
BEEF RESEARCH

Human Nutrition Research

In Progress, Funded Projects

1. Determination of protein digestibility corrected amino acid score and digestible indispensable amino acid score for beef based and plant protein-based burgers (Mahesh Nair, Colorado State University)
 - Determine the protein digestibility corrected amino acid score (PDCAAS) and the digestible indispensable amino acid score (DIAAS) for beef based and plant protein-based burgers using a swine model.
2. Effect of incorporating lean beef into a protein-rich diet during resistance training program on skeletal muscle and connective tissue strength and quality in older women (Chad Carroll, Purdue University)
 - ClinicalTrials.gov Identifier: NCT04347447
3. Beef consumption NHANES analysis (Chris Taylor, The Ohio State University)
 - Quantify the consumption of red meat and beef, specifically in the US diet.
 - Determine the proportion consumed as lean options in accordance with dietary recommendations.
 - Simulate the implications on intakes for recommendations to 1) reduce or eliminate red meat intakes, or 2) substitute with lean options.
4. Systematic literature review(s) to determine the association of unprocessed meat with obesity and related factors: development of literature search strategy (phase 2) (Nikhil Dhurandhar, Texas Tech University)
 - Review and assess available literature regarding the role of unprocessed meat consumption on obesity, weight gain, and body composition in pediatric and adult population.
 - Examine the literatures to summarize the effect or association of meat consumption on satiety, hunger, weight regain, weight maintenance, preventing and treating obesity, weight loss and the improvement in metabolic risk factors.
 - Distinguish the outcome findings depending on the type of the studies between feeding trials vs. observational studies.
5. Nutrient analysis of prime beef cuts (Dale Woerner, Texas Tech University)
 - Develop a nutritional profile for selected USDA Prime beef cuts, both raw and cooked.
6. The effect of high vs. moderate beef consumption on human health (Arne Astrup, University of Copenhagen)
 - ClinicalTrials.gov Identifier: NCT04156165

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7. Effect of minimally processed meat and further processed meat on biomarkers and risk factors for cancer and cardiovascular disease (phase 1) (Dave Baer, USDA, ARS, BHNRC)
 - Co-funded with Missouri Beef Industry Council, Kentucky Beef Council, & North American Meat Institute (NAMI).
 - Determine the effect of minimally processed and further processed meat, when consumed as part of a traditional American and a healthy diet, on biomarkers and risk factors for cancer and cardiovascular disease.

8. Moving beyond single analyses for more rigorous inferences about beef intake & cardiovascular health (Andrew Brown, Indiana University, School of Public Health)
 - Estimate the associations between beef intake and cardiovascular disease using multiverse analysis.
 - Estimate the associations between beef intake and cardiovascular disease using empirical p-value calibration.

9. A family-based intervention for promoting optimal infant feeding and development (Elizabeth Widen, University of Texas, Austin)
 - ClinicalTrials.gov Identifier: NCT04177472

10. The determination of neuraminic acid levels in beef (Richard Helm, Virginia Tech)
 - Study in collaboration with a study at Colorado State University.
 - Optimize and validate an analytical LC-MS/MS assay for absolute quantitation of N-5-glycolylneuraminic (Neu5Gc) and N-5-acetylneuramic (Neu5Ac) acids using Standard Reference Materials (SRMs) sourced from National Institute of Standards and Technology (NIST). Use of NIST standards will permit other laboratories to compare against a reference material available to any research group.
 - Perform absolute quantitation of Neu5Gc and Neu5Ac levels in muscle, liver, and tallow from a set of grain-finished cattle. Central to these objectives are cross validation studies with a laboratory at Colorado State University. The two laboratories will work together to ensure the results are consistent between laboratories, as they use different LC-MS systems. Consistent results across two different laboratories using two different setups will enhance the reliability of the data to the scientific community.

11. A meal-based comparison of protein quality, complementary proteins, and muscle anabolism (Douglas Paddon-Jones, University of Texas Medical Branch, Galveston)
 - Co-funded with Texas Beef Council
 - ClinicalTrials.gov Identifier: NCT03816579

12. Nutrition, vision, and cognition in sport study: beef (IONSport-Beef) (Steven Riechman, Texas A&M University)
 - ClinicalTrials.gov Identifier: NCT04427852

13. The effects of including beef in a plant-based eating pattern on cardiometabolic disease risk factors and overall consumer satisfaction (Wayne Campbell, Purdue University)

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- ClinicalTrials.gov Identifier: NCT03925142
14. Comparing high and normal protein diets for the dietary remission of type 2 diabetes (James Hill, University of Alabama, Birmingham & Holly Wyatt, University of Colorado Anschutz Medical Campus)
- Co-funded with North Dakota Beef Texas Beef Commission & Iowa Beef Industry Council
 - ClinicalTrials.gov Identifier: NCT03832933
15. Essential amino acid density: inequality between animal- vs plant-based dietary patterns – cycle A (Nancy Rodriguez, University of Connecticut)
- Provide a practical definition of “Essential amino acid (EAA) density” in context of protein quantity, protein quality, and calorie content of various 1 oz. equivalents within the Protein Foods Group as outlined by the US Dietary Guidelines.
 - Outline and describe discrepancies in the EAA content and therefore the protein quality between 1 oz. equivalents within Protein Foods Group (i.e., animal vs plant).
 - Translate “EAA Density” concept to current USDA’s Healthy US-style meal patterns.
 - Demonstrate the role of lean beef in a healthy diet pattern in context of a) meeting total protein and EAA requirements outlined by the Recommended Dietary Allowance (RDA) and b) current recommendations for healthy aging.
16. Dietary meat and chronic disease: an assessment of causality (Wayne Campbell, Purdue University)
- PROSPERO:
https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020127976
17. Systematic literature review on mechanisms of red meat intake and type 2 diabetes (Kevin Maki, Midwest Biomedical Research: Center for Metabolic and Cardiovascular Health)
- PROSPERO:
https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020176059
18. Associations of protein intake and IGF1 and mortality (Yanni Papanikolaou, Nutritional Strategies, Inc.)
- Using data from NHANES 2001-2014:
 - Examine associations between animal protein sources and amount of consumption with cancer, diabetes, cardiovascular disease, and mortality-related health outcomes in adults of various age groups.
 - Examine associations between various animal protein sources (i.e., dairy, meat, eggs, seafood, etc.) and amount of consumption with cancer, diabetes, cardiovascular disease, and mortality-related outcomes in adults of various age groups.
 - Compare results to Levine et al. 2014 publication.
19. A review of current red meat consumption in the U.S. (Cody Gifford, University of Wyoming)
- Construct a review of current red meat consumption in the U.S.

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- Describe consumption relative to other factors (e.g., put consumption into perspective across the U.S. population).
 - Summarize current red meat consumption by intake of beef, pork and poultry based on available literature and/or data.
 - Describe considerations of “red meat” terminology in red meat consumption assessment, summarizing reported red meat consumption and type of red meat assessed among observational and randomized control trials using dietary guidance recommendations.
20. Meat and mental health: a meta-analysis (Urska Dobersek, University of Southern Indiana)
- Determine the quantitative relation between meat consumption and mental health.