New Challenges in Food and Nutrition to Inform Policy

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ARS Research Over the Next Decade

- Support dietary guidance
  - DRI's, DGA, effects of nutrients vs foods vs dietary patterns
- Transition from public health model to precision nutrition recommendations
- Technologies needed for food intake, physical activity, microbiome, genome, epigenome, small (mi, si, pi) RNA's
  - Systems approach (AI/ML) to analyze data
- New foods, ingredients, new uses from NP306
  - Vitamin D enriched mushrooms; low-fat, high-fiber salad dressings
- Biology vs Behavior

Human Nutrition Action Plan Components 2019-2024

1) Linking Agricultural Practices and Beneficial Health Outcomes
2) Monitoring Food Composition and Nutrient Intake of the Nation
3) Scientific Basis for Dietary Guidance
4) Prevention of Obesity and Obesity-Related Diseases
5) Life Stage Nutrition and Metabolism

Ten Years From Now …

- At least 10 more best-selling diet books
- >100,000 new food products
- 2 new sets of *Dietary Guidelines for Americans*
- Continued intentional and unintentional nutrition misinformation

Science will …

- Become more inter- and trans-disciplinary
- Become bigger in scope and budget
- Still not connect with the American public
- Increase focus on (forestalling) aging

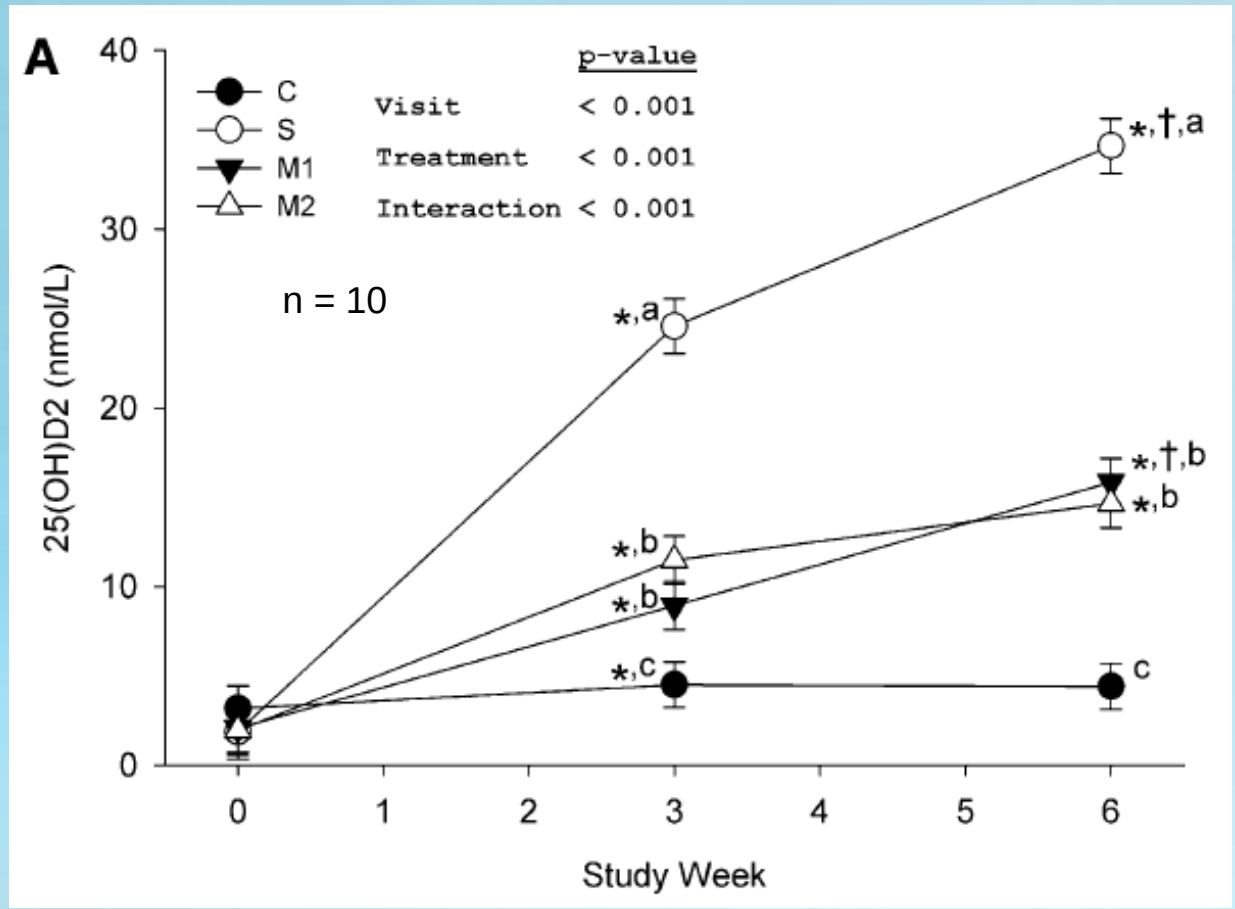
ARS developed technology to cast 100% fruit/vegetables as films/bars/chips

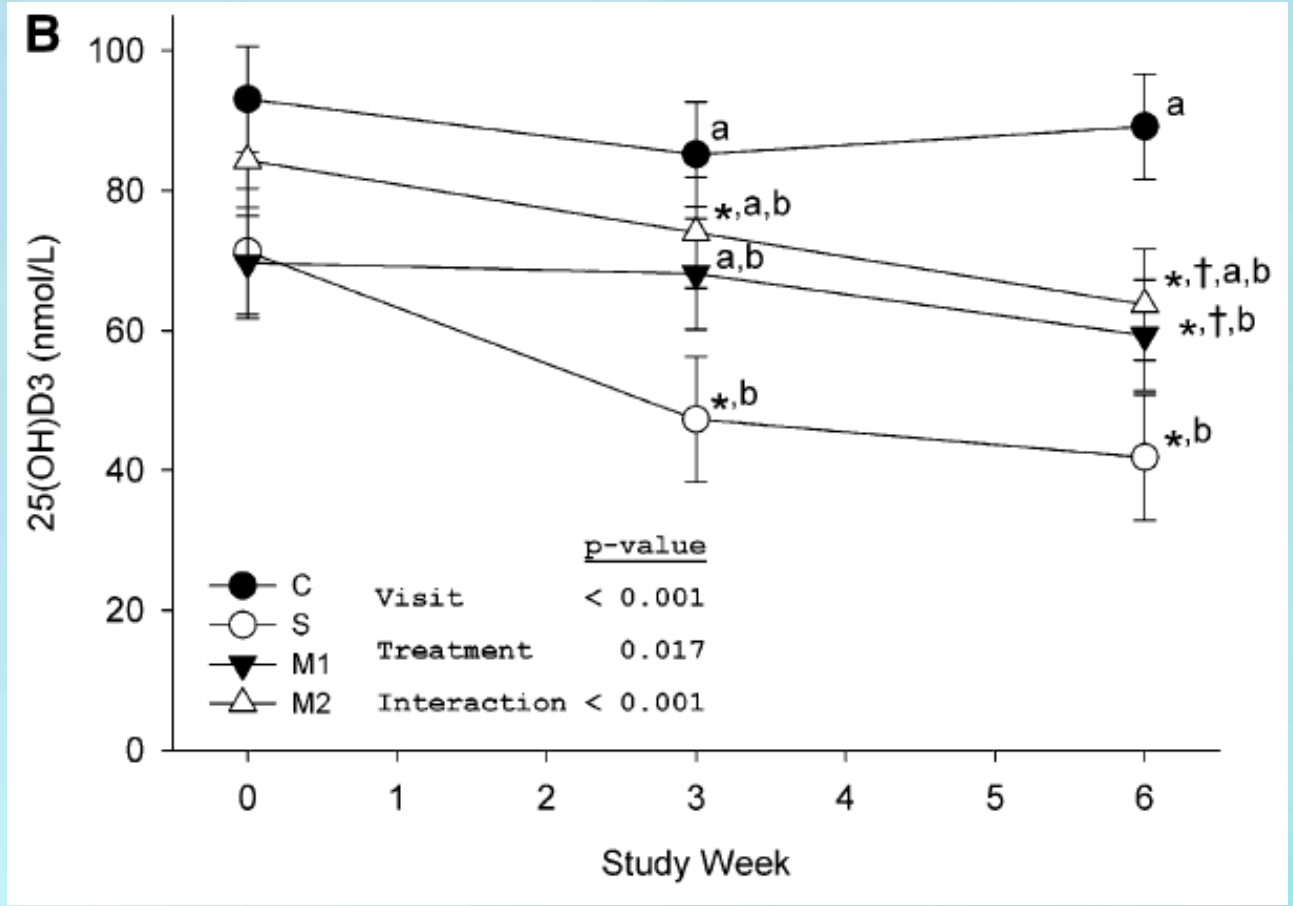
UV Light Pulse Induces Vitamin D2 Formation

Blood Concentrations

Vitamin D2

Vitamin D3





CB Stephensen et al, J Nutr, 142:1246-1252, 2012

USDA U.S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service

http://fdc.nal.usda.gov

ARS HOME | ABOUT ARS | CONTACT ARS

HOME | DATA TYPE DOCUMENTATION | DOWNLOAD DATA | API GUIDE | HELP | FAQ | ABOUT US | CONTACT FOODDATA CENTRAL

Download Data | Get an API Key | API Guide

FoodData Central is an integrated data system that provides expanded nutrient profile data and links to related agricultural and experimental research.

FoodData Central:

- Includes five distinct types of data containing information on food and nutrient profiles, each with a unique purpose.
- Provides a broad **snapshot in time** of the nutrients and other components found in a wide variety of foods and food products.

FOOD SEARCH

milk

Search Operators

Require All Words

Filter Search Results

Data Type Definitions:

About Data Type Definitions

- [x] Foundation (5)
- [x] Survey (FNDDS) (447)
- [x] Branded (78,019)
- [x] SR Legacy (211)

Experimental

Ingredients

Press enter to search.

Brand Owner

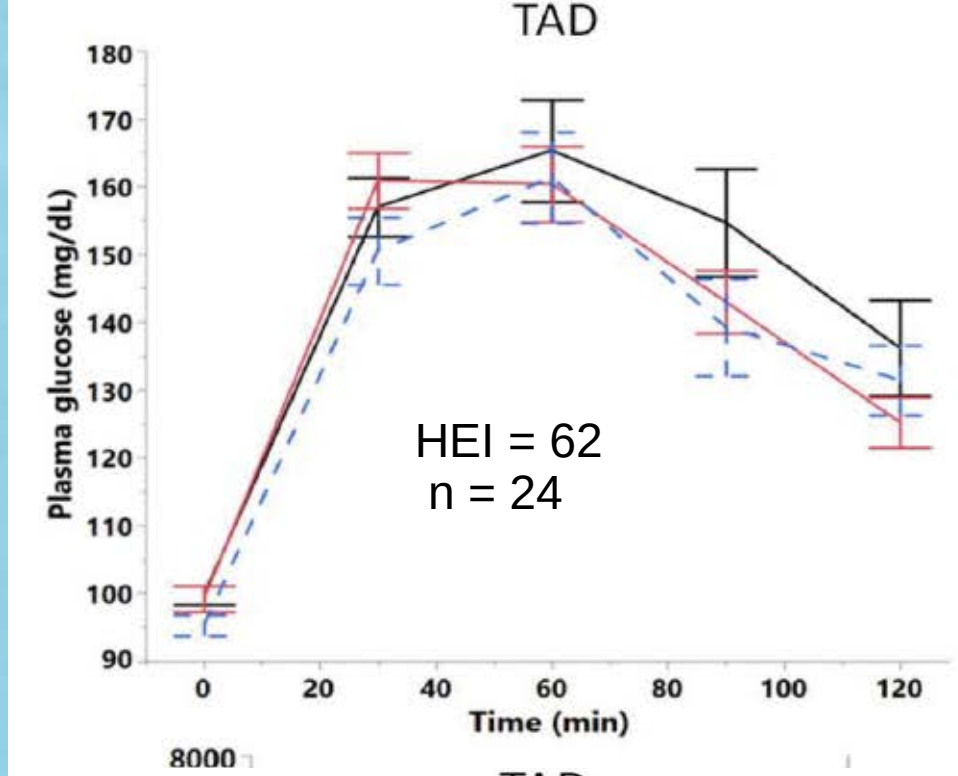
Search Tips

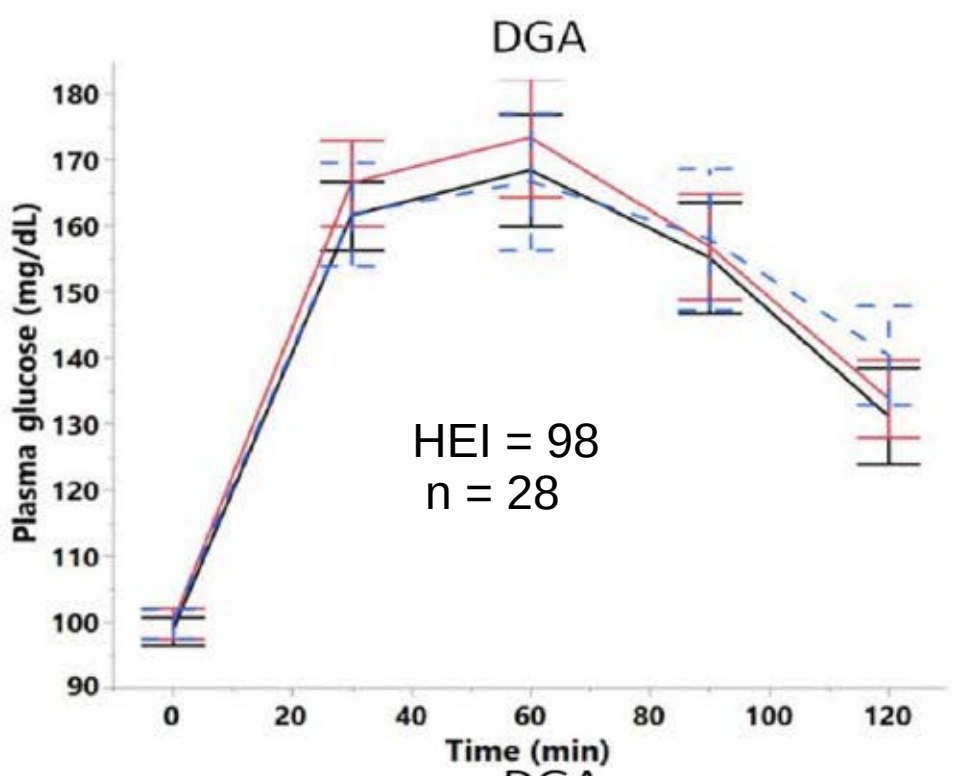
Press enter to search.

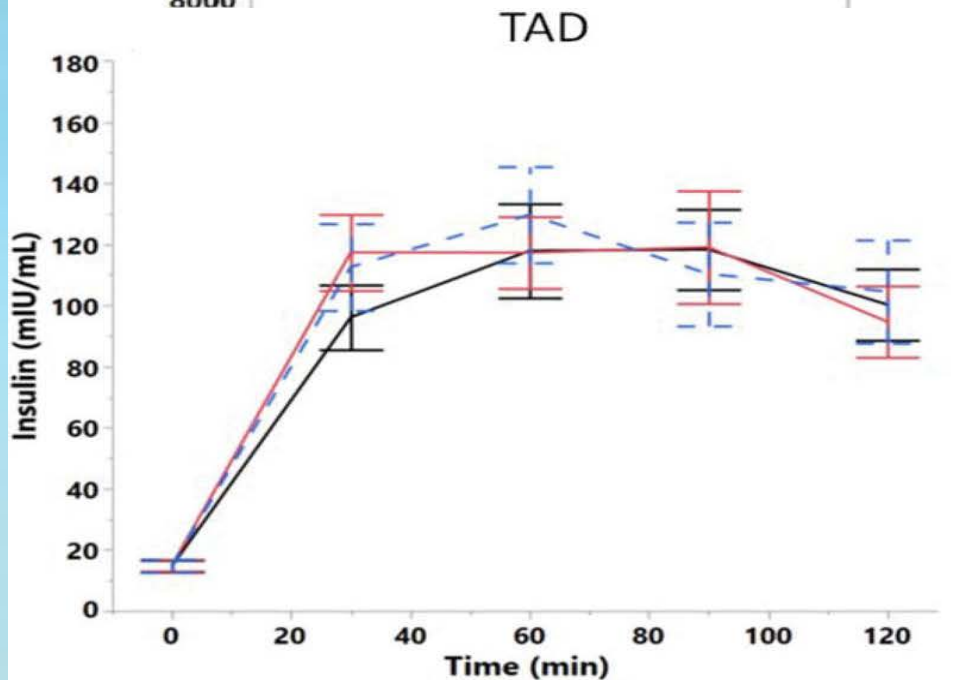
Reset Search

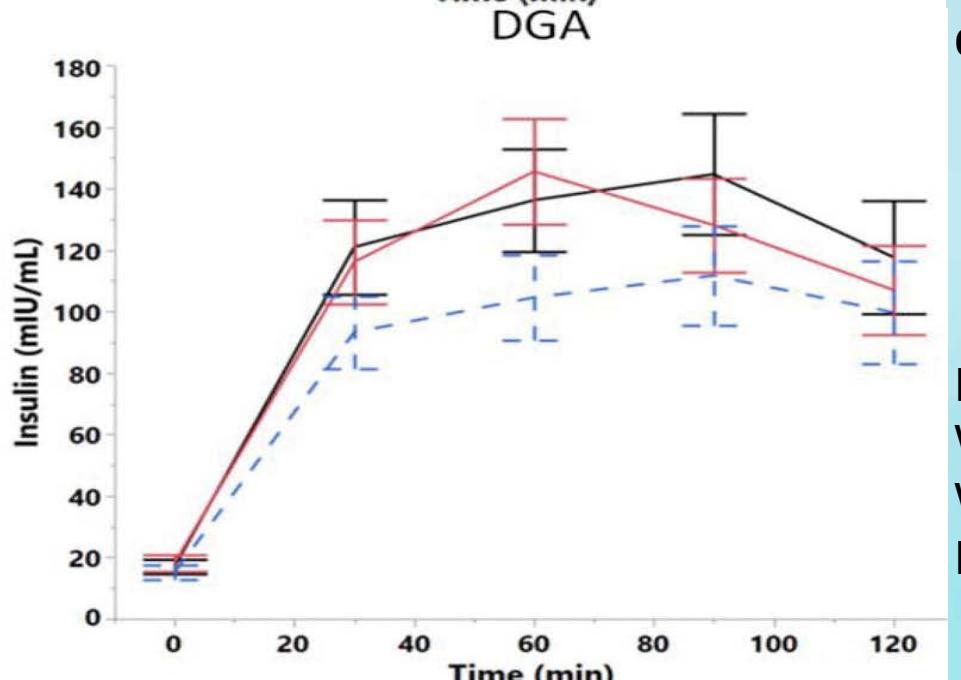
78,682 results

Description	Type	Published Date	FDC ID	
Milk, whole	Survey (FNDDS)	2019-04-01	336070	**Includes**: 3.5% or 3.8% fat ***milk***; leche fresca
Crackers, milk	Survey (FNDDS)	2019-04-01	340202	**Includes**: ***Milk*** Lunch New England Biscuits; Royal Lunch crackers
Milk, malted, chocolate, made with milk	Survey (FNDDS)	2019-04-01	336244	
Coconut milk	Survey (FNDDS)	2019-04-01	336111	
Crackers, milk	SR Legacy	2019-04-01	174980	
Milk, human	Survey (FNDDS)	2019-04-01	336068	
Milk, NFS	Survey (FNDDS)	2019-04-01	336069	
Rice milk	Survey (FNDDS)	2019-04-01	336110	
Soy milk	Survey (FNDDS)	2019-04-01	336099	
MILK	Branded	2019-04-01	356718	**Ingredients**: ***MILK***, HIGH FRUCTOSE CORN SYRUP, SUGAR, NONFAT DRY ***MILK***, CORN STARCH, COCOA, COCOA (PROCESSED









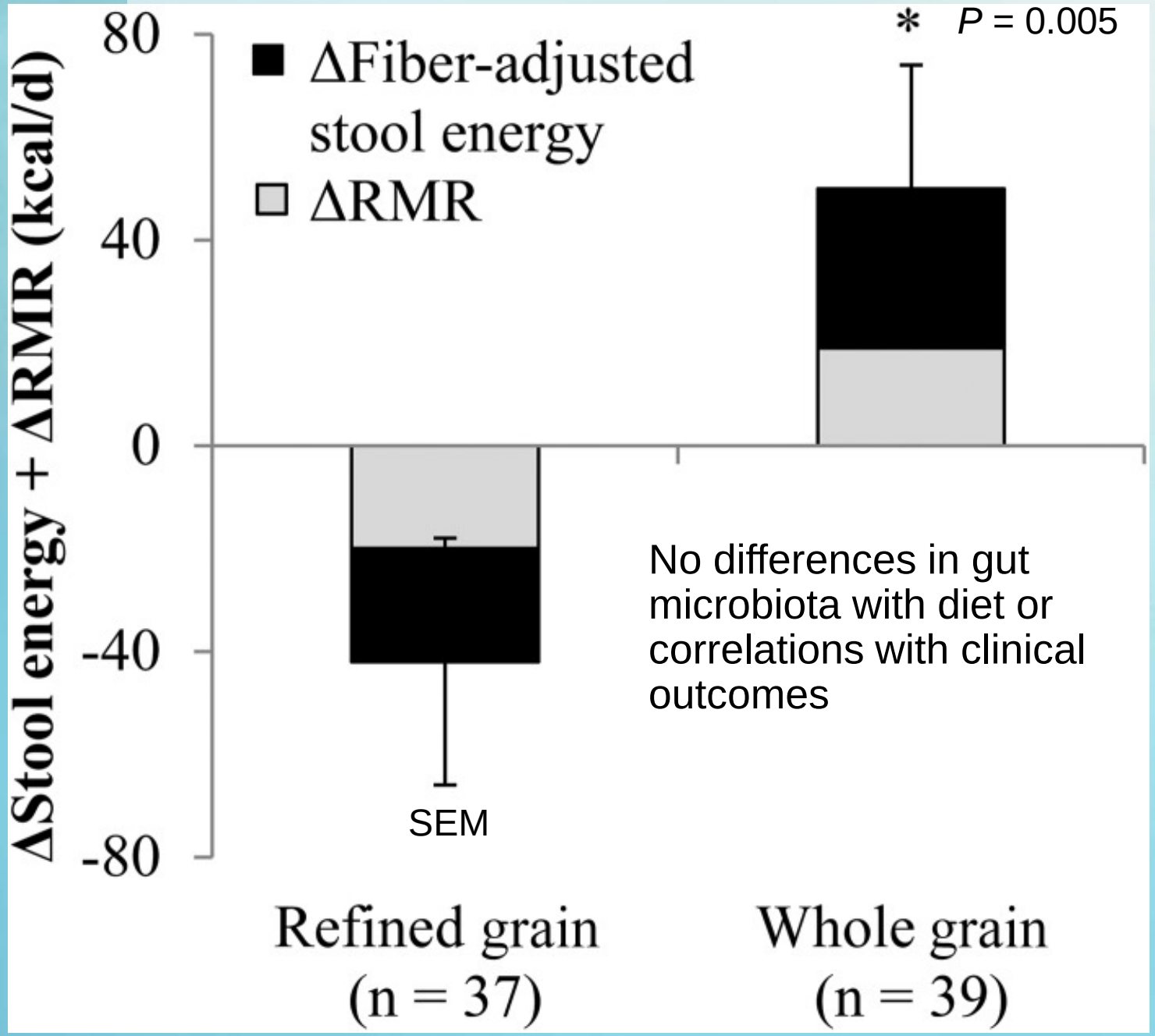
S Krishnan et al,
Am J Clin Nutr 108: 266, 2018

No effect on most parameters

Systolic BP -9 mm Hg

Total and HDL cholesterol decreased 5% and 6%

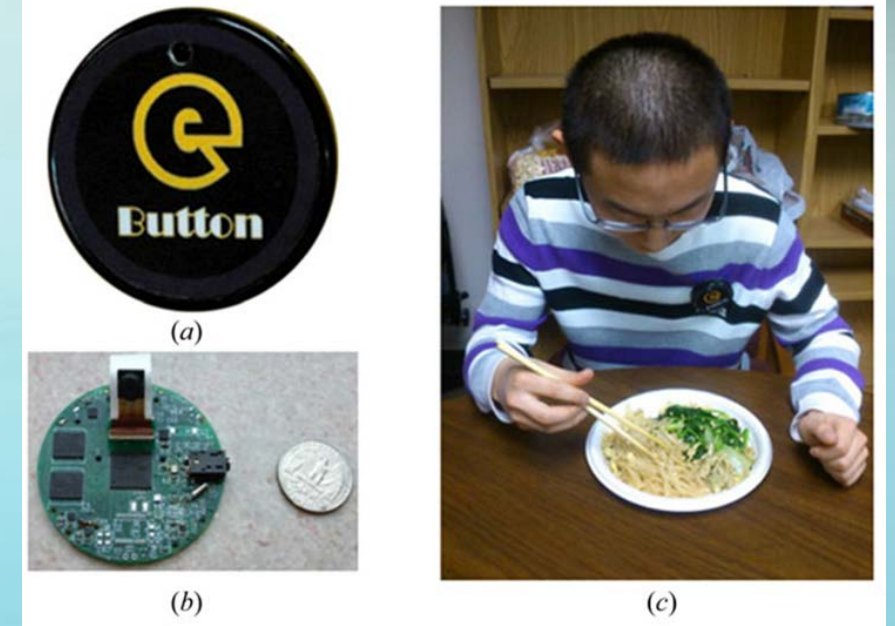
Baseline – black line
Week 2 – red line
Week 8 – blue line
Bars = SD



No differences in gut microbiota with diet or correlations with clinical outcomes

JP Karl et al, Am J Clin Nutr, 2017;105:589-599

“It's tough to make predictions, especially about the future.”

New Technologies Needed For …

- Food intake
  - Metabolome, Proteome
- Physical activity/Energy expenditure
- Genome
- Epigenome
- Microbiome/Metabolic products
- miRNAs
- Data analysis by AI/ML