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# Effects of TESTOSURGE Supplementation on Strength, Body Composition and Hormonal Profiles During an 8-Week Resistance Training Program

Poole C<sup>1</sup>, Bushey B<sup>1</sup>, Pena E<sup>1</sup>, Constancio E<sup>1</sup>, Jones T<sup>1</sup>, Dufour F<sup>1</sup>, Ervin N<sup>1</sup>, Clemens B<sup>1</sup>, Willoughby D<sup>2</sup>, Kreider R<sup>3</sup>, Foster C<sup>1</sup>, Taylor L<sup>1</sup>, Wilborn C<sup>1</sup>.

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

<sup>2</sup>Baylor University, Exercise and Biochemical Nutrition Lab, Waco TX.

<sup>3</sup>Texas A&M University, Exercise and Sport Nutrition Lab, College Station, TX.



HUMAN PERFORMANCE LAB

## Abstract

**Background:** TESTOSURGE is a novel, proprietary substance extracted from Fenugreek (*Trigonella Foenum graecum*) seeds and is patent pending by INDUS BIOTECH. The purpose of this study was to determine the effects of TESTOSURGE supplementation on strength, body composition and hormonal profiles. **Methods:** 30 resistance trained males completed all phases of the study. Subjects were matched according to total body weight and randomly assigned in a double-blind manner to ingest either 500 mg of a placebo (N = 13, 21 ± 3 yrs, 180 ± 6.4 cm, 84 ± 15 kg, 18.3 ± 6.8 BF%) or TESTOSURGE (N = 17, 21 ± 2.8 yrs, 178 ± 5.8 cm, 85 ± 9.6 kg, 18.8 ± 4.8 BF%) once per day for eight weeks. Subjects participated in a supervised, 4-day per week periodized resistance training program consisting of two upper extremity and two lower extremity workouts per week for a total of 8 weeks. At weeks 0, 4 and 8, hydrodensitometry body composition, 1RM bench press and leg press, muscular endurance, anaerobic power and hormonal profiles were assessed. 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 occurred over the eight week period for body fat percentage (TES:  $-1.77 \pm 1.52\%$ , PL:  $-0.55 \pm 1.72\%$ ;  $p = 0.048$ ), total testosterone (TES:  $0.97 \pm 2.67\text{ng/ml}$ , PL:  $-2.10 \pm 3.75\text{ng/ml}$ ;  $p = 0.018$ ) and bioavailable testosterone (TES:  $1.32 \pm 3.45\text{ng/ml}$ , PL:  $-1.69 \pm 3.94\text{ng/ml}$ ;  $p = 0.049$ ). A significant main effect for time ( $p \leq 0.05$ ) was noted for bench press 1RM, leg press 1RM and lean body mass. No significant changes were detected among groups for Wingate peak or mean power, total body weight, free testosterone, dihydrotestosterone, estrogen, hemodynamic variables, or clinical safety data including lipid panel, liver function, kidney function, and/or CBC panel ( $p > 0.05$ ). **Conclusion:** It is concluded that 500 mg of daily TESTOSURGE supplementation significantly impacted body fat percentage, total testosterone and bioavailable testosterone when compared to a placebo in a double-blind fashion. These changes were attained without any clinical side effects. We conclude that combined with a structured resistance training program, TESTOSURGE can significantly improve body composition and increase the anabolic hormonal status in resistance trained males over an 8 week period.

## 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 uses that include aiding in digestive processes, reducing the sugar level of the blood, and it is used in diabetes in conjunction with insulin. Fenugreek may also lower blood pressure, relieve congestion, reduce inflammation and fight infection. Supplements of fenugreek seeds have been shown to

lower serum cholesterol, triglyceride, and low-density lipoprotein in human patients and experimental models of hypercholesterolemia and hypertriglyceridemia. Fenugreek extract has been marketed in dozens of dietary products as having anabolic potential for resistance trained athletes. This particular extraction of fenugreek is purported as an aromatase and  $5\alpha$  reductase inhibitor, thereby increasing total testosterone levels via blocking its conversion to estrogen and DHT respectively. Increased total testosterone levels could potentially affect serum free/bioavailable testosterone concentrations, resulting in escalated delivery and use by muscle cells to enhance protein synthesis, thus positively influencing strength and body composition. However, these claims have not been substantiated. Therefore, the purpose of this study was to investigate the effects of TESTOSURGE in conjunction with a controlled resistance training program on strength, body composition and hormonal profiles.

## Experimental Design

### • Subjects / Supplement

30 resistance trained males completed all phases of the study. Subjects were matched according to total body weight and randomly assigned in a double-blind manner to ingest either 500 mg of a placebo (N = 13, 21 ± 3 yrs, 180 ± 6.4 cm, 84 ± 15 kg, 18.3 ± 6.8 BF%) or TESTOSURGE (N = 17, 21 ± 2.8 yrs, 178 ± 5.8 cm, 85 ± 9.6 kg, 18.8 ± 4.8 BF%) once per day for eight weeks.

### • 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 and had body composition determined using hydrodensitometry. 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 with 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 an EXERTECH (La Crescent, MN) body density measuring system.

### • Serum Hormone Analysis

Serum samples were analyzed for total testosterone, free testosterone, bioavailable testosterone, dihydrotestosterone, and estrogen via Enzyme-Linked Immunosorbent Assays or Enzyme ImmunoAssays from Diagnostic Systems Laboratories, Inc. and ALPCO Diagnostics on a Wallac Victor<sup>2</sup> 1420 Multilabel Counter manufactured by PerkinElmer Life Sciences (Wellesley, MA) using standard procedures.

### • Statistical Analysis

Statistical analyses utilized a two-way ANOVA with repeated measures for all criterion variables. Data was considered statistically significant when the probability of type I error is 0.05 or less.

## Results

- Significant group x time interaction effects were observed among groups in changes in body fat (TES:  $-1.77 \pm 1.52\%$ , PL:  $-0.55 \pm 1.72\%$ ;  $p = 0.048$ ) and;
- Total Testosterone (TES:  $0.97 \pm 2.67\text{ng/ml}$ , PL:  $-2.10 \pm 3.75\text{ng/ml}$ ;  $p = 0.018$ ) and;
- Bioavailable Testosterone (TES:  $1.32 \pm 3.45\text{ng/ml}$ , PL:  $-1.69 \pm 3.94\text{ng/ml}$ ;  $p = 0.049$ )
- There were no significant changes ( $p > 0.05$ ) among groups for Wingate, free testosterone, dihydrotestosterone, estrogen, hemodynamic variables, or clinical safety data.

## Conclusions

It is concluded that 500 mg of daily TESTOSURGE supplementation significantly impacted body fat percentage, total testosterone and bioavailable testosterone when compared to a placebo in a double-blind fashion. These changes were attained without any clinical side effects.

