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### PLASMA TRIMETHYLAMINE-N-OXIDE AND IMPAIRED GLUCOSE REGULATION: RESULTS FROM THE ORAL INFECTIONS, GLUCOSE INTOLERANCE AND INSULIN RESISTANCE STUDY (ORIGINS)

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### BIOGRAPHY

Sumith Roy is an experienced doctoral researcher with a demonstrated history of working in the higher education industry. She is skilled in Statistics, Research, Clinical Research, Medical Education, and Life Sciences. She is a strong research professional with a Master of Public Health (MPH) focused in Epidemiology from New York Medical College.

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Trimethylamine-N-oxide (TMAO) – a gut-microbiota derived metabolite – is an emerging biomarker of cardiometabolic risk. No studies have investigated the utility for TMAO as an early biomarker of diabetes risk. We investigated the association between plasma TMAO and biomarkers of diabetes risk. The Oral Infections, Glucose Intolerance and Insulin Resistance Study (ORIGINS) is a longitudinal cohort study among n=300 diabetes-free participants enrolled at baseline and re-examined at 2-years. Participants were men and women (77%) aged 20-55 years (mean=34 10) without: i) Diabetes Mellitus based on self-report physician diagnosis, fasting plasma glucose (FPG) 126 mg/dl or HbA1c 6.5% (48mmol/mol); ii) self-reported history of myocardial infarction, congestive heart failure, stroke or chronic inflammatory conditions. Plasma TMAO was measured using Ultra Performance Liquid Chromatography-Mass Spectrometry. Baseline FPG, HbA1C and insulin were measured after an overnight fast. Insulin resistance was defined using HOMA-IR. FPG was remeasured two-years after baseline in n=241 participants. Multivariable generalized linear models regressed FPG, HOMA-IR and HbA1c on tertiles of TMAO. Multivariable relative risk regressions modeled prediabetes across TMAO tertiles. Mean values of 2-year longitudinal FPG SE across tertiles of TMAO were 86.6 0.9, 86.7 0.9, 86.4 0.9 (p=0.98). Trends were similarly null for FPG, HbA1c and HOMA-IR, cross-sectionally. The prevalence ratio of prediabetes among participants in the 2nd and 3rd TMAO tertiles (vs. the 1st ) were 1.94 [95%CI 1.09-3.48] and 1.41 [95%CI: 0.76-2.61]. TMAO levels are modestly associated with an increased prevalence of prediabetes in a nonlinear fashion but not with insulin resistance or longitudinal FPG change.



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