Short Oral Abstract 13 - The Effects of Dietary Glycemic Load on Plasma Proteomic Biomarkers (Joseph Jamnik, Canada)

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Background: The consumption of diets with a high glycemic load (GL) has been associated with an increased risk of type II diabetes and other chronic conditions. However, the effects of dietary GL on emerging risk factors for such conditions are unclear.
Objective: To determine the association between dietary GL and plasma proteomic biomarkers involved in diverse physiological pathways in a population of healthy young adults.
Methods: Subjects (n=1,100) were young adults from the cross-sectional Toronto Nutrigenomics and Health Study. Dietary GL was estimated using a one month 196-item Toronto-modified Willett food frequency questionnaire. The absolute concentrations of 54 plasma proteins were measured using a multiple reaction monitoring HPLC-MS/MS assay. The association between dietary GL and each proteomic biomarker was examined using general linear models adjusted for age, sex, BMI, physical activity, ethnicity, total energy intake and hormonal contraceptive use among women.
Results: Dietary GL was inversely associated with circulating concentrations of apolipoprotein A-I, a negative acute phase reactant involved in lipid metabolism and a major constituent of HDL cholesterol (p=0.0003). Additional adjustment for serum HDL levels attenuated the association, suggesting that the effects of GL on apolipoprotein A-I are driven by changes in HDL.
Conclusions: These findings provide further evidence for the beneficial effects of a low GL diet on blood lipid profiles.
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Short Oral Abstract 14 - Serum Non-Esterified Fatty Acid (NEFA) Concentrations are Associated with Longitudinal Progression of β-Cell Dysfunction: Prospective Metabolism and Islet Cell Evaluation (PROMISE) Cohort (Luke W. Johnston, Canada)

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Objective: Elevated fasting NEFA concentrations are associated with incident type 2 diabetes (T2DM), however NEFA are physiologically diverse. Limited longitudinal data exist examining total and individual NEFA on the progression of metabolic disorders underlying T2DM. Our aim was to study the longitudinal associations of total and individual NEFA with insulin sensitivity (IS) and β-cell function.
Methods: Adults at-risk for T2DM in PROMISE had glucose and insulin measured from a glucose tolerance test at 3 visits over 6-yrs (n=478). Baseline NEFA were analyzed using thin-layer-chromatography and gas-liquid-chromatography with flame-ionization detector. The inverse of HOMA-IR (HOMA-IS) and the Matsuda index assessed IS, while the Insulinogenic Index over HOMA-IR (IGI/IR) and the Insulin Secretion-Sensitivity Index-2 (ISSI-2) assessed β-cell function. Dysglycemia was defined as incident pre-diabetes or T2DM. Generalized estimating equations was performed adjusting for waist, physical activity, alcohol, and sex.