

Tongkat Ali (*Eurycoma longifolia* JACK) Published Scientific Abstracts relating to the herbs aphrodisiac action.

J Basic Clin Physiol Pharmacol. 2004;15(3-4):303-9.

Sexual arousal in sexually sluggish old male rats after oral administration of *Eurycoma longifolia* Jack.

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Eurycoma longifolia Jack commonly known as Tongkat Ali in Malaysia, has been used in Malaysia to increase male virility and sexual prowess. The objective of this study is to evaluate sexual arousal in sexually sluggish old male rats, 24 months old and retired breeders, receiving 200, 400, or 800 mg/kg of various fractions of *E. longifolia* Jack, twice daily, for 10 days. Control rats received 3 ml/kg of normal saline. The aphrodisiac effect was monitored by the act of yawning and stretching because yawning, either alone or associated with stretching, is considered an ancestral vestige surviving throughout evolution that promotes sexual arousal. The results showed that 800 mg/kg of *E. longifolia* Jack increased yawning by 50% and stretching by 16.7% in sexually sluggish old male rats, by 676-719% and 31-336%, respectively, in sexually active male rats, and by 22-44% and 75-100%, respectively, in middle aged, 9 months old and retired breeders. We conclude that the results of this study support the folk use of this plant as an aphrodisiac.

PMID: 15803965

J Basic Clin Physiol Pharmacol. 2003;14(3):301-8.

***Eurycoma longifolia* Jack enhances sexual motivation in middle-aged male mice.**

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Eurycoma longifolia Jack was investigated for sexual motivation activity in adult, middle-aged male mice and in retired breeders, using the modified open field and the modified runway choice methods. Each mouse received 500 mg/kg of one of 4 fractions of *E. longifolia* Jack, viz. chloroform, methanol, butanol, and water, whereas the mice in the control and yohimbine groups received 3 ml/kg of normal saline and 30 mg/kg of yohimbine daily respectively for 10 d. The results show a transient increase in the percentage of male mice responding to the right choice after chronic consumption of the fractions with 50 percent of the adult middle-aged male mice treated with *E. longifolia* Jack and yohimbine scoring the right choice after 8 and 5 days post-treatment respectively. In conclusion, this study has shown that *E. longifolia* Jack continues to enhance sexual motivation in adult, middle-aged male mice and in retired breeders.

PMID: 14964739

Phytomedicine. 2003;10(6-7):590-3.

Effects of *Eurycoma longifolia* Jack on sexual qualities in middle aged male rats.

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The effects of *Eurycoma longifolia* Jack were studied on the sexual qualities of middle aged male rats after dosing them with 0.5 g/kg of various fractions of *E. longifolia* whilst the control group received 3 ml/kg of normal saline daily for 12 weeks. Results showed that *E. longifolia* Jack enhanced the sexual qualities of the middle aged male rats by decreasing their hesitation time as compared to controls with various fractions of *E. longifolia* Jack produced 865-916 (91-96),

860-914 (92-98), 850-904 (93-99), 854-890 (95-99), 844-880 (94-98), 840-875 (94-98), 830-870 (94-98), 825-860 (94-98), 820-850 (96-99), 800-840 (93-98), 750-795 (94-99) and 650-754 sec (82-95%) in contrast to controls which produced 950 (100), 934 (100), 910 (100), 900 (100), 895 (100), 890 (100), 885 (100), 880 (100), 855 (100), 860 (100), 800 (100) and 790 sec (100%) throughout the investigation period. Besides these, there was a transient increase in the % of the male rats responding to the right choice after chronic administration of 0.5 g/kg *E. longifolia* Jack, with more than 50% of the male rats scored right choice after 2 weeks post-treatment and the effect was more prominent at the dose of the observation period. However, there was no sexual enhancement of the middle aged male rats which consumed normal saline since only 45-55% of the male rats responded to right choice throughout the investigation period. Hence, this study shows that *E. longifolia* Jack enhanced the sexual qualities of the middle aged male rats, further supports the folkuse of *E. longifolia* Jack as an aphrodisiac.
PMID: 13678248

Fundam Clin Pharmacol. 2002 Dec;16(6):479-83.

Effect of *Eurycoma longifolia* Jack on orientation activities in middle-aged male rats.

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The effects of various fractions of *Eurycoma longifolia* Jack were studied on the orientation activities of the inbred, adult middle-aged Sprague-Dawley rats, 9 months old and retired breeders towards the receptive females (anogenital sniffing, licking, mounting), the environment (climbing, raring, exploration), themselves (nongenital grooming, genital grooming) and mobility (restricted, unrestricted) after treating these subjects twice daily for 10 days. Results showed that subjects treated with 800 mg/kg of *E. longifolia* Jack increased orientation activities towards the receptive females (anogenital sniffing, licking and mounting), increased genital grooming towards themselves and restricted movements to a particular area of the cage but decreased interest in the external environment (climbing, raring, exploration) as compared with the controls during the investigation period. In conclusion, this study gives further evidences that different fractions of *E. longifolia* Jack modified the orientation activities of the middle-aged male rats.

PMID: 12685506

J Basic Clin Physiol Pharmacol. 2002;13(3):249-54.

Effect of *Eurycoma longifolia* Jack on libido in middle-aged male rats.

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The effect of increasing doses of various fractions of *Eurycoma longifolia* Jack extracts on libido was examined in middle-aged male rats. The results showed that a high dose (800 mg/kg) of all *E. longifolia* Jack extracts significantly increased mount frequency (MF) ($P < 0.05$) over that of untreated controls, but had no effect on the frequency of intromission or ejaculation. Methanol, chloroform, water, and butanol fractions exhibited MF of 2.5 +/- 0.1, 2.6 +/- 0.3, 2.5 +/- 0.1 and 2.6 +/- 0.2, respectively, in adult, middle-aged male rats, and retired breeders versus 2.3 +/- 0.1 in untreated controls. This translated to a minor increase in MF of 8.7%, 13.0%, 8.7%, and 13.0% for these fractions, respectively, during the 20-minute observation period. The results of this study show that *E. longifolia* Jack extracts can increase libido in middle-aged male rats.
PMID: 12670032

J Ethnopharmacol. 2002 Sep;82(1):55-8.

In vitro anti-tumor promoting and anti-parasitic activities of the quassinoids from *Eurycoma longifolia*, a medicinal plant in Southeast Asia.

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Some quassinoids (1-6) isolated previously as plant growth inhibitors from the leaves of *Eurycoma longifolia* Jack. (Simaroubaceae) were subjected to in vitro tests on anti-tumor promoting, antischistosomal and plasmodicidal activities. The most active compound for inhibition of tumor promoter-induced Epstein-Barr virus activation (anti-tumor promotion) was 14,15beta-dihydroxyklaineaneone (5, IC(50) = 5 microM). Longilactone (1) gave significant antischistosomal effect at a concentration of 200 microg/ml. 11-Dehydroklaineaneone (3) and 15beta-O-acetyl-14-hydroxyklaineaneone (6) showed potent plasmodicidal activity (IC(50) = 2 microg/ml). Thus it was suggested that *E. longifolia* possesses high medicinal values due to the occurrence of a variety of quassinoids. PMID: 12169407

Arch Pharm Res. 2001 Oct;24(5):437-40.

Effects of *Eurycoma longifolia* jack on laevator ani muscle in both uncastrated and testosterone-stimulated castrated intact male rats.

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It has been reported that *Eurycoma longifolia* Jack commonly known as Tongkat Ali has gained notoreity as a symbol of man's ego and strength by the Malaysian men because it increases male virility and sexual prowess during sexual activities. As such, the effects of 200, 400 and 800 mg/kg of butanol, methanol, water and chloroform fractions of *E. longifolia* Jack were studied on the laevator ani muscle in both uncastrated and testosterone-stimulated castrated intact male rats after dosing them for 12 consecutive weeks. Results showed that 800 mg/kg of butanol, methanol, water and chloroform fractions of *E. longifolia* Jack significantly increased ($p < 0.05$) the laevator ani muscle to 58.56 \pm 1.22, 58.23 \pm 0.31, 60.21 \pm 0.86 and 62.35 \pm 0.98 mg/100 g body weight, respectively, when compared with the control (untreated) in the uncastrated intact male rats and 49.23 \pm 0.82, 52.23 \pm 0.36, 50.21 \pm 0.66 and 52.35 \pm 0.58 mg/100 g body weight, respectively, when compared to control (untreated) in the testosterone-stimulated castrated intact male rats. Hence, the pro-androgenic effect as shown by this study further supported the traditional use of this plant as an aphrodisiac. PMID: 11693547

Fundam Clin Pharmacol. 2001 Aug;15(4):265-8.

Aphrodisiac evaluation in non-copulator male rats after chronic administration of *Eurycoma longifolia* Jack.

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The aphrodisiac effect of *Eurycoma longifolia* Jack (0.5 g/kg) was evaluated in noncopulator male rats using an electrical cage. Fractions of *E. longifolia* Jack decreased the hesitation time of noncopulator male rats, throughout the investigation period. Furthermore, it possessed a transient increase in the percentage of the male rats responding to the right choice, more than 50% of the male rats scored "right choice" after 3 weeks post-treatment and the effect became more prominent after 8 weeks post-treatment (only 40-50% of the control male rats responded to the right choice) using the electrical copulation cage. Hence, this study lends further support to the use of the plant by indigenous populations as a traditional medicine for its aphrodisiac property.

PMID: 11564133

Phytother Res. 2001 Aug;15(5):435-6.

Evaluation of the potency activity of aphrodisiac in Eurycoma longifolia Jack.

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The butanol, methanol, water and chloroform extracts of the roots of Eurycoma longifolia Jack were studied using various tests of potency of treated male rats. The results showed that E. longifolia produced a dose-dependent, recurrent and significant increase in the episodes of penile reflexes as evidenced by increases in quick flips, long flips and erections of the treated male rats during the 30 min observation period. These results provide further evidence that E. longifolia increases the aphrodisiac potency activity in treated animals. PMID: 11507738

Exp Anim. 2000 Jan;49(1):35-8.

Effects of Eurycoma longifolia Jack (Tongkat Ali) on the initiation of sexual performance of inexperienced castrated male rats.

Ang HH, Cheang HS, Yusof AP.

School of Pharmaceutical Sciences, University Science Malaysia, Penang, Malaysia.

We studied the effects of Eurycoma longifolia Jack, commonly known as Tongkat Ali in Malaysia, on the initiation of sexual performance and the weights of sexual accessories in inexperienced castrated male rats. The doses of 200, 400 and 800 mg/kg body weight, which were extracted from E. longifolia Jack, were orally administered to the rats twice daily for 10 days prior to the tests and continued throughout the test period. Testosterone was used as a positive control after injecting 15 mg/kg daily subcutaneously for 32 days. Results showed that E. longifolia Jack produced a dose-dependent increase in sexual performance of the treated animals, but the E. longifolia Jack groups showed lower sexual performance in mounting, intromission and ejaculation than the testosterone group. Further results also showed that E. longifolia Jack promoted the growth of both ventral prostate and seminal vesicles as compared with the control, but the growth of sexual accessories at 800 mg/kg of butanol, methanol, water and chloroform fractions of E. longifolia Jack was less than that of testosterone treated group. The present study therefore gives further evidence of the folkuse of E. longifolia as an aphrodisiac.

PMID: 10803359

Jpn J Pharmacol. 1999 Apr;79(4):497-500.

Studies on the anxiolytic activity of Eurycoma longifolia Jack roots in mice.

Ang HH, Cheang HS.

School of Pharmaceutical Sciences, University Science Malaysia, Minden, Penang.

The anxiolytic effect of Eurycoma longifolia Jack in mice was examined. Fractions of E. longifolia Jack extract produced a significant increase in the number of squares crossed (controls= 118.2 +/- 10.2 squares), but significantly decreased both the immobility (controls = 39.4 +/- 4.0 sec) and fecal pellets (controls= 12.3 +/- 2.1 fecal pellets) when compared with control mice in the open-field test; they significantly increased the number of entries (controls=6.7 +/- 0.5 entries) and time spent (controls=42.9 +/- 0.1 sec) in the open arms, but decreased both the number of entries (controls= 13.2 +/- 0.7 entries) and time spent (controls= 193.4 +/- 0.7 sec) when compared with the control mice in the closed arms of the elevated plus-maze test. Furthermore, fractions of E. longifolia Jack extract decreased the fighting episodes significantly (controls= 18.0 +/- 0.4 fighting episodes) when compared with control mice. In addition, these results were found

to be consistent with anxiolytic effect produced by diazepam. Hence, this study supports the medicinal use of this plant for anxiety therapy.

PMID: 10361892

Arch Pharm Res. 1998 Dec;21(6):779-81.

Eurycoma longifolia increases sexual motivation in sexually naive male rats.

Ang HH, Sim MK.

The aim of this study is to provide evidence on the aphrodisiac property of *Eurycoma longifolia* Jack. An electric grid was used as an obstruction in the electrical copulation cage in order to determine how much an aversive stimulus the sexually naive male rat for both the treated with *E. longifolia* Jack and control groups were willing to overcome to reach the estrous receptive female in the goal cage. The intensity of the grid current was maintained at 0.12 mA and this was the intensity in which the male rats in the control group failed to crossover to reach the goal cage. Results showed that *E. longifolia* Jack continued to enhance and also maintain a high level of both the total number of successful crossovers, mountings, intromissions and ejaculations during the 9-12th week observation period. In conclusion, these results further enhanced and strengthened the aphrodisiac property of *E. longifolia* Jack.

PMID: 9868556

Biol Pharm Bull. 1998 Feb;21(2):153-5.

Eurycoma longifolia JACK and orientation activities in sexually experienced male rats.

Ang HH, Sim MK.

The effects of *Eurycoma longifolia* JACK were studied on the orientation activities of sexually experienced male rats towards receptive females (mounting, licking, anogenital sniffing), environment (exploration, raring, climbing), themselves (genital grooming, non-genital grooming) and mobility (unrestricted, restricted) after dosing them with 200, 400 and 800 mg/kg body weight twice daily for 10 d prior to the test. The results showed that *E. longifolia* JACK modified the orientation activities of the treated male rats in that they significantly displayed more frequent and vigorous mounting, licking and anogenital sniffing towards the receptive females, and it further intensified self orientation as indicated by the increased grooming of the genitals compared to the controls ($p < 0.05$). In addition, rats treated with 800 mg/kg of methanol, water and butanol extracts of *E. longifolia* JACK continued to show confinement to a particular area of the cage (around the female), thus showing restriction in movement as compared to the controls ($p < 0.05$). However, the treated males possessed a lack of interest in the external environment as indicated by a reduction in exploration, raring and climbing on the cage wall. Hence, the present study further supports the folk use of *E. longifolia* JACK as an aphrodisiac.

PMID: 9514610

Exp Anim. 1997 Oct;46(4):287-90.

Eurycoma longifolia Jack enhances libido in sexually experienced male rats.

Ang HH, Sim MK.

The effects of *Eurycoma longifolia* Jack were studied on the libido of sexually experienced male rats after dosing them with 200, 400 and 800 mg/kg body weight twice daily of different fractions of *E. longifolia* Jack for 10 days. Results showed that *E. longifolia* Jack produced a dose-dependent increase in mounting frequency of the treated animals with 400 mg/kg of chloroform, methanol, water and butanol fractions resulting in mounting frequencies of 5.3 +/- 1.2, 4.9 +/- 0.7, 4.8 +/- 0.7 and 5.2 +/- 0.1, and 800 mg/kg further increased them to 5.4 +/- 0.8, 5.4 +/- 0.8, 5.2 +/- 0.6 and 5.3 +/- 0.2 respectively but there were no erections, intromissions, ejaculations or seminal emissions during the 20-min

observation period which allowed for the measurement of sexual arousal reflected by mounting frequency uninfluenced by other behavioural components. This study provides evidence that *E. longifolia* Jack is a potent stimulator of sexual arousal in sexually vigorous male rats in the absence of feedback from genital sensation.

PMID: 9353636