Concurrent Session 15: Diet and health

The effect of a low glycemic index diet during pregnancy on obstetric outcomes
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Background – Pregnancy is a condition where the GI concept may be of particular relevance because maternal glucose is the main energy substrate for intrauterine growth (1-2).

Objectives – The aim was to compare the effects of a low GI and conventional dietary strategy on pregnancy outcomes in healthy women. Compliance and acceptability were also investigated.

Design – Volunteers were assigned alternately to receive dietary counselling that encouraged either low GI carbohydrate foods (LGI) or high fibre, moderate-to-high GI foods (HGI) and studied five times between <16 weeks gestation and delivery. Of the 70 women who met the inclusion criteria, 62 completed the study (32 in LGI and 30 in HGI). Primary outcomes were measures of foetal size.

Outcomes – Mean diet GI fell significantly in the LGI group but not the HGI group. Compared with the LGI group, women in the HGI group gave birth to infants who were heavier (3408 ± 78 vs 3644 ± 90 g respectively, P = 0.051) with higher birth centiles (48 ± 5 vs 69 ± 5, P = 0.005), higher ponderal index (2.62 ± 0.04 vs 2.74 ± 0.04, P = 0.03) and higher prevalence of large-for-gestational age (3% vs 33%, P = 0.01). There was no effect of diet composition on maternal weight gain, method of delivery or indirect measures of insulin sensitivity. Compared with baseline, only the LGI group reduced intake of saturated fat. Women in the LGI group found the diet easier to follow.

Conclusion – Since birth weight and ponderal index may predict chronic disease in later life, a low GI diet may favourably influence long-term outcomes.


The effect of dietary modifications on cortisol secretion
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Background – Cortisol is a key hormone in the response to stress, and depression, anxiety and stress are associated with increased daily cortisol secretion. Dietary factors may influence daily cortisol secretion.

Objective – To assess the effect on cortisol secretion of two diets: a high-calcium diet, rich in low-fat dairy foods (HC) and a low-sodium, high-potassium diet, rich in fruits and vegetables (LNAHK) with a moderate-sodium, high-potassium, high-calcium “DASH” type diet, high in fruits, vegetables and low-fat dairy foods (OD).

Design - In a crossover design, subjects were randomised to two test diets for 4- wk, the OD and either HC or LNAHK, each preceded by a 2 wk control diet (CD). Saliva samples were collected in the morning and at 1200 h, 1600 h, 2000 h for 1 d at the end of each diet.

Outcomes – Seventy-four subjects completed the study (29 men, 45 women) with a mean (SD) age of 56.3(9.8) yr and a mean BMI of 29.2(3.8) kg/m². Cortisol variability was high for morning samples (176% CV); however, afternoon/evening samples (area under the curve (AUC) (nmol.l⁻¹.8hr⁻¹)) had less variation (30% CV). CD cortisol concentrations predicted the change in AUC; for the OD ß=−0.8(0.1) (SEM), LNAHK ß=−0.7(0.1) and HC ß=−0.7(0.1) (R²: 0.4-0.6). The % change in AUC was lower in the HC diet when compared to the OD diet (P=0.058), and significantly lower when compared to the LNAHK diet (P<0.05).

<table>
<thead>
<tr>
<th>Diet</th>
<th>OD AUC (nmol.l⁻¹.8hr⁻¹)</th>
<th>LNAHK AUC (nmol.l⁻¹.8hr⁻¹)</th>
<th>HC AUC (nmol.l⁻¹.8hr⁻¹)</th>
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<tbody>
<tr>
<td>% change</td>
<td>16.8 ± 8.9</td>
<td>19.0 ± 8.4</td>
<td>-3.5 ± 5.7</td>
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</tbody>
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mean ± SEM

Conclusion – Consumption of 3-4 serves/day of dairy foods resulted in a fall in cortisol secretion compared to a rise seen in two diets requiring some dietary restrictions. This suggests increased dairy intake may have beneficial effects on cortisol secretion in the afternoon/evening period.