

Concurrent Session 12: Interventions in Obesity

High protein-high red meat and high carbohydrate weight loss diets do not differ in their effect on lymphocyte DNA damage using the cytokinesis-block micronucleus cytome assay

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Background – The effect of both weight loss and different dietary patterns used for weight loss on DNA damage frequency in peripheral blood lymphocytes has not been assessed to date.

Objectives – Compare the impact of a high protein-high red meat (HP) diet versus a high carbohydrate (HC) diet on genome stability assessed in peripheral blood lymphocytes of overweight men using the cytokinesis block micronucleus cytome (CBMN-Cyt) assay.

Design – 33 obese men (mean age 54y, mean BMI 32kg/m²) were randomized to either a HP or HC dietary pattern. Blood samples were collected at base-line, after 12 weeks intensive weight loss and after 9 months weight maintenance on the diets for DNA damage assessment.

Outcomes and Conclusions – Both diets resulted in an average weight loss of 9.3 ± 0.7kg after 12 weeks with no further significant change in weight after 9 months. Two-way ANOVA showed no effect of time or diet on micronucleus frequency (chromosome loss/breaks). An effect of time (P=0.03) but not diet was seen for nuclear buds (gene amplification), with a trend for reduction in frequency of nuclear budding with weight loss and weight maintenance. There was a positive trend with time for nucleoplasmic bridges (chromosome rearrangement) but did not achieve statistical significance (P=0.051). There was no significant effect of time or diet for nuclear division cytotoxicity index. The results from this study suggest that weight loss or weight maintenance on either a HP or HC diet may alter the genome stability profile in peripheral blood lymphocytes, but there was no difference between the two dietary patterns.

Withdrawn