

POSTER PRESENTATION

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Effects of high carbohydrate or high protein energy-restricted diets combined with resistance-exercise on weight loss and markers of health in women with serum triglyceride levels above or below median values

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Background

A diet high in protein has been shown to have beneficial effects on weight loss and triglyceride (TG) levels when combined with exercise. Recent research has also shown that a diet high in protein in the absence of exercise promotes more favorable results for individuals above the median TG (mTG) levels (>133 mg/dL). The purpose of this study was to determine if women with TG above median values experience greater benefits to a diet and circuit resistance-training program.

Methods

442 apparently healthy sedentary obese women (48±12 yrs, 64±3 in, 201±39 lbs, 45±5 % fat) completed a 10-wk exercise and diet program. All subjects participated in Curves circuit training (30-minute hydraulic resistance exercise interspersed with recovery floor calisthenics performed at 30-second intervals 3 days/wk) and weight loss program (1,200 kcal/d for 1 wk; 1,600 kcal/d for 9 wks). Subjects were randomly assigned to a high protein or high carbohydrate isocaloric diet. The high protein (HP) group (n=200) consumed 30% fat, 55-63% protein, and 9-15% carbohydrate diet while the high carbohydrate (HC) group (n=242) consumed 30% fat, 55% carbohydrate, and 15% protein diet. Pre and post measurements included standard anthropometric

measurements including dual energy X-ray absorptiometry (DEXA), as well as resting energy expenditure (REE), metabolic blood analysis, and blood pressure. Subjects were stratified into a lower or higher TG group based on the mTG value observed (125 mg/dL). Data were analyzed by MANOVA with repeated measures and are presented as means ± SD percent changes from baseline.

Results

Fasting serum TG levels differed between groups stratified based on mTG levels (<mTG 86±24 vs >mTG 204 ±84 mg/dL, p=0.001). Time effects were observed in all anthropometric measurements including waist and hip, as well as weight loss, fat mass and percent body fat. Subjects on the HP diet experienced greater reductions in weight than those on the HC diet (HP -3.1±3.4%; HC -2.3±2.5%, p=0.005) and fat mass (HP -1.7±3.1%; HC -1.3±2.0%, p=0.006). No differences were seen in any measures in subjects with > mTG. However, a Time x Diet x mTG interaction was observed in changes in hip circumference. Subjects in the HP diet with <mTG experienced a greater reduction in hip circumference (-2.7 ± 4.8%) than those with >mTG levels (-2.4 ± 4.8%, p=0.029) while subjects in the HC diet with >mTG experienced a greater reduction in hip circumference (-3.4 ± 4.8%) than those with <mTG levels (-1.9 ± 3.4%, p=0.029).

Time effects were also observed in systolic and diastolic blood pressures, REE, cholesterol, high density

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lipoprotein (HDL), low density lipoprotein (LDL) and uric acid. While no time effects were observed with changes in TG, subjects on the HP diet experienced a significantly greater reduction ($p=0.048$) in TG levels ($-5.6 \pm 34.0\%$) than those on the HC ($2.0 \pm 36.5\%$) while subjects with $>mTG$, also experienced a greater reduction ($p=0.02$) in TG levels ($-12.3 \pm 29.8\%$) than those with $<mTG$ ($9.1 \pm 39.4\%$).

Conclusion

Results reveal that diet combined with circuit training promotes decreases in waist and hip circumference, weight loss, fat mass and body fat percentage while concomitantly reducing blood pressure, cholesterol and uric acid, and increasing resting energy expenditure. A HP diet promotes greater reductions in weight loss, fat mass and TG levels. Greater reductions in TG levels were experienced by individuals with mTG levels > 125 mg/dL. While a HP diet promotes greater reductions in TG, individuals with TG levels > 125 mg/dL experience greater reductions regardless of diet.

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