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T2:S14:02

### Transient overconsumption induced by a western diet in rats is essential to the control of metabolic endotoxemia via regulation of LPS intestinal translocation

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Increased plasma level of gut bacteria-derived lipopolysaccharides (metabolic endotoxemia) due to alteration of intestinal homeostasis plays an important role in obesity-related disorders. We hypothesized that initial calorie overconsumption during Western diet feeding in rats alters intestinal homeostasis, leading to increased lipopolysaccharides (LPS) translocation.

Rats were fed for 1 or 6 weeks either a control diet (C), a Western Diet (45% fat) *ad libitum* (WDal) or at the same caloric level than C rats (WDpf).

Adiposity and weight gain were similarly increased in both groups of WD rats, whereas endotoxemia was increased only in rats fed WD without calorie overconsumption. WD feeding increased intestinal LPS detoxification mechanisms (alkaline phosphate activity) and transiently decreased caecal bile acids receptors mRNA, irrespective of the energy intake level. However, sustained increased in intestinal LPS permeability and decreased caecal pxx, md2 and myd88 mRNA level were observed in WDpf rats as opposed to transient effects at week 1 in WDal rats.

A Western diet has both profound and transient effects on the mechanisms preventing LPS intestinal translocation. The transient effects seem to be driven by initial calorie intake and involved in the control of metabolic endotoxemia.

T2:S14:03

### The effect of a multi-strain probiotic on metabolic bio-markers in adults with prediabetes and recently diagnosed type 2 diabetes mellitus (T2DM)

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T2DM is a metabolic condition characterised by a persistent low-grade inflammatory response associated with the development of insulin resistance. Variations in the type, diversity and metabolic capacity of gastrointestinal (GI) microbial communities have shown to alter metabolic and inflammatory pathways within the host by shifting energy balance and storage and promoting metabolic endotoxaemia. An evidence-based multi-strain probiotic has been developed to restore the GI bacterial composition from a disease-prone to a balanced state and to improve metabolic markers associated with T2DM. The aim of this study is to assess the therapeutic effect of this novel probiotic on glucose metabolism in adults diagnosed with prediabetes and early T2DM.

Sixty adults with a BMI  $\geq 25$  kg/m<sup>2</sup> and diagnosed with prediabetes or T2DM (within the previous 12 months) are being enrolled in a double-blind controlled clinical trial and randomised to a multi-strain probiotic or placebo for 12 weeks. Both groups receive lifestyle advice. Outcome measures include fasting plasma glucose, 2-hour glucose tolerance, insulin, lipids, inflammatory markers, GI permeability, and faecal microbial and metabolomics

profiles. Measurements and samples are collected at baseline and 12 weeks after treatment. The initial results of this study will be reported.

Intentional manipulation of GI microbial profiles may be useful for regulating T2DM-associated metabolic disorders.

T2:S14:04

### Bifidobacterium animalis ssp. lactis 420 with or without Litesse@Ultra controls body fat mass and waist circumference in overweight and obesity—randomized, double-blind, multicenter clinical study

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The composition of gut microbiota is interlinked with energy balance, but causal evidence between its modulation and body fat mass is still very scarce. We investigated the effects of *Bifidobacterium animalis* ssp. *lactis* 420 (B420) and a dietary fiber, Litesse@Ultra polydextrose (LU), on body fat mass and other parameters related to obesity.

A total of 225 healthy participants were randomized into four groups for 6 mo of treatment: 1) Placebo; 2) LU, 12 g/d; 3) B420, 1010 CFU/d; 4) LU+B420, 12 g + 1010 CFU/d. Participants maintained their habitual diet and exercise routines. Body composition (DEXA) and anthropometric measurements were taken at 0, 2, 4 and 6 months, as well as one month after end of treatment.

The Per Protocol analysis (n=134) included participants who completed the treatment without major protocol violations, as was pre-defined. For change in body fat mass, LU+B420 showed a -1.4 kg difference to Placebo (P=0.02), whereas LU alone had no effect, and the overall ANCOVA was non-significant (P=0.095). The factorial analysis for total fat mass was significant for B420 (P = 0.002 vs. Placebo). The effects on body fat mass were most pronounced in the abdominal region, reflected by a reduction in waist circumference in the LU+B420 group (-2.5 cm, P = 0.047 vs. Placebo, ANCOVA P = 0.10).

B420 and LU+B420 showed benefits for controlling body fat mass and waist circumference, whereas LU had no effect. (Clinicaltrials.gov NCT01978691)

Sponsored by DuPont Nutrition & Health.

T2:S14:05

### Abdominal obesity is inversely associated with small intestinal bacterial overgrowth in irritable bowel syndrome

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There are several studies considering obesity and small intestinal bacterial overgrowth (SIBO) as the risk factors for irritable bowel syndrome (IBS). But the relationship between obesity and SIBO is not studied yet in IBS. The aim of this study was to investigate the association between obesity by body mass index (BMI) or waist circumference (WC) and SIBO in IBS patients.

We reviewed the charts of patients who showed IBS symptoms with documented results of lactulose breath test (LBT) for SIBO. Univariate and multivariate models were used to assess the association between obesity and SIBO. Obesity was defined as a BMI equal to or above 25. Abdominal obesity was defined as a WC equal to or above 85 cm in women and 90 cm in men.