



IAFNS-USDA Webinar Series: Fall 2022 Working Agenda (September 22, 2022)

October 26th 2022 (2:00 – 3:30 pm ET)

Sources and Intake of Added Sugars in the U.S. Diet

Description: Numerous governmental and public health organizations recommend reduced intake of added sugars [defined as sugars that are either added during the processing of foods, or are packaged as such (e.g., a bag of sugar)] due to the adverse health effects associated with excess intake, including risk of obesity, dental caries, diabetes, and cardiovascular disease. The 2020-2025 Dietary Guidelines for Americans (DGA) recommends a dietary pattern that contains <10% of energy from added sugars. Reducing the intake of added sugars in the diet is easier said than done because sweet taste is inherently liked. This webinar will showcase the research conducted by the USDA-ARS investigating sweet taste perception, measuring sources of sugars in the U.S. food supply, and capturing intake of added sugars among the U.S. population. The event will start with an overview of the sweet taste receptor and how it is conserved across species. Next, the process used by USDA-ARS to measure sugars and added sugars in the food supply will be discussed. Findings from a recent cross-sectional analysis using data collected from What We Eat in America, the dietary intake component of the National Health and Nutrition Examination Survey (NHANES) will be presented. This analysis focuses on sources of added sugars and dietary patterns among adults that meet or exceed recommended levels of added sugars.

Overview of the USDA Beltsville Human Nutrition Research Center

Naomi K. Fukagawa

Comparative Genomics of Sweet Taste Perception

Harry Dawson

Tracking Food and Beverage Intake using WWEIA

Donna Rhodes

Sources of Added Sugars in the Diet

Kelly Higgins

Overview of Sugars and Added Sugars in FoodData Central

Kyle McKillop



November 3rd 2022 (2 – 3:30 pm ET)

Complex Carbohydrates and the Complexity of Carbohydrates

Description: Investigations of the biological efficacy and mechanisms of action for dietary fiber (DF) in human health and nutrition are complicated because unlike many nutritional components which are discrete compounds, DF represents a diverse set of polymeric materials. Variations in monomeric composition, degree of polymerization, and structural motifs arising from food preparation all impact the digestibility and probiotic effect of different dietary fiber sources. BHNRC scientists seek to address issues related to these challenges by performing interdisciplinary collaborative research. Their preliminary studies are highlighted in this presentation. Dr. Dave Luthria will describe his work on high-throughput fiber analysis using automated Ankom Technology. He will highlight the challenges associated with commonly used methodologies for fiber analysis. Furthermore, he will briefly describe the pros and cons of different methods used for fiber analysis. Dr. Allen Smith will present his work on examining the biological effects of a food ingredient, resistant potato starch, on the gut microbiome and its impact on inflammation in rodent models. Dr. Thomas Wang will describe his work in a diet-induced-obesity rodent model where different resistant starch levels from cooked rice varieties were used to determine the biological efficacy and mechanism of action for resistant starch in a whole food. Dr. Michael Bukowski will close out the presentation with the future of complex carbohydrate analysis using a combination analytical chemistry and polymer analysis techniques.

Research Advances and Challenges in Dietary Fiber Analyses

Dave Luthria, PhD

Research Plans to Improve Carbohydrate Analyses

Mike Bukowski, PhD

Effect of Resistant Starch as an Ingredient on Animal Gut Health

Allen Smith, PhD

Food and Nutrition Research: Carbohydrates in Select Foods, Raw and Processed

Pamela Pehrsson/Xianli Wu

Rice as a Source of Resistant Starch and Diet Induced Obesity and Gut Microbiome

Tom Wang, PhD



November 15th 2022 (2:00 – 3:30 ET)

Botanicals and the Impact of Growing Conditions and Food Preparation on Food Composition

Description: Plant foods are important part of the human diet. They contain various nutrients and large groups of secondary metabolites as bioactive compounds. Food compositions in plant foods are affected by many factors such as genetics, environment, management, and preparation/processing. In this section, the changes of different nutrients/secondary metabolites from strawberries, lettuces, broccoli, sweet corn, and coffee will be presented in response to the different growing conditions, pre/post-harvest management, and food preparation and processing methods. In addition, a botanical database based on mass spectrometric data will be introduced and it will be a very important resource used by common users and professionals in human nutrition research.

Botanical Databases

Pei Chen, PhD

Capturing the Secondary Metabolites Variability in Fruits and Vegetables with Different Growing Conditions

Jianghao Sun, PhD

Effects of Food Processing on the Carotenoids in Sweet Corn

Xianli Wu, PhD

Coffee Chemistry: Complexity of Coffee Compounds and Impact of Roasting Condition

Jae Park, PhD



December 1st 2022 (2:00 – 3:30 ET)

Flavonoids, Diet and Health

Description: The USDA Beltsville Human Nutrition Research Center has an active program to improve understanding of the role of flavonoid-rich foods in promoting health, addressing the issue from multiple angles. In this session, research will be presented on how flavonoid-rich berries affect bioenergetics in humans, as well as how a fruit and vegetable-supplemented diet rich in flavonoids impacts host health by modulating gut microbiome composition and transcriptome response in a translational animal model. We will also describe our recently released flavonoid data products designed for use with national dietary data and how these resources can be used to inform dietary guidance for flavonoids and advance knowledge about flavonoid-health relationships. Finally, to further support the links between diet and health, as well as cross-talk between USDA's FoodData Central and other databases, our databases have been expanded to include common, unique identifiers, which will expand the utility of data on food content of flavonoids and other compounds.

Flavonoid Values for USDA Survey Foods and Beverages 2017-2018: A New Data Tool to Promote Research on Flavonoid-health Relationships

Rhonda Sebastian

How Eating the RDA for Fruits and Vegetables effects Microbiome, Gut health, Gut immunology: Fruit/Vegetable Research with Pigs

Gloria Solano-Aguilar, PhD

Berry/Flavonoid Research Focusing on Human Health Outcomes and Cellular Bioenergetics

Janet Novotny, PhD

FoodData Central Work Allowing Links to Databases such as Flavonoids

Kyle McKillop