Pharmacological activities of Kahruba (Vateria indica Linn.)— A literary review

Dr. Ambar Siddiqui, Dr. Tabassum K., Dr. Aisha Anjum A.
National Institute of Unani Medicine, Bengaluru, Karnataka

ABSTRACT

Kahruba (Vateria indica Linn) is a resin used in Indian medicine as a tonic, carminative and expectorant. The resin exuded by the tree is known as Piney resin, White Dammar or Dhupa Vateria indica Linn is an Indigenous & Endemic plant species to the Western Ghats. The tree belonging to the family Dipterocarpaceae is distributed mainly in the southern Western Ghats in evergreen and semi-evergreen forests, along streams. V. indica was described by Hook in 1874 and Gamble in 1915 many workers have since reported it from different parts of Southern Western Ghats in India from the states of Kerala, Karnataka and Tamil Nadu and a ‘Tree flora of Kerala’2 listed 26 other reports concerning V indica. It has also been reported from Myristica swamps of Uttara Kannada and Southern Kerala. Traditional medicine & Astrological sciences too yield references which make us understand its bondage with the culture and tradition of the country. The plant can be found described in almost all Unani literatures in the treatment of chronic bronchitis, anaemic disorder, ear disorder, skin disorder, gonorrhea, syphilis, urinary discharges, amenorrhoea, piles, and diabetes mellitus along with this it has various pharmacological activities such as anti-inflammatory, anthelmintic, anti-ulcer, anti-tumor activity and anticancer. Vateria indica (Linn.) is a Critically Endangered tree endemic to the South Western Ghats, India.

Keywords— Kahruba, Vateria indica Linn, Resin, Endangered plants, Unani medicine, White dammar

1. INTRODUCTION

Kahruba (Vateria indica Linn) is a large evergreen tree that belongs to the Dipterocarpaceae family. It is a multipurpose plant which has economic and medicinal importance. (1) Resin from V. indica is known as white ‘dammar’. Apart from medicinal uses, it has long been used as incense, and for making varnishes. It is obtained by cutting notches in the tree when it exudes and gradually hardens. (2) The resin which is extensively used in Indian medicine is credited with tonic, carminative and expectorant properties. Vateria indica Linn, an endemic plant species to peninsular India, highly appreciated for its aromatic resin, Timber, Tallow etc., is at threat in its own land. (3) The black variety of vateria is obtained from the Canarium strictum. The bruised and boiled seeds yield solid fat 49.2 p.c., which resembles the solid fats of Gracinia and Bassia. It is a greenish yellow colour which bleaches rapidly on exposure to light with Balsamic odour (4)

1.1 Botanical classification

The botanical classification is done is the following ways. (4,5)

<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Plantae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>Dipterocarpaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Vateria</td>
</tr>
</tbody>
</table>

© 2019, www.IJARND.com All Rights Reserved
Species V. indica
Synonyms V. malabarica Bl. (4)

1.2 Vernaculars

<table>
<thead>
<tr>
<th>Language</th>
<th>Vernacular</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>White Dammar, Indian Copal Tree (4,5,11)</td>
</tr>
<tr>
<td>Arabic</td>
<td>Misbah-ul-room (7,8,9)</td>
</tr>
<tr>
<td>Persian</td>
<td>Kahrubashamayi (7,8,9)</td>
</tr>
<tr>
<td>Unani</td>
<td>Raa (5)</td>
</tr>
<tr>
<td>Hindi</td>
<td>Kahruba, Sapheaddammar (4,9)</td>
</tr>
<tr>
<td>Tamil</td>
<td>Kungiliyam, Vellai Kundarakam, Vellaikuntirikkam (5)</td>
</tr>
<tr>
<td>Telugu</td>
<td>Telladamara, Dupadamaru (4,6)</td>
</tr>
<tr>
<td>Sanskrit</td>
<td>Ajakarua (4,6)</td>
</tr>
<tr>
<td>Malayalam</td>
<td>Vellappayin, Velutta Kunturukkam (4,6)</td>
</tr>
<tr>
<td>Kannada</td>
<td>RalaBilagaggala, Hugadamara (6)</td>
</tr>
</tbody>
</table>

1.3 Mahiyat (Description in Unani literature)

Kahruba is the gum of the plant (7,8,9). The plant is a large evergreen tree and is found in Russia, Bulgaria. According to Avicena the gum is similar to sandroos and is reddish white and bright in colour. (9) Two varieties are found Kahrubanabti and kahrubaroomi in which roomi is considered the best. It has a peculiar feature i.e. power of absorbing or attracting grass and particles. It gives an odour of lemon on rubbing. It is bitter in taste. (7,8,9)

Mizaj (Temperament) Balanced
Muzir (Adverse effect) A headache
Musleh (Corrective) Banafsha (7,8,9)
Miqdar e khuraaq (Dose effects) 1masha - 3masha (8) or 2.15gm (9)
Badal (Substitute) Sandaras (7,8,9)
Parts used Bark, resin, oil (6)
Parts studied Gum (7,8,9)
Propagation By seeds (6)

1.4 Afaal (Functions): (7,8,9)
- Haabis-e-dam
- Qabiz
- Mujaffif
- Mubarrid
- Astringent
- Daafe ishaal
- Mundamml qurooh
- Mufarre wa muqawwi qalb
- Muqawwi meda wa jigar

1.5 Iste’mal (Therapeutic use): (7,8,9)
- Kasraetams,
- Ruaf,
- Bawaseerdamvi,
- Khafqan,
- Diarrhoea,
- Yarqan,
- Amrazechashm,

Action: Resin-astringent, antibacterial, antidiarrhoeal, emmenagogue

Used for chronic bronchitis, piles, skin eruptions, ringworm, scrofula, tubercular glands, ulcers, wounds, boils; urinary discharges; amenorrhea; gonorrhoea and syphilis. (5)

The resin along with little quantities of Jaggery is given to treat Sprue mixed with Sesamum oil, it is given in Gonorrhoea, and with Ghee and long pepper for the treatment of Syphilis and Ulcers.

Sesame oil cooked with gruel & 1/4 lb part of the Resin, after churning with water is prescribed in Fevers, Abdominal disorders & burning sensation. (3)

Bark: Anti-dysenteric.
Oil and resin: Antirheumatic.
Resin enters into a number of antiseptic and anti-inflammatory ointments.
Leaves: Juice is applied to cure burns. Orally administered to prevent vomiting. (5)
1.6 Photochemistry
The bark contains polyphenols-dl-epicatechin, levorotatory isomers of fisetinidol, fzelechin; and bergenin. The resin is a complex mixture of several triterpene hydrocarbons, ketones, alcohols and acids, along with small amounts of sesquiterpenes. On distillation, the oleoresin gave an essential oil (76%), consisting of phenolic constituents and azulenes. The essential oil shows marked antibacterial activity against Gram +ve and Gram -ve micro-organism. The leaves and roots contain bergenin and hope phenol. The seed also contains bergenin. The fruit shell contains 25% tannins.(5)

1.7 Ethnobotanical description
A large elegant evergreen tree, grows up to 30 m high, with a clean, cylindrical bole of 15 m, and a girth of 4.5 m. A large softly pubescent, climbing or training herb with 5 -angled hispid stems and 2 -fid long tendrils; leaves simple, long-petiololed with two glands at the apex, 5 -lobed, cordate, dentate, hairy on both surfaces; flowers large, white, solitary, the males long-stalked and the females short-stalked; fruits large spherical bottle or dumb-bell shaped, rind woody when ripe enclosing soft juicy flesh; seeds many, white compressed smooth with a marginal groove. (11, 6)

1.8 Habitat and Distribution
In the Western Ghats up to 1200 m long the streams (5). In extends in Western Ghats from N. Kanara to Tranvancore up to 3500 or 4000 ft, chiefly in evergreen forests, but occasionally along rivers in deciduous forests. In Coorg both in the Ghat forests and east of the Ghats up to 3500 ft, in the latter locality always in evergreen forest. (11)

2. PHARMACOLOGICAL ACTIVITIES
2.1. Anti-inflammatory activity (1)
The chemical screening of leaves of Vateria indica were performed as per the guideline of the World Health Organization (WHO). The anti-inflammatory activity screening of the various extracts showed the presence of alkaloids, carbohydrates, steroids and glycosides. Anti-inflammatory activity was performed using the carrageenan induced rat paw oedema method. The ethanolic extract (400 mg/kg, p.o.) showed 36.9% inhibition and compared to the standard drug diclofenac sodium which showed 55.6% inhibition. Conclusively the result revealed that Vateria indica leaves have an anti-inflammatory activity which may be due to the presence of alkaloids, steroids and glycosides.

2.2. Anti-tumour effect (1)
Dipterocarpaceous plants contain various resveratrol oligomers that exhibit a variety of biological activities, such as antibacterial and antitumor effects. The antitumor activity of the ethanol extract from the stem bark of Vateria indica, which has been traditionally used for health and healing diseases. High-performance liquid chromatography analysis showed that the extract contains bergenin, hopeaphenol, vaticanol B, vaticanol C, and epsilon-viniferin. The extract did not show significant toxicity to mice even at a dosage of 1000 mg/kg body weight by daily oral administration for 28 days. These results demonstrated that the ethanol extract containing various stilbenoids from the stem bark of Vateria indica has the potent antitumor activity.

2.3. Anthelmintic activity (4)
The crude ethanolic extract of Vateria indica significantly demonstrated paralysis, and death of worms a concentration 50 mg/ml compared to standard reference mebendazole.

2.4. Anti-ulcer activity (1)
Vateria indica resin extract in the higher dose (500 mg/kg) witnessed a significant dose-dependent anti-ulcer activity against ethanol-induced gastric ulcer and indomethacin-induced gastric ulcer models. It also produced a significant (**p≤0.01) reduction in the ulcer index on a higher dose (500 mg/kg) as well as standard (ranitidine) treated groups. The study revealed that Vateria indica Linn. resin extract possess significant anti-ulcer activity.

2.5. Anticancer potential (1)
In the present study, the anticancer potential of stem bark of Vateria indicia gainst two cancer cell lines namely, rat glioma (C6) and EAC was tested. Alcoholic and aqueous extract of stem bark of Vateria indica exhibited considerable cytotoxic activity against the cell lines in the preliminary screening. But not all fractions of the extract were active against the cell lines. Acetone, ethanolic and petroleum ether showed active cytotoxicity in cancer cells, the rest of the fractions were not active. Based on the present study it can be concluded that Vateria indica possesses anticancer activity.

2.6. Antioxidant and anti-mutagenic activity (12)
Vateria indica stem bark extracts contain a good amount of phenolic and flavonoid content and can be used as a natural source antioxidant and antimutagenic agents that could have great importance as therapeutic agents in preventing or slowing the progress of aging and age associated oxidative stress related degenerative disease.

3. REFERENCES