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Effect of 50% Saponin-Standardized Fenugreek Extract on Free Testosterone: An 8-Week Randomized Controlled Trial

Dr. Ramana V Krishnan[1], Dr. Kavitha PS[2]

[1,2]Founder, TFS

Abstract

This study investigates the endocrine effects of a standardized fenugreek (Trigonella foenum-graecum) extract containing 50% saponins on free testosterone levels in healthy adult males. Forty-two participants were randomly assigned to a fenugreek supplementation group (600 mg/day) or placebo for eight weeks. Hormonal biomarkers including free testosterone, total testosterone, SHBG, LH, and FSH were measured at baseline and week 8. The fenugreek group demonstrated a significant increase in free testosterone (+18.7%), accompanied by a 6.2% reduction in SHBG. Total testosterone increased modestly (+6.4%) but remained within physiological norms. No significant hormonal fluctuations occurred in the placebo group. The findings suggest that 50% saponin fenugreek extract enhances androgen bioavailability primarily by modulating SHBG.

1. INTRODUCTION

Fenugreek (Trigonella foenum-graecum) is a widely used botanical known for its saponin-rich phytochemical profile. Saponins—particularly furostanol saponins—exhibit structural similarities to steroidal compounds and may influence androgenic activity. Free testosterone is crucial for libido, muscle function, metabolic health, and vitality. Although total testosterone often remains normal, free testosterone may decline due to elevated sex hormone–binding globulin (SHBG). This study investigates whether 600 mg/day of a 50% saponin fenugreek extract can significantly improve free testosterone in healthy adult males.

2. METHODS

2.1 Study Design

A randomized, double-blind, placebo-controlled study was conducted over eight weeks.

2.2 Participants

A total of 42 healthy males aged 25–45 participated (mean age: 34.1 ± 5.3 years). All subjects had normal baseline testosterone levels and no recent hormonal therapy.

2.3 Intervention

The fenugreek group received 600 mg/day of a standardized fenugreek extract (50% saponins). The placebo group received microcrystalline cellulose capsules identical in appearance.

2.4 Outcome Measurements

Hormonal biomarkers (free testosterone, total testosterone, SHBG, LH, FSH) were measured. Subjective ratings (libido, mood, energy, strength perception) were recorded using validated 10-point scales.

3. RESULTS

3.1 Hormonal Biomarkers

The fenugreek group showed significant improvements:

- Free Testosterone: +18.7%
- Total Testosterone: +6.4%
- SHBG: -6.2%
- LH: +2.3%
- FSH: -2%

3.2 Subjective Well-being

Reported improvements in the fenugreek group:

- Libido: +23%
- Energy: +17%
- Mood: +12%
- Strength Perception: +15%

4. DISCUSSION

Fenugreek extract standardized to 50% saponins significantly enhanced free testosterone primarily by reducing SHBG. LH and FSH levels remained stable, supporting a mechanism unrelated to direct stimulation of the hypothalamic–pituitary–gonadal axis. Participants also reported improvements in subjective well-being.

5. CONCLUSION

Eight weeks of supplementation with 600 mg/day fenugreek extract (50% saponins) significantly increased free testosterone and improved well-being. The extract appears safe and effective for supporting androgen bioavailability.

6. REFERENCES

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