

I296V; rs10246939) and grouped by haplotype. Serum and red cell folate levels (chemiluminescent immunoassay) and estimated folate intake (food frequency questionnaires) were determined. 6-n-propylthiouracil solutions were used to determine bitter taste phenotype (“taster”/“non-taster”). Differences between groups were assessed by *t*-tests, χ^2 tests and RR of AP.

Results: TAS2R38 haplotype significantly, but only partially predicted taster phenotype ($r = 0.43$, $\chi^2 = 35.5$, $p < 0.001$). There were no significant differences in folate intake or red cell folate in those with the PAV haplotype, relative to those without. Those with the PAV haplotype had significantly higher serum folate (17.95 ± 0.88 vs. 21.17 ± 1.42 nmol/L, $p = 0.046$). “Tasters” consumed significantly less folate (436.7 ± 15.7 vs. 521.0 ± 40.2 $\mu\text{g/d}$, $p = 0.021$) and had lower serum (18.52 ± 0.08 vs. 22.34 ± 1.53 nmol/L, $p = 0.024$) and red cell folate (832.2 ± 32.7 vs. 973.4 ± 58.1 nmol/L, $p = 0.030$), compared to “Non-tasters”. Neither haplotype nor phenotype alone predicted AP risk.

Conclusions: Folate status significantly varies with phenotype, but not haplotype, but neither adequately predicted AP. Phenotype may be modified by additional factors (genetic, epigenetic, sociocultural), which may influence the axis between diet and disease.

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A NOVEL APPLICATION OF BREATH HYDROGEN AND METHANE MONITORING IN NUTRITIONAL SCIENCE

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Background/Aims: Breath tests have great clinical utility in the diagnosis and management of intestinal disease (i.e. *Helicobacter pylori* infection and intestinal bacterial overgrowth). These breath tests are based on carbohydrate malabsorption and require administration of a substrate in an acute setting. To date, monitoring basal production of hydrogen and methane during dietary interventions remain unexplored. We aim to determine the dynamics of breath hydrogen and methane profile of overweight/obese adults with type 2 diabetes during weight loss on different dietary patterns.

Methods: Individuals were randomly assigned to consume a hypocaloric, low carbohydrate, low saturated fat diet (LC, 14% of energy as carbohydrate, 28% protein, 58% fat; $n = 13$) or an energy matched high carbohydrate, low fat diet (HC, 53% carbohydrates, 17% protein, 30% fat; $n = 14$) combined with a structured exercise program for 12 weeks. Breath hydrogen and methane were measured by BreathTracker at baseline, weeks 4, 8 and 12.

Results: Both groups had similar reductions in weight (LC 10.6%, HC 9.3%, $p = 0.39$). Breath hydrogen was altered during the intervention (repeated measures ANOVA: time $p = 0.388$; diet \times time $p = 0.011$); The LC group experienced significant reductions in hydrogen (-8.9 ppm, $p = 0.013$) at week 12 and non-significant change in the HC group ($+1.7$ ppm, $p = \text{NS}$). Methane tended to increase during the intervention in both diets (time $p = 0.078$, diet \times time $p = 0.3$).

Conclusions: Changes in hydrogen and methane production occurred following dietary intervention, likely via modulation of fermentation patterns within gastrointestinal tract. Further investigation is required to validate their utility and applicability as non-invasive biomarker in nutritional interventions.

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LOW FODMAP DIET – EFFICACY IN MANAGING ABDOMINAL SYMPTOMS IN PATIENTS WITH ENDOMETRIOSIS

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Background/Aims: Endometriosis is a chronic condition that is associated with pelvic pain and bowel symptoms similar to those usually described as IBS. While management for endometriosis is often pharmacological or surgical, we hypothesised bowel symptoms might respond to dietary

manipulation as does IBS without endometriosis. We aim to determine the response to a low FODMAP diet (LFD) of gastrointestinal symptoms in patients with endometriosis and IBS and to compare responses with those with IBS alone.

Methods: A consecutive cohort referred to a private IBS clinic in Christchurch NZ between 2009 and 2013 prospectively completed a symptom questionnaire. The data were interrogated in those with IBS (Rome III criteria) with and without endometriosis. All received LFD advice by an appropriately trained nurse consultant. The response to a LFD, defined by patient-reported outcome of $> 50\%$ improvement of symptoms, was assessed. Difference between the groups was tested via Fishers exact test.

Results: Of 157 women with IBS, 56 (35%) had a concurrent diagnosis of endometriosis. The median age of those with endometriosis was 32 as opposed to those without where median age was 39 ($p = 0.014$). However, response was reported in 71% with endometriosis compared with 47% of those without endometriosis ($p = 0.004$).

Conclusions: The high rate of response to a LFD suggests that this approach should be added to the repertoire of management strategies for endometriosis. Why the response was poorer in those without endometriosis was not clear.

Funding source(s): N/A.

POSTPRANDIAL NUTRIGENOMIC PATHWAY ANALYSIS OF ADIPOSE TISSUE IN MEN WITH METABOLIC SYNDROME (METS)

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Background/Aims: Profiling the transcriptomic regulation of adipose tissue (AT) by dietary manipulation in MetS will elucidate therapeutic and nutritional targets for chronic disease management.

Methods: Seventeen men (8 control; 9 MetS) were recruited to participate in a controlled randomised, single-blinded crossover single meal study. Participants consumed either a saturated fatty acid (FA)-rich breakfast or an unsaturated FA-rich breakfast. AT biopsies were taken at baseline (0 h), and 4 h following each test meal. Global gene expression profiling of the AT was performed using Illumina Human WG-6 v3 microarray chips followed by gene set enrichment analysis (GSEA) using DAVID software. Pathways were considered significant with Expression Analysis Systematic Explorer (EASE) score < 0.05 and a false discovery rate (FDR) value < 0.05 .

Results: Two pathways that were differentially regulated in MetS compared to control AT at baseline were also enriched by the following meal consumption. The Lysosome pathway was up-regulated ($p < 0.001$) and the Ribosome pathway was down-regulated ($p < 0.001$) in MetS AT compared with controls at baseline. Control AT exhibited enrichment of the Lysosome pathway with the SFA meal ($p = 0.001$) and MetS AT showed enrichment of the Ribosome pathway after the UFA meal ($p = 0.02$).

Conclusions: Lysosome and Ribosome pathways are impaired in MetS AT and can be manipulated by alterations in meal composition. This finding is important in the discovery of potential nutritional targets for chronic metabolic disease.

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REDUCED FODMAPS IN GLUTEN-FREE GRAINS MAY EXPLAIN THE IMPROVED SYMPTOMS IN PEOPLE WITH IBS FOLLOWING A GLUTEN-FREE DIET

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Background/Aims: Individuals with IBS blame gluten-containing grains for triggering gastrointestinal symptoms. Another component of grains that requires consideration is the FODMAPs mostly fructans and galacto-oligosaccharides (GOS). We aim to analyse the gluten and FODMAP content of 22