P.O. Box 144345 Austin, TX 78714-4345 ▪ 512.926.4900 ▪ Fax: 512.926.2345 ▪ www.herbalgram.org

HerbClip™

Mariann Garner-Wizard Shari Henson Heather S Oliff, PhD
Samaara Robbins Gavin Van De Walle, MS, RD, LN

Executive Editor – Mark Blumenthal *Managing Editor* – Lori Glenn

Consulting Editors –Thomas Brendler, Meghan Henshaw, Allison McCutcheon, PhD, Kristen McPhee, MSciTH, Beth Quintana, ND, Carrie Waterman, PhD

File: ■ Tribulus (*Tribulus terrestris*, Zygophyllaceae)
■ Infertility
■ Testosterone

HC 061942-633

Date: January 31, 2020

RE: Many Phytotherapies Have a Potential Role in Male Infertility and Prostate Health

Santos HO, Howell S, Teixeira FJ. Beyond tribulus (*Tribulus terrestris* L.): The effects of phytotherapics on testosterone, sperm and prostate parameters. *J Ethnopharmacol*. May 2019;235:392-405. doi: 10.1016/j.jep.2019.02.033.

Globally, infertility affects 5% of men, with hypogonadism the main contributor. Failure to produce enough testosterone or sperm causes hypogonadism, but most cases are idiopathic. Exogenous testosterone administration treats symptoms but may affect sperm quantity, motility, and morphology. Hormonal imbalances and erectile dysfunction (ED) contribute to benign prostate hyperplasia (BPH). It is estimated that 25% of men will have BPH in their lifetimes. BPH reduces quality of life through lower urinary tract symptoms (LUTS). Population-level declining testosterone levels in men add to the need for natural remedies. After an electronic database search, the authors provide a systematic review (SR) of evidence for herbal remedies. Of 489 English-language reports published from 2002-2018, 53 were potentially relevant after title/abstract review and removal of duplicates. Fourteen papers were retrieved, read and analyzed as far as their reporting on T and/or semen parameters.

Tribulus (*Tribulus terrestris*, Zygophyllaceae) saponins are said to increase testosterone, physical performance, and body composition, but the clinical literature does not appear to support such claims. An SR of seven studies found no changes in free or total testosterone (FT; TT) with intake of 200-1350 mg/d for four to eight weeks. Standardization did not alter results. However, in an SR of seven studies, six saw better sperm parameters with tribulus (250-500 mg/d). In contrast, maca (*Lepidium meyenii* syn. *L. peruvianum*, Brassicaceae), tongkat ali (*Eurycoma longifolia*, Simaroubaceae), velvet-bean (V-B; mucuna; *Mucuna pruriens*, Fabaceae), ashwagandha (*Withania somnifera*, Solanaceae), and fenugreek (*Trigonella foenum-graecum*, Fabaceae) elicited an increase in TT (37-151 ng/dL). Best increases in TT (151 and 143 ng/dL) were reported for 5,000 mg/d powdered V-B seed and ashwagandha root, respectively. Increased FT was reported in two studies of fenugreek seed extracts and one of a tongkat ali aqueous extract; another tongkat ali study described a lower level of FT in middle-aged men.

Three studies reported levels of luteinizing hormone (LH); two, follicle-stimulating hormone (FSH). Statistically significant increases in LH were seen in two studies of powdered V-B seeds and one of ashwagandha. Both V-B studies reported significant decreases in FSH. V-B seeds, at 5000 mg/d for 12 weeks, produced the highest sperm count increases in oligozoospermia. In a study of sperm parameters with the use of 200 mg/d tongkat ali extract, 11 spontaneous pregnancies occurred in female partners of male participants. Black cumin (*Nigella sativa*, Ranunculaceae) seed oil, evaluated in one study, improved sperm in infertile men after two months at 5 mL/d. Spermatogenesis and testosterone pathways are discussed in regard to known components and effects of V-B, longjack, ashwagandha, fenugreek, and black cumin; diagrammed for ashwagandha and V-B. Libido enhancement in men and women in some studies is credited to higher serum testosterone (ST).

Maca root was found in an SR of four RCTs to have the potential to boost libido in either sex. In men, 360 mg/d tongkat ali for 12 weeks increased libido vs. placebo, stimulating the corpora cavernosa and seminal muscle tone. Tongkat ali may boost testosterone in women. Healthy men who took 600 mg/d fenugreek for six weeks reported higher libido vs. placebo with no increases in ST. Fenugreek may boost libido in women, with significant increases in FT, estradiol, and arousal vs. placebo in one RCT. Some studies funded by companies reporting better male libido with tribulus when using patented products, some of which are blends with other herbs and/or compounds. However, a non-funded randomized control trial (RCT) found no boost in libido or TT in men with ED who took 800 mg/d. Tribulus may be useful in women with hypoactive sexual desire disorders (HoSDDs). Two RCTs found better arousal, vaginal lubrication, and orgasm in women with HoSDDs who took 750 mg/d for 120 days.

The authors end their review discussing other natural remedies for prostate and other aspects of men's sexual health. Saw palmetto (*Serenoa repens*, Arecaceae), popular for prostate health and seemingly useful *in vitro*, had no benefits in nocturia, peak urine flow, or BPH symptom scores in an SR of 18 RCTs, even at 200-300% usual doses. SRs and MAs show efficacy of pygeum (*Prunus africana* syn. *Pygeum africanum*, Rosaceae), bee pollen extract, beta-sitosterols, and nettle (*Urtica dioica*, Urticaceae) in LUTS consistent with BPH. Promising herbs for men include Korean angelica (*Angelica gigas*, Apiaceae) root, *ge shan xaio* (*Cynanchum wilfordii*, Apocynaceae), and moringa (*Moringa oleifera*, Moringaceae) leaf extract.

Many foods and spices are claimed to enhance prostate health and boost testosterone levels. Increased intake of cooked tomato (*Solanum lycopersicum*, Solanaceae) and pomegranate (*Punica granatum*, Lythraceae) appear to have some benefits, with tomato, in particular, claim to reduce risks of prostate cancer due to the presence of lycopene and other carotenoides, which also occurs abundantly in pumpkin (*Cucurbita pepo*, Cucurbitaceae) seed oil. Bulb onion (*Allium cepa*, Amaryllidaceae), garlic (*A. sativum*), and several "spicy" herbs may also have some potential benefits. Emerging evidence of nuts and other foods improving sperm should be further studied.

The authors declare no conflicts of interest.

—Mariann Garner-Wizard

The American Botanical Council has chosen not to reprint the original article.

The American Botanical Council provides this review as an educational service. By providing this service, ABC does not warrant that the data are accurate and correct, nor does distribution of the article constitute any endorsement of the information contained or of the views of the authors.

ABC does not authorize the copying or use of the original articles. Reproduction of the reviews is allowed on a limited basis for students, colleagues, employees and/or members. Other uses and distribution require prior approval from ABC.