T6;P6c-009

THE EFFECT OF NORMAL-FAT DIETS, EITHER MEDIUM OR HIGH IN PROTEIN, ON BODY WEIGHT IN OBESE SUBJECTS: A RANDOMISED ONE-YEAR TRIAL

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Aims: To extend our previous observation, of a more favourable effect of a 60% fat-reduced high-protein diet on body weight loss, by a further 6-12 mo less stringent intervention and a 24 mo follow-up.

Methods: A total of 50 overweight and obese subjects (age: 19-55 years, BMI: 26.34) participated in a randomised 6 mo strictly controlled dietary intervention followed by 6-12 mo dietary counselling period, and a subsequent 24 mo follow-up, comparing an ad libitum, fat-reduced diet (30% of energy) either high in protein (25% of energy, HP) or medium in protein (12% of energy, MP).

Results: After 6 months, the HP group (n=23) achieved a greater weight loss than the MP group (n=27) [9.4 vs. 5.9 kg] (P<0.01). After 12 months, the drop-out was 8% in the HP vs. 28% in the MP group (P<0.07). The weight loss was 6.2% in the HP group vs 3.5% in the MP group (NS). The HP group had a 10% greater reduction in intra-abdominal adipose tissue (P=0.05). In all, 17% in the HP group lost >10 kg, whereas none in the MP achieved this (P<0.09). At 24 months, both groups tended to maintain their 12 months weight loss, but more than 50% were lost to follow-up.

Conclusion: A fat-reduced diet high in protein seems to enhance weight loss and provide a better long-term maintenance of reduced intra-abdominal fat stores.

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REVERSAL OF HORMONE CONCENTRATIONS DURING PHASES OF BODY WEIGHT LOSS

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Aims: To investigate the effects of weight loss on the blood parameters ghrelin, adiponectin, IGF-1, insulin and glucose.

Methods: Twenty-two overweight male subjects (age 35.4 ± 3.7 yr, BMI 29.1 ± 6.9 kg/m²) followed a very low energy diet (2.1 MJ/d) for 46 days. At days 1, 25, and 46, a venous blood sample was taken after an overnight fast, and body weight (BW) was measured. Before and after the diet intervention, body composition was determined.

Results: BW loss was 8.9 ± 1.8 kg during the first 25 days, and 4.5 ± 1.8 kg during days 25–46. The rate of BW loss was 0.35 ± 0.07 kg/d during the first week of weight loss compared to 0.21 ± 0.08 kg/d during the last week (p<0.001). Surprisingly, decreases in ghrelin, adiponectin, and IGF-1 levels on day 25 were reversed on day 46 (p<0.005) (Table 1).

Reducations in insulin and glucose remained (Table 1).

Table 1. Changes in blood parameters (mean ± st) during weight loss

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 25</th>
<th>Day 46</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghrelin</td>
<td>114.6 ± 32.0</td>
<td>72.3 ± 26.8*</td>
</tr>
<tr>
<td>Adiponectin</td>
<td>144 ± 7.3</td>
<td>118.4 ± 6.5*</td>
</tr>
<tr>
<td>IGF-1</td>
<td>159.9 ± 34.1</td>
<td>118.1 ± 36.0*</td>
</tr>
<tr>
<td>Insulin</td>
<td>8.2 ± 3.1</td>
<td>2.7 ± 1.7*</td>
</tr>
<tr>
<td>Glucose</td>
<td>5.2 ± 0.2</td>
<td>4.5 ± 0.4*</td>
</tr>
</tbody>
</table>

*p<0.05 compared to day 1; #p<0.05 compared to day 25.

Conclusions: BW loss induced decreased plasma levels of ghrelin, adiponectin, IGF-1, insulin, and glucose. However, when the rate of BW loss decreased, the originally decreased ghrelin, adiponectin and IGF-1 concentrations increased again.

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EFFECT OF A 2-DAY VERY LOW-CALORIE DIET ON GLUCOSE DISPOSAL AND LIPID METABOLISM IN OBESE TYPE 2 DIABETIC PATIENTS

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Aims: In obese type 2 diabetic patients fasting plasma glucose (FPG) levels decrease before significant weight loss has occurred when a very low calorie diet (VLCD) is initiated. This study was performed to investigate the mechanism underlying this early reduction of FPG.

Methods: Eleven obese type 2 diabetic patients were studied before (day 0) and after a 2-day VLCD (day 2), while all their blood glucose-lowering medication was discontinued. Endogenous glucose production (EGP) and whole-body glucose disposal (6H2O-glucose, lipolysis (6H2O-glycerol) and substrate oxidation rates (ventilated hood) were measured on both study days in basal and hyperinsulinemia conditions.

Results: After a 2-day VLCD basal EGP (24.7 ± 1.7 to 20.4 ± 1.3 pmol/kg lbm7 min−1; p=0.012) significantly declined whereas basal lipolysis (8.3 ± 1.7 to 6.5 ± 1.9 pmol/kg lbm7 min−1) did not change. During hyperinsulinemia, EGP; whole-body glucose disposal and lipolysis did not change significantly. Patients effectively switched from glucose to lipid oxidation.

Conclusions: In severely obese type 2 diabetic patients on oral blood glucose-lowering medication and insulin therapy a 2-day VLCD in combination with the cessation of all glucose-lowering therapy led to a reduction in FPG in most patients. This reduction in FPG was due to a decrease in basal EGP. Insulin suppressibility of EGP and lipolysis and insulin-stimulated whole-body glucose disposal did not change.

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ANTIOBESITY EFFECTS OF A FERMENTED SOY PRODUCT ENRICHED IN ISOFLAVONES

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Aims: To examine the effects of a fermented soy product enriched in isoflavones on adipose tissue.

Methods: Male young Wistar rats were divided into 6 groups as follows: (1) control; (2) cholesterol-enriched diet; (3) cholesterol-enriched diet comercial diet (HCL); (4) cholesterol-enriched diet comercial diet fermented product enriched in isoflavones (HCPL); (5) cholesterol-enriched diet comercial diet + placebo (HCP) and (6) cholesterol-enriched diet comercial diet + placebo enriched in isoflavones (HCPFL). The HCL, HCP, HCPFL groups were fed with a diet with, 1% (w/w) cholesterol in the first 31 days. After that, they received commercial diet during the next 21 days. The HCL, HCP, HCPFL groups received daily 1 mL of the soy products in the last 21 days.

The effects of isoflavones on adipose tissue were evaluated at the end of the experiment. The food intake was measured during the last 21 days.

Table 2. Changes in body weight (gut/100g) and food intake (gut/100g body weight)

<table>
<thead>
<tr>
<th>Group</th>
<th>Retropertioneal</th>
<th>Epididymal</th>
<th>First 21 days</th>
<th>Last 21 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.62 ± 0.10*</td>
<td>0.60 ± 0.11*</td>
<td>9.33 ± 0.29*</td>
<td>7.58 ± 0.29*</td>
</tr>
<tr>
<td>H</td>
<td>0.38 ± 0.07*</td>
<td>0.46 ± 0.08*</td>
<td>10.10 ± 0.55*</td>
<td>9.34 ± 0.77*</td>
</tr>
<tr>
<td>HC</td>
<td>0.55 ± 0.16*</td>
<td>0.60 ± 0.14*</td>
<td>9.53 ± 0.21*</td>
<td>8.93 ± 0.54*</td>
</tr>
<tr>
<td>HCFP</td>
<td>0.44 ± 0.12*</td>
<td>0.52 ± 0.12*</td>
<td>9.66 ± 0.42*</td>
<td>9.09 ± 0.47*</td>
</tr>
<tr>
<td>HCP</td>
<td>0.96 ± 0.12*</td>
<td>0.72 ± 0.12*</td>
<td>9.30 ± 0.45*</td>
<td>7.72 ± 0.27*</td>
</tr>
<tr>
<td>HCFP</td>
<td>0.62 ± 0.19*</td>
<td>0.50 ± 0.13*</td>
<td>8.46 ± 1.38*</td>
<td>7.45 ± 0.27*</td>
</tr>
</tbody>
</table>

*p<0.05 compared to the same column, #p<0.05.

Conclusions: These results indicate the anitobesity effect of isoflavones.