Posters

**Inter- and intra-individual variation in DNA damage potential of faecal water assessed in the WIL2-NS cell line**

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**Background** - As human faeces represent the outcome of the digestion process as well as the metabolic products of colonic bacteria, the assessment of the faecal contents provides a non-invasive mechanism for studying the environment in the colon and its contribution to risk of colorectal cancer.¹ ² The ability of faecal water (aqueous phase of the faeces) to induce DNA damage in a cell line as measured using the cytokinesis block micronucleus (CBMN) assay has not been assessed, such that the extent of inter- and intra-individual variation with this assay is unknown.

**Objectives** - To measure the inter-individual and intra-individual effect of faecal water on DNA damage using the WIL2-NS cell line.

**Design** - Faecal samples were collected from 1 individual on 6 occasions and 6 individuals on 1 occasion. The WIL2-NS cell line was used to measure DNA damage of 1% faecal water assessed by the CBMN assay. CBMN assay biomarkers measured were micronuclei (MN, marker of chromosome breakage/loss), nucleoplasmic bridges (NPB, marker of chromosome rearrangement) and nuclear budding (NBud, marker of gene amplification), as well as necrosis and nuclear division cytotoxicity index (NDCI).

**Outcomes** - MN, NPB, NBuds and necrosis increased significantly and NDCI decreased significantly in the presence of 1% faecal water. Interindividual variation was greater than intra-individual variation (%CV) for all biomarkers measured. Fold increase relative to %CV suggest MN, NPB and NBud are the most reliable and sensitive biomarkers.

**Conclusions** - The CBMN assay is a comprehensive and reproducible method for measuring the DNA damage potential of faecal water within a population. The most reliable and sensitive biomarkers appear to be MN, NPB and NBuds.

**References**

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**Depression of postprandial hyperglycemia and hyperinsulinemia by low glycemic index cookies in diet-induced insulin resistant Wistar rats**

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**Background** - The postprandial hyperinsulinemia is a causative factor of obesity, pancreatic beta-cell exhaustion and the development of diabetes. The metabolic syndromes are characterized by the insulin resistance in peripheral tissues and are considered to be induced by the excessive postprandial hyperglycemia and hyperinsulinemia. High glycemic index (GI) diet led to at the initial phase an increased insulin secretion during an intravenous glucose tolerance test.

**Objective** - To examine whether the disposition behaviour of blood glucose and insulin secretion are manipulated by the intake of the low GI cookies with non-digestible dextrin in rats fed high sucrose high fat (HSHF) diet. These parameters were determined during and after the intravenous infusion of glucose and after the intake of the reference starch solution (Toleran-G).

**Design** - Male Wistar rats were fed HSHF diet for 16 weeks. The glucose was intravenously infused into these rats to clarify the relationship between blood glucose and insulin levels. The low GI cookies and Toleran-G were administered orally to estimate the values of GI and the insulinemic index (II) of the low GI cookies.

**Outcomes** - The basal insulin concentration in the HSHF diet group (1.8±0.8 ng/ml; mean±SD) was significantly higher than that of the standard chow group (0.8±0.4 ng/ml). Although the excessive postprandial hyperinsulinemia were observed after the oral administration of Toleran-G, the GI and II values for the low GI cookies was maintained low in HSHF diet group (GI: 27±11, II: 23±6).

**Conclusions** - Low GI cookies have the potential to depress hyperglycemia and hyperinsulinemia. The low GI cookies might be useful for the prevention of the metabolic syndromes.