P12-012-24 Comparative Analysis of Fenugreek Extracts at Different Concentrations on Male Sexual Enhancement

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Objectives: About 31% of men globally suffer from sexual dysfunction, leading many to prefer natural dietary supplements over pharmaceutical drugs[1]. Fenugreek, known for improving sexual performance, has limited studies comparing its standardized and non-standardized extracts. Our study evaluates the effectiveness of Testofen® Fenugreek extract, combined with Zinc and Magnesium, in comparison to a non-standardized Fenugreek extract with the same minerals, to determine their impact on male sexual enhancement.

Methods: We involved two distinct control groups. Group A (n=75) take two fenugreek capsules with Testofen®, two Mg citrate tablets, and one Zn capsule daily for a duration of 14 days, taken 30 minutes before bedtime. Group B (n=100) followed the same regimen with non-Testofen® Fenugreek capsules. Data were collected by questionnaire and analyzed by ANOVA , Shapiro-Wilk test and Wilcoxon in R Studio 4.1.2.

Results: A total of 38 participants in Group A and 52 in Group B completed the trial. Both groups showed significant improvements in sexual performance, with Group A displaying notably better outcomes. The duration of penile-vaginal penetration to ejaculation significantly improved in Group A compared to Group B (GroupA: σ^2=0.82, Group B: σ^2=0.21, p=0.01). The confidence in achieving satisfactory sexual intercourse also showed a greater improvement in Group A over Group B (GroupA: σ^2=1.08, GroupB: σ^2=0.5, p=0.01). Additionally, participants in both group exhibited significant enhancements in terms of sexual performance. In Group A, the number of individuals engaging in sexual intercourse for more than 3 minutes increased by 44% post-administration (P=6.2E-05). In Group B, the number of individuals very satisfied with their sex life increase from 5.8% to 31.3% (P=2.79E-09).

Conclusions: In summary, both fenugreek extract improved male sexual performance. The patent-Testofen® fenugreek extract exhibited superior efficacy in sexual enhancement compared to the non-patented extract when used jointly with Mg and Zn. [1]. Rosen, R. C. (2000). Prevalence and risk factors of sexual dysfunction in men and women. *Current Psychiatry Reports*, 2(3), 189–195. https://doi.org/10.1007/s11920-996-0006-2.

PTFS16-01-24 Development of Computational Algorithmics Using Biochemical Data to Predict Dietary Habits: Insights From the Dietary Deal Study

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Objectives: Assessing dietary intake and understanding the underlaying contributions to health is crucial from achieving metabolic wellbeing. Traditional methods to measure food intake such as food questionnaires and dietary recall have limitations in accuracy and reliability. This study aimed to develop a nutritional tool using easily available biochemical data to predict dietary habits.

Methods: A total of 138 participants enrolled in the Dietary Deal cross-sectional study were assessed for diet quality using AHEI and MEDAS17 scores, categorized by median adherence ($\leq$p50 or >p50). Adjusted logistic regressions (a-LR) identified biochemical markers associated with higher diet quality (>p50). Model performance was evaluated using metrics: precision-recall (PR) and area under curves (AUC), sensitivity, specificity, positive (PPV) and negative predictive values (PNV).

Results: Individuals in the >p50 category for both scores (AHEI and MEDAS17) consumed more pro-healthy foods and had higher values in diet-nutriscores. Two a-LR models (controlling for age, sex, BMI, physical activity, and SF-36) were developed. Probability classification in MEDAS17 >p50, associations (p-value < 0.1) were observed with glucose (OR=1.06), HDL (OR=1.04), calcium (OR=0.14), retinol (OR=0.01), ascorbate (OR=0.88), D25OH (OR=1.05), and HbA1c % (OR=0.43). Probability classification in AHEI >p50, associations (p-value < 0.1) were observed with platelet (OR=0.99), HDL (OR=0.96), copper (OR=0.98), insulin (OR=0.86), homocysteine (OR=1.33), ascorbate (OR=1.48). Both models showed moderate/high correct classification (AUC: 79% and 85%, sensitivity: 73% and 79%; specificity: 75% and 77%; PPV: 73% and 77%; PNV: 75% and 79% for MEDAS17 and AHEI, respectively). Preliminary computational algorithms were devised for probability classification based on the a-LR as a tool for nutritional practice, incorporating a weighted system to each variable.

Conclusions: These findings suggest that simple biochemical data shows potential for predicting dietary habits, a stepping-stone for personalized interventions in precision medicine. This study suggests some biomarkers can objectively assess food intake, paving the way for tailored personalized nutrition interventions based on individual needs.

PTFS16-02-24 **Methodology for Meal Composite Production and Analysis: Lessons From the Nutrition for Precision Health Study**

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Objectives: To establish consistent methodology for quality control monitoring for diets provided to participants in the Nutrition for Precision Health study across study sites.

Methods: The goal of the Nutrition for Precision Health (NPH) study is to understand how individuals respond to different dietary patterns. Participants consume three different diets for 13 days each in a crossover design. The 3 diet patterns were selected using foods commonly consumed and for their potential to elicit individual response variability. Nutrient specifications were determined using published data. Three-day menus were developed for each diet to meet the nutrient specifications and food group serving targets using a standard nutrient database. Staff prepared meals using standardized ingredients and preparation methods to achieve meals consistent in macronutrients, visual appeal, texture and taste. To determine accuracy within diet targets and consistency across sites, each site prepared and homogenized the 2100kcal menus using a standard protocol and sent them for chemical analysis. To be considered accurate within the diet targets, the 3-day menu average from each site was set to be within acceptable ranges ($\sim +/- 2.5\%$ of the planned value) for protein, saturated fat, and sodium or carbohydrates, depending on the diet. Coefficient of variation (% CV) was used to determine consistency across sites targeting $\leq 10\%$ CV for each nutrient of interest. Results outside $+/-10\%$ of the median were used to identify outliers and address potential issues with production and/or analysis. This process was repeated until each issue passed the benchmark.

Results: Initial results revealed production and analytical inconsistencies. A more tightly controlled process for preparing meals and composites, and additional standardized analyses procedures specific to the NPH diets were established. Sites prepared menus using the refined procedures resulting in alignment with nutrient targets and improved consistency across sites.

Conclusions: Establishing a controlled process for meal production and composite preparation resulted in alignment with diet targets and consistency across sites allowing initiation of meal provision. This quality control process will continue throughout the NPH study.

Funding Sources: NIH.

PTFS16-03-24 **Traditional Indigenous Foods in Child Nutrition Programs and USDA FoodData Central (FDC)**

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Objectives: To assist the USDA Food and Nutrition Service (FNS) in enhancing their menu planning tools to incorporate traditional Indigenous foods into the Child Nutrition Program, the USDA ARS Beltsville Human Nutrition Research Center is identifying sources and determining yields and nutrient composition of selected foods appearing in school menus.

Methods: Together, FNS and BHNRC teams identify foods of interest as part of the Food Yield Study (FYS). When acquired, the Indigenous food samples are weighed in their raw state before and after refuse removal to estimate edible yields. As appropriate, these foods are cooked using traditional indigenous methods and then weighed to determine cooking yields. Samples of the raw edible portions and cooked edible portions are immediately homogenized and frozen for later select compositional analysis.

Results: Data collected by the FYS are used to enhance USDA's Food Buying Guide for Child Nutrition Programs and allow for the selection of indigenous foods in the application of menu planning tools for the school meal program. Compositional analysis results are provided in the publicly available in USDA's FoodData Central, providing analytical data for use by investigators, consumers, policymakers and industry.

Conclusions: These efforts affirm USDA's commitment to support Tribal Nations' self-determination, promoting equity, removing barriers to services and programs, and incorporating Native American perspectives into food programs, recognizing their food sovereignty. Availability of nutrient and bioactive components in these foods will assist in meeting nutritional guidance for school meals as well as enhance the understanding of investigators and consumers of the unique properties of indigenous and traditional foods.

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PTFS16-04-24 **Human Milk Oligosaccharide Metabolizing Gene Abundance and Diversity in Infants**

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Objectives: This study aims to assess the diversity of human milk oligosaccharide (HMO) metabolizing genes in the infant gut microbiome and associate gene patterns with participant characteristics. We hypothesized that gut microbiotas of human-milk fed infants would contain a greater abundance and diversity of HMO metabolizing genes compared to those of non-human milk