

AN INSIGHT INTO THE PHYTOCHEMICAL EVALUATION OF VITEX ALTISSIMA L.f - AN EXTRAPHARMACOPOEIAL DRUG

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ABSTRACT

Exploration of medicinal plants is a continuous process. From *Vedic* to *Samhita* period and *Samhita* to the *nighantu* period there is an up gradation in the number of medicinal plants. Acharya Charaka has emphasized the need of interaction between the physician and cowherds, forest dwellers, shepherds etc¹, it proves that our Acharyas had vivid knowledge of drug research regarding its identity, properties and the therapeutic use along with the safety of the drug before administering to a patient. *Vitex altissima L.f* belonging to the family *verbenaceae* is a drug which is extrapharmacopoeial medicinal plant called *Baranige* in kannada and its frequently used in folklore medicine for the joint pain, to improve the strength, etc hence the proper identification is important and mandatory. The pharmacognostical study helped to standardize its identity, preliminary phytochemical analysis revealed the presence of certain phytoconstituents which helped to understand the properties and actions of the drug.

Keywords: Extrapharmacopoeial drug, *Vitex altissima L.f*, Standardization, Pharmacognostic study

INTRODUCTION

Vitex altissima L.f is an anukta dravya of ayurveda, proper knowledge of its *nama*, *rupa* and *gunakarma* is very essential to use it in the clinical practice. The *aushadhi sukta* in *rigveda* is the oldest document available on medicinal plants. It briefly describes the morphological characters of medicinal plants, their habitat, therapeutic classification and their uses in various ailments. *Rigveda* mentioned about 67 medicinal plants followed by 81 in *Yajurveda*, later *atharva veda*

narrated about 289 plants². The number of medicinal plant exceptionally increased in *samhita* period and the same tradition continued in *nighantu* period as well. Even though the details of medicinal plants mentioned in *samhita* period is less when compared to *nighantu kala*, they believed that everything in this universe can be considered as medicine if utilized properly

Vitex altissima L.f is a potent drug belonging to the family *verbenaceae* is an extra pharmacopoeial drug which is not mentioned in any of the *samhitas* or *nighantus*. Traditionally its leaves and bark are used in joint pain and the seeds are used to improve the strength and the leaves are also used for wound healing³. In the recent studies it is proved to have the antimicrobial⁴, antioxidant⁴, antibacterial activity⁵. Pharmacognostic, morphological and microscopical characters of leaf of *Vitex altissima L.f* will set the standard which can promise quality, and identity of samples. Phytochemical studies helps in standardization of the drug which in future will help the practitioners to get the genuine drug and best outcome in their clinical practice. The present study will provide the information in respect of identification and standardization.

MATERIALS AND METHODS

Sample collection: The plant source was identified in the field with the help of regional flora and collected. The fresh leaves were collected and used for macroscopic evaluation, dried and powdered form was used for powder microscopy.

Macroscopic evaluation: The external features of the test samples were documented using digital camera. The macroscopic features were compared to local flora for confirmation.

Powder microscopy: Pinch of leaf powder previously sieved is put on the slide and mounted in glycerine and powder characters are observed under the Zeiss AXIO trinocular microscope attached with Zeiss AxioCam camera under bright field light

Physico-chemical analysis: Organoleptic examination, macro, microscopy, and physicochemical studies, viz., total ash, water-soluble ash, acid-insoluble ash, water and alcohol soluble extractive, loss on drying at 105⁰ C as per standardized methods.⁶

Phytochemical analysis: Tests for alkaloids, carbohydrates, steroids, saponins, tannins, flavonoids, phenol, coumarins, triterpenoids, carboxylic acid, resin and quinine.⁷

OBSERVATION AND RESULTS

Table 1: Vernacular names

Kannada	Baranige ,naviladi
English	Peacock chaste tree
Tamil	Mayilati
Telugu	Mayooramu
Malayalam	Kattumayila
Marathi	Bavalgee

Table 2: Taxonomic position

Kingdom	Plantae
Phyllum	Tracheophyta
Infraphyllum	Angiosperms
Class	Magnoliopsida
Order	Lamiales
Family	Verbinaceae
Genus	Vitex
Species	altissima L.f

Morphology

Trees, upto 30 m high, bark 10-13 mm thick, greyish-yellow, scaly; blaze yellow; branchlets lenticellate, minutely tomentose. Leaves compound, trifoliate, opposite, stipulate; rachis 35-60 mm long, slender, pubescent, winged in sapling leaves, wings auriculate at base; leaflets 3-5, sessile; lamina 6-18 x 2-5 cm, lanceolate, elliptic-lanceolate, or oblanceolate, base cuneate or acute, apex acuminate, margin entire, glabrous above and pubescent or glabrescent along the nerves below, chartaceous; lateral nerves 10-16 pairs, pinnate, puberulent beneath, slender, prominent; intercostae reticulate, prominent. Flowers bisexual, white, tinged with blue, in terminal panicles, 5-8 m long; bracts lanceolate, 3 mm long, cauducous; calyx densely tomentose, shortly 5 lobed, ovate; corolla 5 mm long, 2 lipped, upper lip of 2 and lower lip of 3 lobes, obtuse, throat villous; stamens 4, didynamous, exserted; filaments hairy at base; ovary globose, 1 mm, superior, densely hairy, 2-4-celled, 4 ovuled; style filiform; stigmas bifid. Fruit a drupe, 5 x 5 mm, smooth, globose, glabrous, blue, supported by enlarged calyx; seeds 4, obovate.

Table 3: Organoleptic characters

Leaf characters	Leaf powder characters
Colour: Greenish, glabrous above	Colour: Greenish
Taste: Slightly astringent	Taste: Slightly astringent
Odor: characteristic	Odor: characteristic
Touch: Smooth	Touch: Smooth

Macroscopic features

The leaves are greenish trifoliate, leaflets sessile, lanceolate, margin serrated acuminate at apex, acute at base. Petioles angular and winged, with auricles at base.

Powder microscopic characters

Powder microscopic characters showed the presence of trichomes, spiral vessels, upper epidermal cell and vascular fibres.

Physico-chemical tests

- Loss on drying - 6.15%
- Total ash - 4.99%,
- Acid insoluble ash - 0.4%,
- Alcohol soluble extractive value - 17.88%
- Water soluble extractive value - 14.46%
- ph - 6.34.

Preliminary phytochemical tests

Phytochemical tests carried out showed the presence of alkaloid, tannins, flavonoids, phenols, amino acids, sugars and proteins.

DISCUSSION

In India 80% of people live in rural areas in rely upon traditional medicines for their primary healthcare; this is due to strong belief on the traditional medicine and the healers. Inadequate primary healthcare centers and transportation facilities also make them to approach traditional healers. Besides, medicinal plants are easily available natural products, cost effective with no or negligible side-effects. The ethno-medico botanical study of *Vitex altissima L.f* revealed that the drug is used extensively in treatment of ailments like joint pain and to improve the strength, to promote wound healing³. The pharmacognostical study is one of the major criteria for identification of plant drugs. The preliminary phytochemical screening showed the presence of alkaloid, tannins, flavonoids, saponins phenols and amino acids. Alkaloids are quite diverse,

they act on central nervous system, used to relieve the pain, and analgesic hence is used as muscle relaxants⁸. Tannins are antiseptic on skin and mucus membrane, they are used as healing agents in inflammation⁹. The presence of flavonoids implies that it may have anti-inflammatory, antioxidant, anti-cancer activity. Presence of the above phytochemicals justifies its therapeutic value as to be a better wound healing, analgesic, anti-inflammatory, anti-arthritis, anti-bacterial and anti-oxidant drug as the action of the drug is directly dependent on its chemical composition.

CONCLUSION

The results of the pharmacognostical, physicochemical analysis helps in standardization with respect to its identity and genuinity of the herbal material, phytochemical screening showed the presence of alkaloid, tannins, flavonoids, phenols and proteins. with this sufficient data the drug can be taken up studying it as per guidelines of Ayurveda like assessment of its rasa panchaka and further for clinical studies to rationally include it into Ayurveda materia medica, thus providing a scientific and evidence based documentation of traditional knowledge as mentioned in Ayurveda.

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FIGURES

Fig no 1: Leaf of *Vitex altissima* L.f

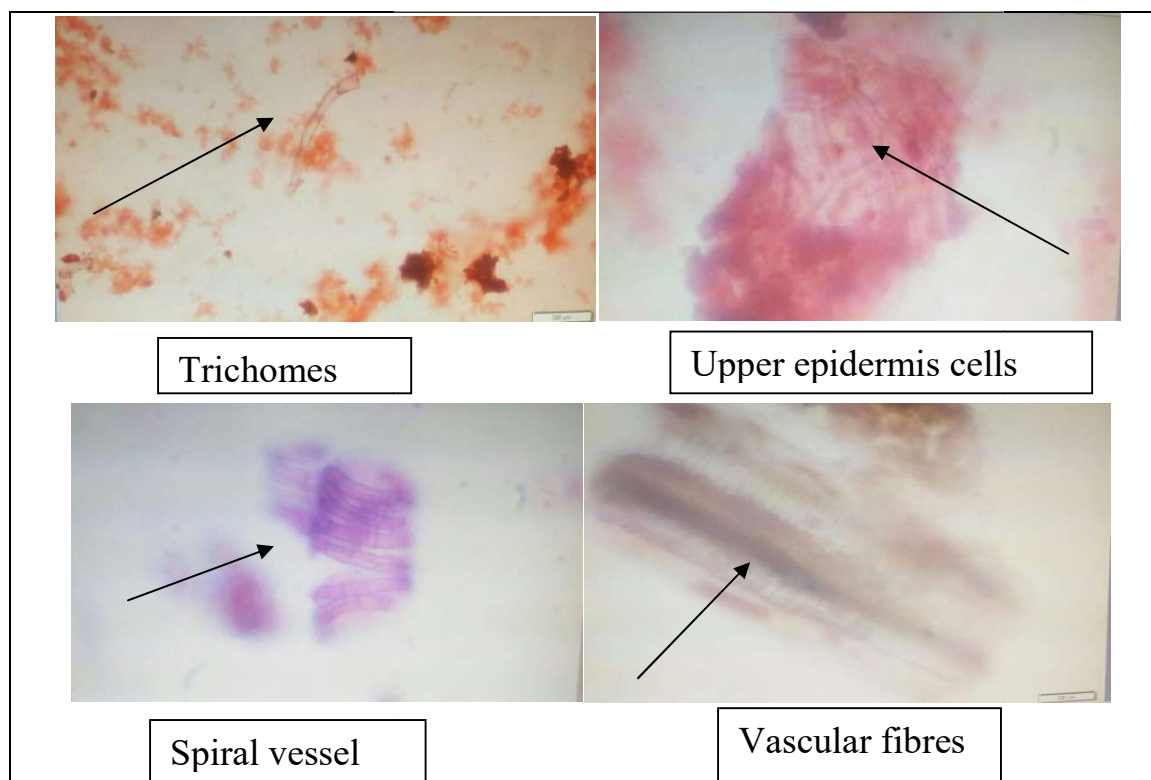


Fig no 2: showing the powder microscopic features of *Vitex altissima* L.f

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