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**File: ■ Tongkat Ali (*Eurycoma longifolia*, Simaroubaceae)
■ Erectile Dysfunction
■ Systematic Review/Meta-analysis**

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RE: Systematic Review/Meta-analysis of Clinical Efficacy of Tongkat Ali for Erectile Dysfunction

Kotirum S, Ismail SB, Chaiyakunapruk N. Efficacy of Tongkat Ali (*Eurycoma longifolia*) on erectile function improvement: systematic review and meta-analysis of randomized controlled trials. *Complement Ther Med*. October 2015;23(5):693-698.

Erectile dysfunction (ED) is defined as the inability of a man to attain and/or maintain an erection sufficiently for sexual activity. ED can negatively impact the quality of life of many men throughout the world. Also, due to varying cultural norms, patients may not seek conventional medical help. Tongkat Ali (*Eurycoma longifolia*, Simaroubaceae) has been used traditionally in Malaysia to boost energy and as an aphrodisiac. It has been noted to contain several bioactive compounds, such as polyphenols, alkaloids, and notably the quassinoid eurycomanone. One study recently suggested the water extract of the roots can improve ED, but the underlying mechanism remains unknown. This systematic review and meta-analysis sought to compile the evidence on the efficacy of Tongkat Ali root water extract for ED in men.

The authors searched the databases MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, ClinicalTrials.gov, and the Allied and Complementary Medicine Database from as early as possible to October 10, 2014. The terms "Tongkat Ali," "*Eurycoma longifolia* (Jack)," and "pasak bumi" were used in the search. Studies were included if they were randomized, controlled, clinical trials and tested Tongkat Ali in patients with ED. Duplicate studies or those that showed a lack of reporting were excluded.

Study quality was determined by use of the Cochrane risk of bias system and the Jadad scale. Information used from the study included patient number and characteristics, dosage and form of Tongkat Ali, duration, and outcomes. Results of the International Index of Erectile Function (IIEF-5) symptom questionnaire were considered the main outcome. This score rates sexual performance and satisfaction according to five questions that are rated from low (1) to high (5).

From a total of 342 articles, the authors found two randomized, placebo-controlled studies with a total of 139 patients. Patients were otherwise healthy, heterosexual men in the United States, ranging in age from 40-65 years old, and married Malaysian men from 30-55 years old. At baseline, the IIEF-5 scores were 12.36-15.77 and 21.30-22.29 (less than 21 indicates ED), and scores were compared after six and 12 weeks. The freeze-dried root water extract of Tongkat Ali at dosages of 200 mg daily along with 100 mg of small water pepper (*Persicaria minor* syn. *Polygonum minus*, Polygonaceae) and 300 mg daily of Tongkat Ali alone were used in both studies. [Note: Source of plants, preparation of small water pepper, and ingredients of placebo were not mentioned.]

It was determined that both studies had a high risk of bias due to selective reporting of endpoints. Also, baseline discrepancies of IIEF-5 scores between groups in one study contributed to high risk of bias. The Jadad scores for the two studies were 5 and 4, indicative of high study quality. The weighted mean difference (WMD) of IIEF-5 was not significantly different at weeks six and 12 as compared to the placebo; significant heterogeneity of the data at both timepoints was observed ($P=0.003$ and <0.001 , respectively).

Due to variation of the IIEF-5 scores at baseline between groups in one of the studies, score changes from baseline to weeks six and 12 were analyzed. The change in score was found to decrease from baseline to six weeks in the Tongkat Ali group, suggesting no ED improvement. The change in score from baseline to 12 weeks was 0.91 but was significantly heterogeneous ($P=0.002$), possibly due to baseline discrepancies in score. The authors observed that patients with lower initial IIEF-5 scores experienced score improvement with Tongkat Ali consumption, while those with higher scores did not see any effect. Adverse side effects were not significantly different between groups; no serious adverse side effects associated with the treatment were reported.

This meta-analysis, which reviewed two clinical studies, suggests that Tongkat Ali may be efficacious for treating ED in men with low IIEF-5 scores, but further studies are certainly needed to make a better conclusion. Potential confounding factors include the use of another botanical in combination with Tongkat Ali, differential degrees of ED among patients, and very small sample size of trials. The two studies used Physta[®] Tongkat Ali extract (Biotropics Malaysia Berhad; Shah Alam, Selangor, Malaysia) which is standardized to 0.8-1.5% eurycomanone, >30% polysaccharide, >22% protein, and >40% glycosaponin.

One of the authors (SB Ismail) of this review is one of the authors of an article included in the review, but had no role in the screening and selecting of eligible studies.

—Amy C. Keller, PhD

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

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