



Effects of BIOCREAT Supplementation on Strength and Body Composition During an 8-week Resistance Training Program



Lewing M¹, Pena E¹, Poole C¹, Dufour F¹, Consancio E¹, Jacobson H¹, Dugan K¹, Jones T¹, Ervin N¹, Foster C¹, Kreider R², Taylor L¹, Wilborn C¹

¹University of Mary Hardin-Baylor, Human Performance Lab, Belton, TX 76513, USA.

²Texas A&M University, Exercise and Sport Nutrition Lab, College Station, TX.

Abstract

Background: BIOCREAT is a highly purified unique molecule extracted from Fenugreek (*Trigonella Foenun graecum*) seeds. BIOCREAT is a proprietary patent pending molecule of INDUSBIOTECH that is hypothesized to enhance creatine uptake. The purpose of this study was to evaluate the effects of BIOCREAT supplementation on strength and body composition. **Methods:** 47 Resistance trained men were matched according to body weight and randomly assigned to ingest in a double blind manner 75 g of placebo (N=15, 20 ± 1.1 yrs, 177 ± 6 cm, 87 ± 11 kg, 16 ± 5.6 %BF), 75 g of dextrose/ 5 g creatine in powdered form (N=14, 21 ± 4 yrs, 181 ± 7.1 cm, 89 ± 12 kg, 18 ± 5.5 %BF) or 900 mg BIOCREAT/ 3.5 g creatine capsules (N=17, 21 ± 2 yrs, 179 ± 6 cm, 85 ± 10 kg, 15 ± 6 %BF). Subjects participated in a supervised 4-day per week periodized resistance-training program split into two upper and two lower extremity workouts per week for a total of 8-weeks. At 0, 4, and 8-weeks, subjects were tested on body composition via dual energy x-ray absorptiometry, 1RM strength, muscular endurance, and anaerobic capacity. Statistical analyses utilized a two-way ANOVA with repeated measures for all criterion variables ($p \leq 0.05$). Data are presented as mean ± SD changes from baseline values. **Results:** Significant group x time interaction effects ($p \leq .05$) were observed with BIOCREAT and creatine groups compared to placebo in changes of lean mass (PL: .4 ± 1.7 kg, CRE: 1.8 ± 2.1 kg, BIO: 1.8 ± 1.3 kg), bench press 1RM (PL: 8 ± 10.7 lbs, CRE: 21 ± 13 lbs, BIO: 16 ± 11 lbs) and Wingate peak power (PL: 18.9 ± 55.7 W, CRE: 12.1 ± 70.4 W, BIO: 55.8 ± 66.1 W). There was no significant group x time interaction effects between the BIOCREAT and creatine groups on these parameters. Significant main effects for time ($p \leq .05$) were observed on body weight, fat mass, body fat percentage, leg press, and Wingate mean power. No significant interactions were observed among groups for muscular endurance on bench press or leg press. In addition there were no changes among groups in any clinical safety data including lipid panel, liver function, kidney function, and/or CBC panel ($p > 0.05$). **Conclusion:** It is concluded that BIOCREAT supplementation had a significant impact on upper body strength and body composition in comparison to placebo in a double blind controlled trial. The results obtained also demonstrated that there was no significant difference between BIOCREAT and the dextrose/ creatine mixture on parameters of upper body strength and body composition. These changes were obtained with no clinical side effects. We conclude that in addition to a structured resistance training program, BIOCREAT can significantly increase strength and muscle mass.

Rationale and Background

Fenugreek (*Trigonella foenum-graecum*) is used both as an herb (the leaves) and as a spice (the seed). It is cultivated worldwide as a semi-arid crop. Fenugreek is one of the world's oldest medicinal herbs. It has a variety of claimed uses, including aiding in digestion, lowering blood pressure, relieving congestion, reducing inflammation and fighting infection. Supplements of fenugreek seeds have also been shown to lower serum cholesterol, triglyceride, and low-density lipoprotein in human patients. Several human intervention trials demonstrated that the antidiabetic effects of fenugreek seeds ameliorate most symptoms associated with type-1 and type-2

diabetes in both humans and relevant animal models by increasing glucose sensitivity. Therefore, it is hypothesized that fenugreek will also increase creatine uptake by the muscle, as glucose and creatine are both associated with the same absorption mechanisms. The theoretical response is claimed to enhance uptake in the same method as pairing dextrose with creatine, which is used in many supplements. However, these claims have not been substantiated. The purpose of this study is to investigate the effects of Biocreat in conjunction with a controlled resistance training program on strength and body composition.

Experimental Design

Subjects / Supplement

47 Resistance trained men were matched according to body weight and randomly assigned to ingest in a double blind manner 75 g of placebo (N=15, 20 ± 1.1 yrs, 177 ± 6 cm, 87 ± 11 kg, 16 ± 5.6 %BF), 75 g of dextrose/ 5 g creatine in powdered form (N=14, 21 ± 4 yrs, 181 ± 7.1 cm, 89 ± 12 kg, 18 ± 5.5 %BF) or 900 mg BIOCREAT/ 3.5 g creatine capsules (N=17, 21 ± 2 yrs, 179 ± 6 cm, 85 ± 10 kg, 15 ± 6 %BF).

Baseline Testing

Following the familiarization/practice session, the subjects recorded all food intake on dietary record forms for four days (4-d). Subjects were instructed to refrain from exercise for 48 hours and fast for 12-hours prior to baseline testing. Subjects reported to the HPL for body composition and clinical assessments. Once reporting to the lab, subjects were weighed, had body composition determined using dual energy x-ray absorptiometry. Subjects then donated approximately 20 ml of fasting blood using venipuncture techniques of an antecubital vein in the forearm according to standard procedures. Subjects then performed 1 repetition maximum lifts on the bench press and leg press to assess strength and then muscular endurance. Finally Subjects did a Wingate power test. Before leaving the lab subjects were assigned to a supplement group and given their training regimen

Training Protocol

Subjects participated in a periodized 4-day per week resistance-training program split into two upper and two lower extremity workouts per week for a total of 8-weeks. The subjects performed an upper body resistance-training program consisting of nine exercises (bench press, lat pull, shoulder press, seated rows, shoulder shrugs, chest flies, biceps curl, triceps press down, and abdominal curls) twice per week and a seven exercise lower extremity program (leg press, back extension, step ups, leg curls, leg extension, heel raises, and abdominal crunches) performed twice per week. Subjects performed 3 sets of 10 repetitions during weeks 1-4 and 3 sets of 8 during weeks 5-8 using as much weight as they can lift per set (typically 60 – 80% of 1RM). Rest periods between exercises lasted no longer than 3 minutes and rest between sets lasted no longer than 2 minutes. Training was conducted at the Mayborn Campus Center (MCC) at the University of Mary Hardin Baylor under the supervision of trained research assistants, documented in training logs, and signed off to verify compliance and monitor progress.

Methods

Variables

1RM Bench press, 1RM Leg Press, Dietary Inventory, Wingate Power, and Body Composition were analyzed at baseline, 4 weeks, and 8 weeks of the study.

Body Composition

Body composition was analyzed using a HOLOGIC DISCOVERY (Bedford, MA) dual energy x-ray absorptiometry.

Statistical Analysis

Analysis of variance (ANOVA) for repeated measures univariate tests was used to analyze data. Data was considered statistically significant when the probability of type I error is 0.05 or less. If a significant group, treatment and/or interaction alpha level was observed, least significant differences (LSD) post-hoc analyses was performed to determine where significance was obtained.

Results

- Significant group x time interaction effects were observed among groups in changes in lean mass (PL: .4 ± 1.7 kg, CRE: 1.8 ± 2.1 kg, BIO: 1.8 ± 1.3 kg, $p < 0.05$) and;
- Bench press 1RM (PL: 8 ± 10.7 lbs, CRE: 21 ± 13 lbs, BIO: 16 ± 11 lbs, $p < 0.05$) and;
- Wingate peak power (PL: 18.9 ± 55.7, CRE: 12.1 ± 70.4, BIO: 55.8 ± 66.1, $p < 0.05$)
- There was no significant change ($p > 0.05$) in muscular endurance or clinical safety data.

Conclusions

- It is concluded that BIOCREAT supplementation had a significant impact on upper body strength and body composition in comparison to placebo in a double blind controlled trial. The results obtained also demonstrated that there was no significant difference between BIOCREAT and the dextrose/ creatine mixture on the same parameters of upper body strength and body composition.
- These changes were obtained with no clinical side effects.

