EFFECT OF A LOW CARBOHYDRATE VERSUS A LOW FAT DIET ON THE METABOLIC SYNDROME

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**Background:** Though a low carbohydrate (CHO) diet is effective for weight loss, concern remains that low CHO diets may increase cardiac risk due to higher fat intake. We hypothesized that a low CHO diet would be as effective as a low fat diet for ameliorating metabolic syndrome (MetSyn).

**Methods:** Obese or overweight but otherwise healthy subjects (n=77), aged 40-65 years (mean (SD) 48.5 ± 9.1 years) were randomized to 6-months of an isocaloric low-CHO or low fat diet, each combined with supervised exercise training. Measurements included anthropometrics, lipid profile, serum glucose, and BP.

**Results:** Sixty subjects completed the study. At baseline, subjects had 1.9 ± 1.0 indices of MetSyn; 23.3% of subjects met full criteria. Mean weight was 98.6 ± 15.4 kg, waist circumference 102.6 ± 10.8 cm, fasting glucose 92.7 ± 9.2 mg/dL, triglycerides 117.9 ± 66.6 mg/dL, HDL 52.8 ± 15.9 mg/dL, and BP 125 ± 14 / 74 ± 9.8 mmHg with no differences between groups. At 6 months, the low-CHO v. the low-fat group had a greater reduction in weight (-13.1 ± 6.0 v. -8.2 ± 4.7 kg), waist circumference (-12.1 ± 6.0 v. -6.1 ± 7.8 cm) and triglycerides (-49.1 ± 52.7 v. -7.4 ± 49.8 mg/dL) and increase in HDL (+8.1 ± 13.6 v. +0.8 ± 13.3 mg/dL), with p < 0.05 for all comparisons. Both groups demonstrated similar reductions in glucose, -5.7 ± 11.0 mg/dL, and BP, -10 ± 12.1 / -8.6 ± 8.2 mmHg, both p<0.05. At 6 months, subjects had 1.2 ± 1.0 indices of MetSyn, p < .001 for change from baseline; 10% of subjects met full criteria, p < 0.05 for change from baseline with no difference between groups. In regression analyses, the decrease in number of MetSyn indices was associated with the magnitude of weight loss independent of the diet followed.

**Conclusion:** Both weight loss programs improved indices of MetSyn, independent of the macronutrient content of the diet. These results suggest that a low-CHO diet as part of a weight loss program is a viable option for reducing cardiovascular disease burden.