



RADIX EURYCOMAE

Eurycoma root

1.0 Definition

Radix Eurycomae consists of dried root or underground parts of *Eurycoma longifolia* Jack (Simaroubaceae).

2.0 Synonym

2.1 Latin synonym: None

2.1 Vernacular names: Tongkat Ali, penawar pahit, bedara pahit, tongkat baginda, petala bumi, pasak bumi, setunjang bumi (Malay).

3.0 Description

Plant morphology

A medium size slender shrub reaching 10m in height, often unbranched with reddish brown petioles. Leaves compound, even pinnate reaching 1m in length. Each compound leaf consist of 30-40 leaflets, lanceolate to obovate-lanceolate. Each leaflet is about 5-20cm long, 1.5-6cm wide, much paler on the ventral side. Inflorescence axillary, in large brownish red panicle, very pubescent with very fine, soft, glandular trichomes. Flowers are hermaphrodite. Petals small, very fine pubescent. Drupe hard, ovoid, yellowish brown when young and brownish red when ripe.

4.0 Description of plant material

Part used: Root

4.1 Macroscopic characteristics

Main root, cylindrical usually unbranched, yellowish white in colour and very bitter.

4.2 Microscopic characteristics

The abundant starch granule is mostly simple. Calcium oxalate crystals are fairly abundant, prism shape, sometimes cuboid, oval or irregular. Those which occur freely are usually larger than those that occur in the cells or in the fibres. The fibres which occur in groups are thin walled usually associated with vessels and parenchyma cells. Larger fibres have thick dentate wall or sometimes septated. The very large pericyclic fibre are only found in fragments. Vessels are fairly numerous, usually in small fragments which are associated with fibres or xylem parenchyma cells. The thin-walled parenchyma cells are found associated with fibres. Starch granules are usually found in them. Xylem parenchymal cells are scarce and found associated with fibres. They are thick-walled and have bordered pits. The very few cork cells are thick-walled, isodiametric in shape and found associated with fibres. Brown pigments are fairly numerous brown pigments found in small and large fragments.

4.3 Powdered plant material

Powdered *Eurycoma* root is creamy yellow in colour.

5.0 Geographic distribution

Malaysia, lower Burma, Thailand, Indo-China to Sumatra and Borneo.

*Eurycoma root***6.0 TLC and general identity test****6.1 Thin layer chromatography**

Method of extraction: Hot ethanol extraction
 Solvent system: n-BUOH : CH₃ COOH : H₂O
 = 6 : 1 : 1
 TLC: Silica gel preprepared plate (Merck)
 Detection: Iodine



Solvent system: CHCl₃ : MeOH = 10:1
 TLC: Silica gel preprepared plate (Merck)
 Detection: Iodine

**6.2 Colour test on powdered root sample**

Original colour of powdered sample: Creamy yellow
 Observed colour changes on treatment with various reagents:

H ₂ SO ₄ (conc)	-	black
HCl (conc)	-	yellow to light green
NaOH (5%)	-	yellow
KOH (5%)	-	yellow
NH ₄ OH (25%)	-	no change
FeCl ₃ (5%)	-	no change

7.0 Purity tests**7.1 Foreign organic matter:** Not available**7.2 Ash content:** Not more than 4%**7.3 Acid-Insoluble ash:** Not available**7.4 Water soluble extract:**

Hot method - Not less than 2%

Cold method - Not less than 5%

7.5 Ethanol soluble extract: Not less than 2%**7.6 Moisture content:** Not more than 12%**8.0 Chemical constituents**

Aervin,¹ stigmasterol, ^{1,2} campesterol, β -sitos-
 sterol,² 9-hydroxycanthin-6-one,
 9-hydroxycanthin-6-one n-oxide,
 9-methoxycanthin-6-one,
 9-methoxycanthin-6-one n-oxide, β -carboline-
 1-propionic acid, β -7-methoxycarboline-
 1-propionic acid,³ eurycomalactone,⁴
 eurycomanol, eurycomanol-2-O- β -D-glucoside,⁵
 13- β -18-dihydroeurycomanol,
 14-15-dihydroxyklaineanone,⁶ eurycomanone,⁷
 13-21-dihydroeurycomanone,
 13- β -21-dihydroxyeurycomanone,
 14-15- β -dihydroxyklaineanone, longilactone.⁸

9.0 Dosage forms: Cut material and dried powder.**9.1 Storage:** Cool, dry place.

Eurycoma root

10.0 Reports on medical uses

- 10.1 Uses supported by clinical data: Not available
- 10.2 Uses described in pharmacopoeias/traditional systems of medicine: Not available
- 10.3 Uses described in folk medicine, not supported by experimental or clinical data:
It is antimalarial,⁷ antihistaminic,⁹ antipyretic¹⁰ and tonic.^{11,12} The root is useful for fever, medication after birth,¹² boils,^{11,12} wounds, ulcer,^{12,13} syphilis¹³ and bleeding gums.¹⁴

11.0 Contraindications: Not available

12.0 Warnings: Not available

13.0 Precautions

13.1 General: Not available

13.2 Drug interactions: Not available

13.3 Drug/laboratory test interaction: Not available

13.4 Carcinogenesis, mutagenesis, impairment of fertility: Not available

13.5 Pregnancy: Not available

13.6 Nursing mothers: Not available

13.7 Pediatric use: Not available

14.0 Adverse reactions: Not available

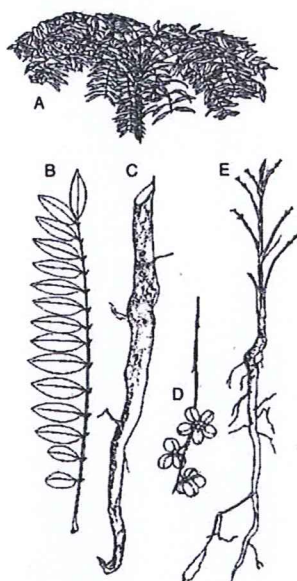
15.0 Posology

15.1 Herbals: Not available

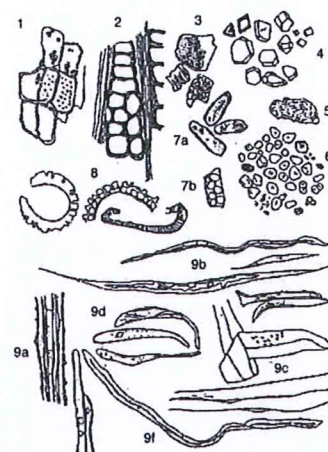
15.2 Physiological/pharmacological: Not available

15.3 Homeopathy: Not available

15.4 Intermediate: Not available


Eurycoma longifolia Jack

- A. Shoot
B. Leaf
C. Root
D. Fruit
E. Young plant without leaves


Eurycoma longifolia Jack, powder sample

1. A group of xylem.
2. Cork cells and fibre
3. Bordered and longitudinal pitted vessels
4. Calcium oxalate crystals
5. Fragments of brownish pigment
6. Starch granules
7a. Parenchyma cells
7b. Starch granules in parenchyma cells
8. Thick reticulated vessels
9a. A group of fibre
9b. Thick-walled fibre
9c. Fragment of pericyclic fibre
9d. Short fibres with thin-wall
9e. A group of fibre with calcium oxalate crystals
9f. Thick-walled dentated fibre

16.0 References

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