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The Effect of VP2 Whey Isolate, Micronized Creatine and Resistance Training on Muscle Fiber Characteristics, Strength and Body Composition

By P.J.Cribb

Exercise Metabolism Unit, Center for Rehabilitation in Exercise and Sport Science,

Very few studies have examined the effects of dietary supplements on muscle fiber characteristics, even fewer have examined a correlation between supplementation and changes in strength or body composition during resistance training. This study examined the effects of an 11-week Max-OT™ resistance training program in combination with VP2 Whey Isolate, Micronized creatine and carbohydrate supplementation on muscle fiber characteristics, strength and body composition.

METHODS: In a double-blind protocol thirty-three resistance-trained males were matched for strength and placed into one of four groups: Micronized creatine/carbohydrate (HSC), VP2 Whey Isolate (VP2), Micronized creatine/VP2 Whey Isolate (CrVP2) or a carbohydrateonly (CHO) placebo supplement. Participants consumed 1.5gms of their supplement/kg body wt/day. The groups taking micronized creatine underwent a loading phase (20-25gms/day) in the first week, followed by a maintenance dose of approx 5-10gms/day.

All subjects undertook the same fully supervised resistance training program four times per week. Strength was assessed by 1-RM in three exercises (bar bench press, squat and cable pull-down). Body composition assessed by DEXA QDR 4500. Muscle fiber types (1, 2a and 2x) and cross-sectional area (CSA) were determined histochemically from vastus lateralis muscle biopsy samples. The participant's diets were analyzed throughout the study. All assessments occurred in the week before and the week after training.

RESULTS: After the training/supplementation program the HSC, VP2 and CrVP2 groups all demonstrated significantly better gains ($P<0.05$) in strength than the placebo supplement (284%, 308% and 371% respectively). The HSC, VP2 and CrVP2 groups each demonstrated a significantly better gain ($P<0.05$) in lean mass (8.1, 5.0 and 7.4 pounds respectively) compared to the placebo group. The HSC, VP2 and CrVP2 groups each demonstrated significantly greater CSA increases in the type-2 muscle fibers compared to the placebo supplement (793%, 543% and 1230% respectively).

Additionally, there was a highly significant ($P<0.001$) correlation between the magnitude of strength gained by the bodybuilders using these supplements and the increases in muscle fiber CSA in all fiber types.

CONCLUSION: All participants in this study consumed a high energy/high protein diet. However, the bodybuilders supplementing with HSC, VP2 and CrVP2 achieved greater adapatational responses from 11-weeks of Max-OT training. Supplementation with HSC, VP2 and CrVP2 produced greater increases in lean mass and muscle fiber size that resulted in greater weight lifting performance.

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