of Utah
HSEB Building, Room 5775
26 South 2000 East
Salt Lake City, UT 84112
Phone: 801-581-4080
phil.brewster@utah.edu

Patricia Britten
USDA-Center for Nutrition
Policy and Promotion
3101 Park Center Drive
Room 1034
Alexandria, VA 22302
Phone: 703-305-1062
Patricia.Britten@cnpp.usda.gov

Emily Brown
NIH Clinical Center Nutrition
Dept.
Building 10, Room B2-2426
10 Center Drive, MSC 1078
Bethesda, MD 20892
Phone: 301-594-6881
emily.brown@nih.gov

Karen Thompson Bullock
KTB-Government Contractor
POB 749
West Brookfield, MA 01585
Phone: 508-867-3434
ktbdesigns@charter.net

Katrina Butner
NIH Clinical Center Nutrition
Dept.
Building 10, Room B2-2426
10 Center Drive, MSC 1078
Bethesda, MD 20892
Phone: 301-594-9429
katrina.butner@nih.gov

Carol Byrd-Bredbenner
Rutgers University
26 Nichol Ave.nue
New Brunswick, NJ 08901
Phone: 732-932-2382
bredbenner@aesop.rutgers.edu

Pedro Camacho
Escola Superior das Tecnolgias
da Saude de Lisboa
Lisbon, Portugal
Pedro.camacho@estesl.ipl.pt

Catherine Champagne
Pennington Biomedical
Research Center
6400 Perkins Road
Baton Rouge, LA 70808
Phone: 225-763-2553
champacm@pbrc.edu

Deirdra Chester
USDA-ARS-Food Sruveys
Research Group
10300 Baltimore Ave., Bldg.
005, Room 102
Beltsville, MD 20705
Phone: 301-504-0187
deirdra.chester@ars.usda.gov

Cynthia Clark
Washington Cancer Institute
c/o 5304 Crestedge Lane
Rockville, MD 20853
Phone: 202-877-3498
cynthia.d.clark@medstar.net

Nancy Conley
Virginia Tech
304 Engel Hall
Blacksburg, VA 24060
Phone: 540-231-4361
nconley@vt.edu

Nancy Crane
FDA/CFSAN
5100 Paint Branch Parkway
HFS-830
College Park, MD 20740
Phone: 301-436-1456
nancy.crane@fda.hhs.gov

Ilona Csizmadi
Alberta Health Services Cancer Care
Tom Baker Cancer Centre
1331-29 Street NW
Calgary, Alberta, Canada T3A 2N6
Phone: 403-521-3372
Ilona.csizmadi@albertahealthser
vices.ca

Valerie Darcey
NIH Clinical Center Nutrition Dept.
10 Center Drive
Room B2-2426
Bethesda, MD 20892
Phone: 301-496-9873
darceyvl@cc.nih.gov

Sai Krupa Das
Jm USDA _HNRCA at Tufts
University
711 Washington Street
Room 1314 A
Boston, MA 02111
Phone: 617-556-3313
sai.das@tufts.edu

Susie Day
Univ. Texas School
of Public Health
1200 Herman Pressler
RAS 1027
Houston, TX 77379
Phone: 713-500-9317
rena.s.day@uth.tmc.edu

Josephine Deeks
Health Canada
251 Sir Frederick Banting Dr.
PL 2203E
Ottawa, Ontario K1A 0K9
Phone: 613-957-0926
josephine.deeks@hc-sc.gc.ca

Henry DeLima
DeLima Associates
1227 Providence Terrace
Suite L-2
McLean, VA 22101
Phone: 703-448-9653
hdl630@aol.com

Latha Devareddy
Kellogg Company
2 Hamblin Ave.
Battle Creek, MI 49017
Phone: 269-363-5500
latha.devareddy@kellogg.com

Thu Dinh
Texas Tech University
Main St. and Indiana Ave.
Box 42141
Lubbock, TX 79409-2141
Phone: 806-742-2805
thu.dinh@ttu.edu

Deirdre Douglass
Westat
10907 Rampart
Houston, TX 77096
Phone: 713-721-1276
DeirdreDouglass@westat.com

PARTICIPANT LIST

Insuk Durham
Griffin Hospital
238 Main Street, Suite 304
Cambridge, MA 02142
Phone: 617-661-3600
idurham@griffinhealth.org

Johanna Dwyer
ODS/NIH
6100 Executive Blvd
Bethesda, MD 20892
Phone: 301-435-2920
dwyerj1@od.nih.gov

Katie Egan
US FDA
5100 Paint Branch Pkwy
HFS-308
College Park, Maryland 20740
Phone: 301-436-1946
katie.egan@fda.hhs.gov

Julie Eichenberger Gilmore
University of Iowa
SW44-A GH, Inst for Clin & Trans Sci
University of Iowa
Iowa City, IA 52242
Phone: 319-384-5365
julie-gilmore@uiowa.edu

Alison Eldridge
Nestle Research Center
P.O. Box 44
Vers-chez-les-Blanc
1000 Lausanne, Vaud 26
Phone: 41-21-785-8365
alison.eldridge@rdls.nestle.com

Nancy Emenaker
National Cancer Institute
6130 Executive Blvd.
EPN 3158
Rockville, MD20852
Phone: 301-496-0116
emenaken@mail.nih.gov

Cecilia Wilkinson Enns
USDA-ARS-Food Sruveys Research Group
BARC-West, Bldg 005, Rm. 102
10300 Baltimore Ave.
Beltsville, MD20705
Phone: 301-504-0345
cecilia.enns@ars.usda.gov

Bethene Ervin
CDC/NCHS
3311 Toledo Rd., Rm. 4420
Hyattsville, MD 20782
Phone: 301-458-4205
rbe0@cdc.gov

Jacob Exler
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
Bldg. 005, Room 203, BARC-West
Beltsville, MD 20705
Phone: 301-504-0641
jacob.exler@ars.usda.gov

Jeremiah Fasano
FDA/CFSAN
5100 Paint Branch Parkway
HFS-255
College Park, MD 20740
Phone: 301-436-1173
jeremiah.fasano@fda.hhs.gov

Rachel Fisher
NIH Division of Nutrition Research Coordination
6707 Democracy Blvd., Rm 628
Bethesda, MD 20892
Phone: 301-594-7722
Rachel.Fisher@nih.hhs.gov

Lisa Fleige
PepsiCo
325 7th St NW
Suite 400
Washington, D.C. 20004
Phone: 202-567-2934
lisa.fleige@pepsico.com

James Friday
USDA-ARS-Food Sruveys Research Group
10300 Baltimore Ave.
Bldg. 005, Rm. 102, BARC-West
Beltsville, MD 20705
Phone: 301-504-0614
James.Friday@ars.usda.gov

Lisa Gable
Healthy Weight Commitment Foundation
13501 I Street, NW, Suite 300
Washington D.C. 20005
Phone: 202-639-5960
lgable@healthyweightcommit.org

Susan Gebhardt
USDA-ARS-Nutrient Data Laboratory
Bldg. 005, Room 209A
10300 Baltimore Ave.
Beltsville, MD 20705
Phone: 301-504-0644
susan.gebhardt@ars.usda.gov

Constance J. Geiger
President, Geiger & Assoc, LLC
1511 County Road 261
Fort Bridger, WY 82933
Phone: 307-782-6837
Constancegeiger@comcast.net

Constance Gewa
George Mason University
4400 University Dr. MS 5B7
Fairfax, VA 22032
Phone: 703-993-2173
cgewa@gmu.edu

Cheryl Gilhooly
Jean Mayer USDA HNRCA at Tufts University
711 Washington Street
Dietary Assessment Unit
Boston, MA 02111
Phone: 617-556-3154
cheryl.gilhooly@tufts.edu

Joseph Goldman
USDA-ARS-Food Sruveys Research Group
10300 Baltimore Ave.
BARC-West, Bldg 005, Rm 102
Beltsville, MD 20705
Phone: 301-504-0342
joe.goldman@ars.usda.gov

Gig Graham
Benetta
Bethesda, MD 20816
Phone: 240-396-6884
gagster@benetta.net

PARTICIPANT LIST

Qian Graves
FDA
5100 Paint Branch Pkwy
HFS-012
College Park, MD 20740
Phone: 301-426-1837
qian.graves@fda.hhs.gov

Patricia Guenther
USDA-Center for Nutrition
Policy and Promotion
3001 Park Center Dr.
Ste. 1032
Alexandria, VA 22302
Phone: 703-605-0253
patricia.guenher@cnpp.usda.gov

Janice Hall
Westat
1445 Research Blvd, Suite 500
Rockville, MD 20850
Phone: 301-738-3678
janicehall@westat.com

Ann Hall
USDA, FNS, Child Nutrition
Division
2736 Linden Lane
Silver Spring, MD20910
Phone: 703-305-2630
ann.hall@fns.usda.gov

Constance Hardy
Food and Drug Administration
5100 Paint Branch Pkwy
College Park, MD 20906
Phone: 301-436-1433
constance.hardy2@fda.hhs.gov

Laura Harkness
PepsiCo
100 Stevens Ave.
Valhalla, NY 10595
Phone: 914-831-4229
laura.harkness@pepsico.com

Lisa Harnack
University of Minnesota
Nutrition Coordinating Center
1300 South 2nd St., Suite 300
Minneapolis, MN 55454
Phone: 612-626-9398
harnack@epi.umn.edu

James Harnly
USDA-ARS-Food Composition
and Methods Development Lab
Building 161, BARC-East
Beltsville, MD 20705
Phone: 301-504-8569
james.harnly@ars.usda.gov

Terryl Hartman
Penn State
110 Chandlee Laboratory
University Park, PA 16802
Phone: 814-865-8747
tjh9@psu.edu

David Haytowitz
USDA-ARS-Nutrient Data
Laboratory
10300 Baltimore Ave.
B-005, Rm. 107, BARC-West
Beltsville, MD 20705
Phone: 301-504-0714
david.haytowitz@ars.usds.gov

Mei He
National Institute of Nutrition
and Food Safety, China CDC
Room 456, 29 Nan Wei Road
Xuan Wu District
Beijing, Beijing, China 100050
Phone: 8610-83132903
hemei2003@163.com

Bobbie Henry
Johns Hopkins University ICTR
600 North Wolfe Street,
Blalock 309
Baltimore, MD 21287
Phone: 410-955-9055
bjhenry@jhu.edu

Teresita Hernandez
Health Technomics, Inc
7800 Dassett Ct,, #301
Annandale, VA 22003
Phone: 703-916-7933
tbh1@earthlink.net

Joanne Holden
USDA-ARS-Nutrient Data
Laboratory
10300 Baltimore Ave., Bldg 005
BARC West
Beltsville, MD 20705
Phone: 301-504-0635
Joanne.Holden@ars.usda.gov

Norton Holschuh
General Mills, Inc.
James Ford Bell Technical
Center
9000 Plymouth Ave. N
Minneapolis, MN 55427
Phone: 763-764-3496
nort.holschuh@genmills.com

Kathy Hoy
USDA-ARS-Food Sruveys
Research Group
10300 Baltimore Ave.
Bldg. 005, Rm. 337
Beltsville, MD 20705
Phone: 301-504-0616
kathy.hoy@ars.usda.gov

Van Hubbard
Director, NIH Nutrition
Research Coordination NIDDK
NIH Bldg 2DEM, Room 631
6707 Democracy Blvd
Bethesda, MD 20892
Phone: 301-594-8827
hubbardv@mail.nih.gov

Rafia Hussain
Spring Grove Hospital Center
55 Wade Ave.
Catonsville, MD 21228
Phone: 410-402-7733
rhthyhfh@yahoo.com

Jennifer Hutchinson
Texas A&M University
400 Marion Pugh, #1508
College Station, TX 77840
Phone: 832-377-9020
RunnerJen08@neo.tamu.edu

Lisa Jahns
USDA ARS GFHNRC
2420 2nd Ave. N STOP 9034
Grand Forks, ND 58203
Phone: 701-795-8331
lisa.jahns@ars.usda.gov

Elaine Jones-McLean
Public Health Agency of Canada
785 Carling Ave. - AL 6809A
Rm. 929A
Ottawa, Ontario K1Y 3L6
Phone: 613.954.8670
Elaine.Jones-McLean@phac-aspc.gc.ca

PARTICIPANT LIST

Satya Jonnalagadda
General Mills Inc
9000 Plymouth Ave. North
Golden Valley, MN 55427
Phone: 763-764-3939
satya.jonnalagadda@genmills.com

Nandan Joshi
General Mills
9000 Plymouth Ave. N
Minneapolis, MN 55427
Phone: 763-764-4133
nandan.joshi@genmills.com

WenYen Juan
FDA/ONLDS
5100 Paint Branch Parkway
College Park, MD 20740
Phone: 301-436-1790
wenyen.juan@fda.hhs.gov

Debra Keast
Food & Nutrition Database Research, Inc.
1801 Shadywood Lane
Okemos, MI 48864
Phone: 517-347-2715
keastdeb@comcast.net

Monazzah Khan
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
Beltsville, MD 20705
Phone: 301-504-0690
Mona.khan@ars.usda.gov

Sooja Kim
NIH
9129 Kirkdale Rd.
Bethesda, MD 20817
Phone: 301-435-1780
kims@csr.nih.gov

Joel Kimmons
CDC
4770 Buford Hwy, NE
(Mail Stop K-25)
Atlanta, GA 30341-3717
Phone: 770-488-5371
jkimmons@cdc.gov

Sharon Kirkpatrick
National Cancer Institute
6130 Executive Boulevard
EPN 4005
Bethesda, MD 20892
Phone: 301-435-1638
kirkpatricksi@mail.nih.gov

Kristin Koegel
USDA-Center for Nutrition Policy and Promotion
3101 Park Center Drive, 10th flr
Alexandria, VA 22302
Phone: 703-305-2157
kristin.koegel@cnpp.usda.gov

Merel Kozlosky
NIH
10 Center Dr, MSC 1078
Bldg 10, Rm. B2-2426
Bethesda, MD 20892
Phone: 301-451-5884
kozloskym@cc.nih.gov

Susan Krebs-Smith
National Cancer Institute
6130 Executive Blvd MSC 7344
Bethesda, MD 20892
Phone: 301 496-4766
krebssms@mail.nih.gov

Marie Kuczmarski
University of Delaware
26 N College Ave.
010 Carpenter Sports Bldg
Newark, DE 19716
Phone: 302-831-8765
mfk@udel.edu

Kevin Kuczynski
USDA-Center for Nutrition Policy and Promotion
3101 Park Center Drive, 10th flr
Alexandria, VA 22302-1594
Phone: 703-305-2153
kevin.kuczynski@cnpp.usda.gov

Kimberly Kuczynski
Morrison Senior Dining Services
3050 Military Road NW
Washington, D.C. 20015
Phone: 202-363-8310
kimakucz@comcast.net

Mary L'Abbe
Dept of Nutritional Sciences, Univ of Toronto
Rm. 315 FitzGerald Building
150 College Street
Toronto, Ontario M5S 3E2
Phone: (416) 978-7235;
mary.labbe@utoronto.ca

Randy LaComb
USDA-ARS-Food Sruveys Research Group
Bldg 005, Rm. 336
10300 Baltimore Ave.
Beltsville, MD 20705
Phone: 301-504-0346
randy.lacomb@ars.usda.gov

Bill Lands
Fellow, ASN
6100 Westchester Park Drive, #1219
College Park, MD 20740
Phone: 301-345-4061
wemlands@att.net

Evelyn Lashley
USDA-ARS-BHNRC
BARC EAST, BLDG 307B, Rm.139
Beltsville, Maryland MD 20705
Phone: (301) 504-8411
Evelyn.Lashley@ars.usda.gov

Deborah Lee
USDA-AMS-PPB-BDQA
1400 Independence Ave. SW
Washington, D.C. 20050
Phone: 202-690-4940
Deborah.lee2@usda.gov

Jessica Leighton
FDA
10903 New Hampshire Ave.
Room 3222, Bldg 1
Silver Spring, Maryland 20993
Phone: (301) 796-7526
jessica.leighton@fda.hhs.gov

Linda Lemar
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
Bldg 005, Rm. 107
Beltsville, MD 20705
Phone: 301-504-0695
linda.lemar@ars.usda.gov

PARTICIPANT LIST

Ana Marie Luna
Texas Tech University
Indiana Ave. and Main Street
Lubbock, TX 79409
Phone: 806-742-2805
anamarie.luna@ttu.edu

John Lund
USDA
1400 Independence Ave.
Washington, D.C. 20250
Phone: 202-690-4938
john.lund@ams.usda.gov

Patricia Lynch
North Carolina A&T State University
1601 East Market Street
205 Benbow Hall
Greensboro, NC 27411
Phone: 336-334-7850
palynch@ncat.edu

Margaret Mangan
UNC-CH, Nutrition Epidemiology
2219 McGavran-Greenberg
CB 7461
Chapel Hill, NC 27599
Phone: 919-966-7236
mangan@email.unc

Judi Marlin
entegra
9801 Washingtonian Blvd.
Suite 1427A
Gaithersburg, MD 20878
Phone: 301-987-4448
Judi.Marlin@entegraPS.com

Linda Marmer
Sodexo
20461 Afternoon Lane
Germantown, MD 20874
Phone: 301-987-4654
linda.marmer@sodexo.com

Bernadette Marriott
Samueli Institute
1737 King Street, Ste 600
Alexandrie, VA 22314
Phone: 703-299-4841
bmarriott@siib.org

Carrie Martin
USDA-ARS-Food Sruveys Research Group
10300 Baltimore Ave.
Bldg 005, Rm. 102, BARC-West
Beltsville, MD 20705
Phone: 301-504-0617
carrie.martin@ars.usda.gov

Len Marquart
University of Minnesota
1334 Eckles Avenue
St Paul, MN 55108
Phone: 952-292-4719
lmarquar@umn.edu

Antonioa Mattia
FDA/CFSAN
5100 Paint Branch Pkwy
HFS-255
College Park, MD 21146
Phone: 301-436-1221
Antonia.mattia@fa.hhs.gov

Margaret McDowell
NIH/Division of Nutrition Research Coordination
6707 Democracy BLVD
Suite 629
Bethesda, MD 20892
Phone: 301-594-8824
Margaret.McDowell@nih.gov

Suzanne McNutt
Westat
3949 E. Viewcrest Drive
Salt Lake City, UT 84124
Phone: 301-738-3554
susiemcnutt@westat.com

Robert Merritt
CDC
4770 Buford Highway NE
Mail Stop K-47
Atlanta, GA 30341
Phone: 770-488-5185
rem2@cdc.gov

Angela Middleton
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
Beltsville, MD 20705
Phone: 301-555-1212
amiddl@gmail.com

Kevin Miller
Kellogg Company
2118 Milwaukee Ave.
Minneapolis, MN 55404
Phone: 269-660-4689
kevin.miller@kellogg.com

Diane Mitchell
Penn State University
110 Chandlee Laboratory
University Park, PA 16802
Phone: 814-863-5955
dcm1@psu.edu

Gabriela Montenegro-Bethancourt
CeSSIAM
17 Avenida 16-89 zona 11
Guatemala, Guatemala 1011
Phone: 502-247-3942
gmont.bt@gmail.com

Janice Montville
USDA-ARS-Food Sruveys Research Group
10300 Baltimore Ave.
Bldg 005, Rm. 102, BARC-West
Beltsville, MD 20705-2350
Phone: 301-504-0176
jan.montville@ars.usda.gov

Judi Morrill
San Jose State University
1239 Bellair Way
Menlo Park, CA 94025
Phone: 650-854-5390
morrill@stanford.edu

Alanna Moshfegh
USDA-ARS-Food Sruveys Research Group
10300 Baltimore Ave.
Bldg. 005
Beltsville, MD 20705
Phone: 301-504-0170
Alanna.Moshfegh@ars.usda.gov

Suzanne Murphy
University of Hawaii
1236 Lauhala St., Suite 407
Honolulu, HI 96813
Phone: 808-564-5861
suzanne@crch.hawaii.edu

PARTICIPANT LIST

Elizabeth Neale
Smart Foods Centre, University of Wollongong
University of Wollongong, Northfields Ave.
Wollongong, NSW 2522
Phone: 61242215123
epn579@uow.edu.au

Mark Nelson
Nestle USA
800 North Brand Blvd
Glendale, CA 91203
Phone: 818-549-5530
mark.nelson@us.nestle.com

Melissa Nickle
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
Mail Stop 47
Bldg. 005 BARC-West
Beltsville, MD 20702
Phone: 301-504-0691
Melissa.Nickle@ars.usda.gov

Forrest Nielsen
USDA, ARS, Grand Forks Human Nutrition Research Center
2420 2 Ave. North
Stop 9034
Grand Forks, ND 58202-9034
Phone: 701-795-8455
forrest.nielsen@ars.usda.gov

Kellie O'Connell
USDA-Center for Nutrition Policy and Promotion
3101 Park Center Drive
Room 1034
Alexandria, VA 22302
Phone: 703-305-0160
Kellie.O'Connell@cnpp.usda.gov

Meghan Olesnevich
USDA
10300 Baltimore Ave.
Bldg. 005, Rm. 102, BARC-West
Beltsville, MD 20705
Phone: 301-504-0370
Meghan.Olesnevich@ars.usda.gov

Grace Omolewa-Tomobi
USDA-ARS-Food Surveys Research Group
10300 Baltimore Ave,
Bldg. 005, Room 237A. BARC-West
Beltsville, MD 20705
Phone: 301-504-9391
Grace.Omolewa-Tomobi@ars.usda.gov

Monica Orozco
CeSSIAM
17 Avenida 16-89 (interior) zona 11
Guatemala City, Guatemala 1011
Phone: ++502 24733942
orozcomonica@yahoo.com

Patty Packard
ConAgra Foods
Five ConAgra Drive
Omaha, NE 68102
Phone: 402-240-6700
patty.packard@conagrafoods.com

Marisa Paolillo
NuVal LLC
1 Rex Drive, Suite A
Braintree, MA 02184
Phone: 781-228-5806
mpaolillo@nuval.com

Song-Yi Park
University of Hawaii
1236 Lauhala Street
Honolulu, HI 96813
Phone: 808-564-5947
spark@crch.hawaii.edu

Young-Hee Park
National Academy of Agricultural Science
Gwonsun-gu, Seodung-dong, Nokji-ro 160
Department of Agri-food Resources
Suwon, Kyonggi 441-853
Phone: +82 31 299 0481
ypark@korea.kr

Pamela Pehrsson
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave., BARC West
Building 005, Room 208A
Beltsville, MD20705
Phone: 301-504-0693
pamela.pehrsson@ars.usda.gov

Jean Pennington
NIH, retired
4404 Elm Street
Chevy Chase, MD 20815
Phone: 301-652-4953
jeanp12@verizon.net

Antonio Perfecto
University of Hawaii at Manoa
3128A Hinano St
Honolulu, HI 96815
Phone: 510-918-5610
aperfect@hawaii.edu

Ying Qi
University of Toronto
35 Charles Street W, Apt 502
Toronto, Ontario M4Y1R6
Phone: 416-788-1508
ying.qi@utoronto.ca

Jeanette Queenan
Tufts University School of Medicine
150 Harrison Ave.
Jaharis Building, Room 263
Boston, MA 02111
Phone: 617-636-2921
jeanette.bowles@tuts.edu

David Queenan
CCS Companies
Two Wells Ave.
Newton, MA 02459
Phone: 617-965-2000
dqueenan@ccsusa.com

Damanna Rao
National Institute of Food and Agriculture-USDA
1400 Independence Ave., MS 2220
Washington, D.C. 20250
Phone: 202-401-6010
rrao@nifa.usda.gov

PARTICIPANT LIST

Amy Rasor
Virginia Tech
304 Engel Hall
Department of Biochemistry
Blacksburg, VA 24061-0308
Phone: 540-231-9292
arasor@vt.edu

Jill Reedy
National Cancer Institute
6130 Executive Boulevard
Bethesda, MD 20892
Phone: 301-594-6605
reedyj@mail.nih.gov

Kristin Reimers
ConAgra Food
Five ConAgra Drive
Omaha, NE 68102
Phone: 402-240-7693
kristin.reimers@conagrafoods.com

Donna Rhodes
USDA-ARS-Food Sruveys Research Group
10300 Baltimore Ave.
Bldg 005, Rm. 102, BARC-West
Beltsville, MD 20705
Phone: 301-504-0348
Donna.Rhodes@ars.usda.gov

Susan Roberts
Tufts University
711 Washington Street
Energy Metabolism Lab
Boston, MA 02111
Phone: 617-556-3238
susan.roberts@tufts.edu

Janet Roseland
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
BARC-West, Building 005
Beltsville, MD 20705
Phone: 301-504-0715
janet.roseland@ars.usda.gov

Kelly Day Rubenstein
USDA Economic Research Service
1800 M St., NW
Room 4015S
Washington, D.C. 20036
Phone: 202-694-5515
kday@ers.usda.gov

Nadine Sahyoun
University of Maryland
0112 Skinner Building
College Park, MD 20742
Phone: 301-405-8774
nsahyoun@umd.edu

Leila Saldanha
ODS/NIH
5904 Sandbrook Ct
Alexandria, VA 22307
Phone: 292-460-3529
saldanhl@mail.nih.gov

Laura Sampson
Harvard School of Public Health
Nutrition Dept, Bld 2, Rm. 315
665 Huntington Ave.
Boston, MA 02115
Phone: 617 432 4563
nhlas@channing.harvard.edu

Susan Sanders
The Coca-Cola Company
P. O. Box 1734
Atlanta, GA 30301
Phone: (404) 816-4704
susanders@na.ko.com

TusaRebecca Schap
Purdue University
700 W. State Street
Stone Hall
West Lafayette, IN 47907
Phone: 765-494-0101
tschap@purdue.edu

Alyssa Schermel
University of Toronto
2244 Medhat Dr.
Mississauga, ON L5B2E6
Phone: 905-277-1696
a.schermel@gmail.com

Rhonda Sebastian
USDA-ARS-Food Sruveys Research Group
10300 Baltimore Ave.
Bldg 005, Rm. 102, BARC-West
Beltsville, MD 20705
Phone: 301-504-0343
Rhonda.Sebastian@ars.usda.gov

Tomoko Shimakawa
Food and Drug Administration
5100 Paint Branch Parkway, HFS-830
College Park, MD 20740
Phone: 301-436-1461
Tomoko.Shimakawa@fda.hhs.gov

Bethany Showell
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
BARC-West, B-005, Rm. 107
Beltsville, MD 20705
Phone: 301-504-0642
bethany.showell@ars.usda.gov

Kathleen Smith
Regulatory - Nutrition Consultant
4009 Ridge Road
Annandale, VA 22003
Phone: 703-256-7539
kathleensmith.22003@hotmail.com

Ashley Solomon
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave.
Bldg. 005, Rm. 218
Beltsville, MD 20705
Phone: 301-504-0656
Ashley.Solomon@ars.usda.gov

Noel Solomons
CeSSIAM
17th Avenida #16-89
Zona 11
Guatemala City, Guatemala 1011
Phone: 502-473-3942
cessiam@guate.net.gt

Judith Spungen
Exponent for Rebecca Goldsmith, Nutrition Department, Public Health Services, Ministry of Health, Israel
P.O. Box 283
New Market, MD 21774
Phone: 410-530-0927
jhspungen@gmail.com

PARTICIPANT LIST

Urs Stalder
Federal Office of Public Health
FOPH, Switzerland
Schwarzenburgstrasse 165
Bern, Bern, Switzerland 3003
Phone: 31 322 95 90
urs.stalder@bag.admin.ch

Lois Steinfeldt
USDA-ARS-Food Sruveys
Research Group
10300 Baltimore Ave.
Bldg 005, Rm. 102, BARC-W
Beltsville, MD 20705
Phone: 301-504-0179
Lois.Steinfeldt@ars.usda.gov

Samantha Stephenson
Texas Tech University
2101 22nd Street
Lubbock, TX 79411
Phone: 512-923-9139
samantha.stephenson@ttu.edu

Phyllis Stumbo
Institute of Clinical and
Translational Science
Institute for Clinical and
Translational Research
Iowa City, IA 52242
Phone: 319-354-9378
phyllis-stumbo@uiowa.edu

Cathy Sullivan
MetroHealth Medical Center
2500 MetroHealth Dr R205A
Cleveland, OH 44109
Phone: 216-778-8492
csullivan1@metrohealth.org

Maureen Ternus
International Tree Nut Council
Nutrition Research & Education
Foundation
2413 Anza Ave.
Davis, CA 95616
Phone: 530-297-5895
maureen.ternus@gmail.com

Robin Thomas
USDA-ARS-Nutrient Data
Laboratory
10300 Baltimore Ave.
BARC-West, Bldg. 005, Rm. 209
Beltsville, MD20705
Phone: 301-504-0645
robin.thomas@ars.usda.gov

Abby Thompson
PepsiCo
1600 Arlington Business Park
Theale
Reading, Berkshire RG74SA
Phone: 441189233282
abby.thompson@pepsico.com

Paulette Thompson
Nutrition Education and
Counseling Services
3117 Belleview Ave.
Cheverly, MD 20785
Phone: 301-772-5831
paulette.thompson10@gmail.com

Jessica Thomson
USDA Agricultural Research
Service
284 Knapp Hall, Human
Nutrition and Food
LSU AgCenter
Baton Rouge, LA 70803
Phone: 225-892-3662
jessica.thomson@ars.usda.gov

Rose Tobelmann
General Mills, Inc
Number One General Mills
Blvd.
W01-B
Minneapolis, MN 55426
Phone: 763-764-3915
rose.tobelmann@genmills.com

Lisa Tussing-Humphreys
USDA-ARS
282 Knapp Hall
Baton Rouge, LA 70803
Phone: 225-892-3727
lisa.tussing@ars.usda.gov

Lorien Urban
Tufts University
711 Washington St
Energy Metabolism Lab
Boston, MA 02111
Phone: 617-556-3033
lorien.urban@tufts.edu

Florence Uruakpa
Dept of Nutrition & Dietetics,
University of North Dakota
3624 Landeco Lane, Apt. 10
Grand Forks, ND 58201
Phone: 336-686-1543
ojiugou@yahoo.com

Julie Van Alstine
U.S. Environmental Protection
Agency
1200 Pennsylvania Ave., NW
(7509P)
Washington, D.C. 20460
Phone: 703-603-8866
VanAlstine.Julie@epa.gov

Tim Vazquez
USDA Food and Nutrition
Service
Child Nutrition Division
3101 Park Center Drive, Room
632
Alexandria, VA 22302
Phone: 703-305-2600
tim.vazquez@fns.usda.gov

Marieke Vossenaar
CeSSIAM
Center for Studies of Sensory
Impairment, Aging and
Metabolism (CeSSIAM)
Guatemala City, Guatemala
1011
Phone: 59161112
mvossenaar@hotmail.com

Zhu Wang
National Institute of Nutrition
and Food Safety, China CDC
Room 448, 29 Nan Wei Road
Xuan Wu District
Beijing, Beijing, China 100050
Phone: 8610-83132569
wzhblue@yahoo.com.cn

Rick Weiss
Viocare, Inc.
145 Witherspoon Street
Princeton, NJ 08542
Phone: 609-497-4600
weiss@viocare.com

Juhi Williams
USDA-ARS-Nutrient Data
Laboratory
10300 Baltimore Ave.
Beltsville, MD 21043
Phone: 301-504-0646
juhirohatgi@hotmail.com

PARTICIPANT LIST

Barbara Winters
Campbell Soup
One Campbell Place
Box 48K Global Nutrition and Health
Camden, NJ 08103
Phone: 856.968.5774
barbara_winters@campbellsoup.com

Catherine Woteki
USDA
1400 Independence Ave., SW
Room 214W
Washington, D.C. 20250-0110
Phone: 202-720-1542
catherine.woteki@osec.usda.gov

Sylvia Yada
Consultant/Almond Board of California
77 Cheltonwood Ave.
Guelph, Ontario N1E4E4
Phone: 519-821-1384
yada77@sentex.ca

Jimin Yang
University of South Florida
3650 Spectrum Blvd
Suite 100
Tampa, FL 33612
Phone: 813-396-9549
jimin.yang@epi.usf.edu

Allison Yates
Beltsville Human Nutrition Research Center
10300 Baltimore Ave.
Bldg 307-C BARC East
Beltsville, MD 20705
Phone: 301-504-8157
Allison.Yates@ars.usda.gov

Patricia Zecca
Campbell Soup
One Campbell Place
Camden, NJ 08103
Phone: 856-342-8582
Patricia_zecca@campbellsoup.com

Cuiwei Zhao
USDA-ARS-Nutrient Data Laboratory
10300 Baltimore Ave. Bldg005
Beltsville, MD 21042
Phone: 301-504-0694
lucy.zhao@ars.usda.gov

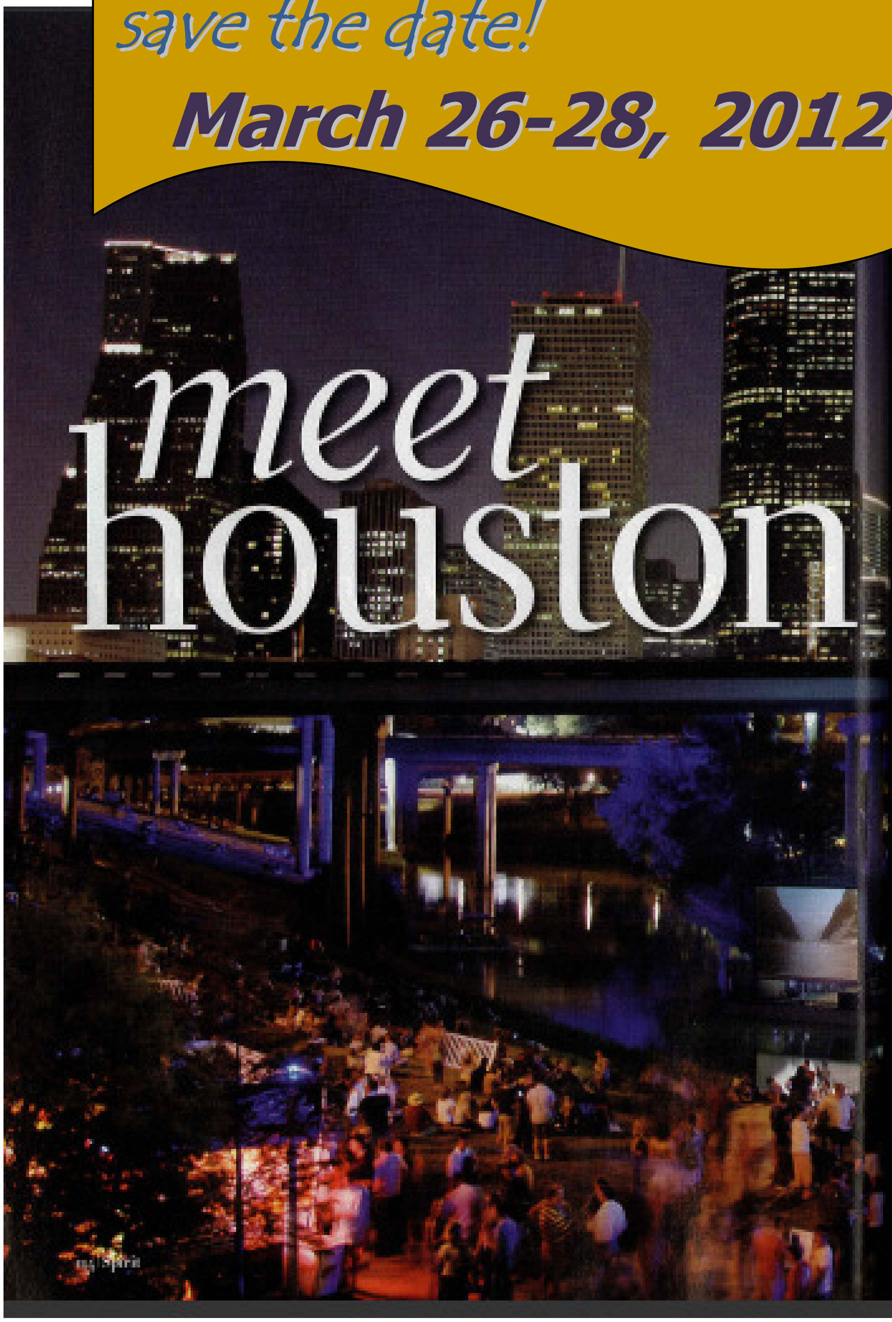
Thea Zimmerman
Westat
2311 Saybrook Road
University Heights, OH 44118
Phone: 216-397-6963
theazimmerman@westat.com

Jennifer Zuercher
Purdue University
700 W. State Street
Department of Foods and Nutrition
West Lafayette, IN 47907
Phone: 765-494-2461
jlzuerch@purdue.edu

36th National Nutrient Databank Conference

save the date!

March 26-28, 2012



Hosted by:

University of Texas
School of Public Health

Updates via:

http://www.nutrientdataconf.org/

meet Houston

"That's just another facet of the New Houston—a seemingly random tapestry of traditional and modern, upscale and down-home, ultra-country and ultra-urban—all presented with a warm Southern smile."

Southwest Spirit

HOUSTON PLAY-DATE

"Big, bold and bustling, Houston offers travelers variety and adventure. It's also a great place for a family getaway."

Texas Highways

A Culinary Selection as BIG as Texas

"It's easy to conclude that Houston has one of the most satisfying food scenes in the country right now."

New York Times

A Multitude of Museums

"As befits America's fourth largest city, Houston's museum scene represents an embarrassment of riches."

Texas Journey