Terminalia chebula

TAXONOMICAL CLASSIFICATION:[1]

- *Kingdom: Plantae*
- *Phylum: Spermatophyta*
- *Subphylum: Angiospermae*
- *Class: Dicotyledonae*
- *Order: Myrtales*
- *Family: Combretaceae*
- *Genus: Terminalia*
- *Species: Terminalia chebula*

INTRODUCTION:[2,3]

Terminalia chebula is a medium to large size deciduous tree attaining a height of 15-24 m. Leaves ovate or elliptic with a pair of large glands at the top of the petiole. Flowers are yellowish white in terminal spikes. Drupes ellipsoidal, obovoid or ovoid, yellow to orange brown, wrinkled, sometimes tinged with red or black and hard when ripe, 3-5 cm long, 5 longitudinal ribbs on drying. Seeds are hard and pale yellow. It is found throughout the greater parts of India chiefly in deciduous forest and areas of light rainfall, also in slightly moist forest ascending to an altitude of 1500 m in Himalayas, also in West Bengal, Assam, Bihar, Orissa, Madhya Pradesh, Maharashtra, Deccan and South India. It grows on variety of soils but thrives best in clay and sandy soil. The fruits ripen from November to March depending upon the locality. Mostly fallen fruits are collected in first half of January, they are dried and the seeds can be stored for one year. Seed germination is low because of hard cover and seed requires pre-sowing treatment. Best germination is obtained when the seeds are chipped at their broad end without damaging the embryo and then soaked in water for 36 h, before sowing in nursery beds. Germination starts after 15 days and continues for 3-4 weeks. The tree can be successfully raised by directly sowing the seed or by transplanting the seedlings or by stem cuttings. It is observed that transplanting of

1 year seedling grows better than cutting or direct seed sown plants. The young plant requires watering during first hot weather. Shelter is desirable. The general growth of plant is slow. *Terminalia chebula* fruit is rich in tannic acid. The chief constituents of tannic acid are chebulic acid, chebulagic acid, corilagin and gallic acid. Tannic acid of *Terminalia chebula* is of pyrogallol (hydrolyzable) type. A group of researchers found 14 components of hydrolyzable tannins (gallic acid, chebulic acid, punicalagin, chebulanin, corilagin, neochebulinic acid, ellagic acid, chebulegic acid, chebulinic acid, 1,2,3,4,6-penta-O-galloyl-H-D-glucose, 1,6-di-O-galloyl-D-glucose, casuarinin, 3,4,6-tri-O-galloyl-D-glucose and terchebulin) from *Terminalia chebula* fruits.One source lists *Terminalia chebula* as having 32% tannic acid content. The tannic acid content of *Terminalia chebula* varies with geographical variation Besides, fructose, **amino acid**s, succinic acid, β-sitosterol, resin and purgative principle of anthroquinone and sennoside nature is also present. Flavonol glycosides, triterpenoids, coumarin conjugated with gallic acids called chebulin as well as other **phenolic compounds** were also isolated. It also exhibits the ability to scavenge the 1,1-diphenyl-2-picrylhydrazyl radicals.

OPERTIES AND USES: [2,3]

- Anti-ulcerogenic activity
- Neuroprotective activity
- Antibacterial activity
- Anti-convulsant activity
- Anti-oxidant activity
- Hepatoprotective activity
- Cardioprotective activity
- Cytoprotective activity
- Antidiabetic
- retinoprotective activity
- Hypolipidaemic activity
- Anti-arthritic effect
- Antifungal activity
- Antiviral activity
- Antimutagenic/anticarcinogenic activity'
- Molluscicidal activity
- Immunomodulatory effect
- Anaphylactic effect
- Anticaries effect
- Wound healing
- Prokinetic effect
- Antiinflammatory
- in the diseases of mouth and throat.
- Useful in Digestive System
- Useful in headache, weakness of the nerves and the brain, as well as in Vata disorders
- Useful in Erysipelas and other skin disorders
- Antiageing

SIDE EFFECTS OF EXCESS CONSUMPTION:[4]

When taken by mouth: Terminalia chebula is **POSSIBLY SAFE** when taken by mouth for 3 months or less.

DOSAGE: [4]

500 mg of the powdered bark

RESEARCH:

Plant-derived medicines have been a part of our traditional health care system, and the antimicrobial properties of plant-derived compounds are well documented. The purpose of this study is to evaluate the effect of an aqueous extract of *Terminalia chebula* (a medicinal plant) on salivary samples and its potential for use as an anticaries agent in the form of mouthwash. A concentrated aqueous extract was prepared from the fruit of *T. chebula* . A mouth rinse of 10% concentration was prepared by diluting the extract in sterile distilled water. The efficacy of the mouth rinse was assessed by testing on 50 salivary samples. Salivary samples were collected from subjects assessed to be at high risk for caries. Salivary pH, buffering capacity, and microbial activity were assessed before rinsing, immediately after, and 10 min, 30 min, and 1 h after rinsing. There was an increase in the pH and buffering capacity and decrease in microbial count. An aqueous extract of *T. chebula* used as a mouth rinse seems to be an effective anticaries agent. [5]

1. Antimutagenicity of water and chloroform extracts of dried myroblan Terminalia chebula was determined against two direct acting mutagens, sodium azide and 4-nitro-o-phenylenediamine (NPD) in strains TA100 and TA1535, and TA97a and TA98 of Salmonella typhimurium respectively and S9-dependent mutagen 2-aminofluorene (2-AF) in TA97a, TA98 and TA100 strains. Water extract reduced NPD as well as 2-AF induced his+ revertants significantly but did not have any perceptible effect against sodium azide included his+ revertants in TA100 and TA1535 strains of S. typhimurium. The pre-incubation studies, where the extract was incubated at 37 degrees C for 30 min with the said mutagen prior to plating, enhanced the inhibitory effect. Autoclaving the water extract reduced the inhibitory effect but the reduction in the effect was not significant. No inhibitory effect was observed in any of the strains and against any of the test mutagens with chloroform extract.[6]
2. Phytochemical analysis, estimation of various metabolites, in *vitro* antioxidant and antibacterial activity were done by adopting standard protocols. Selected bioactive (acetone) extract of *T.*

chebula was analyzed for their phytochemical profile by GC-MS analysis. **Results:** The results of preliminary phytochemical screening analysis revealed that presence of various phytochemicals like, alkaloids, flavonoids, glycosides, terpenoids, phenolics, saponins and carbohydrates in most of the tested extracts. Acetone extract possess significant high quantity of both primary and secondary metabolites when compared with other extracts. Remarkable free radicals scavenging potential was observed in acetone extract with lowest IC_{50} values on all tested radicals namely, DPPH. (IC_{50}=144.77 µg/ml), NO. (IC_{50}=149.46 µg/ml), .OH (IC_{50}=121.18 µg/ml), O2 .- (IC_{50}=159.41 µg/ml), Reducing power (IC_{50}=35.85 µg/ml), Fe^{2+} ion chelating (IC50=137.56 µg/ml) and TBARS (IC_{50}=201.96 µg/ml). Acetone extract expressed significant high antibacterial activity against *S. typhi* (15 mm). The result of GC-MS analysis of acetone extract shows the presence of 32 major bioactive compounds, including various phenolic, sesquiterpene, flavonoid, triazine and gibberellin compounds. **Conclusion:** The present study suggested that T. chebula bark extract serves as a good source of phytochemicals, natural antioxidant and antibacterial agent. [7]

PRECAUTIONS & WARNINGS: [4]

Pregnancy: There is some evidence that Terminalia is **POSSIBLY UNSAFE** during pregnancy. The safety of the other two species during pregnancy is unknown. It's best to avoid using any terminalia species.

Breast-feeding: There is not enough reliable information about the safety of Terminalia if you are breast-feeding. Stay on the safe side and avoid use.

Diabetes: Terminalia might lower blood sugar levels. Your diabetes medications might need to be adjusted by your healthcare provider.

Surgery: Terminalia might decrease blood sugar levels and interfere with blood sugar control during surgery. Stop taking Terminalia at least 2 weeks before a scheduled surgery.

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