PHARMACOGNOSTIC STUDY OF *GUAZUMA ULMIFOLIA*

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ABSTRACT

Guazuma ulmifolia Lamk is a small sized tree belongs to family Sterculiaceae. The leaves and fruits are used by rustics of Latur district to treat gastrointestinal problems, dermatological and pulmonary infections. Pharmacognostic studies were carried out for evaluation of drugs and to detect adulteration. It includes dermal characters like stomata, trichomes and anatomical features etc. The plant was analyzed for its preliminary screening of phytochemicals. The results reveals that the presence of active constituents comprising alkaloids, glycosides, terpenoids etc. The generated data may provide the basis of its wide use as the therapeutic agent in the traditional and folk medicine.

Keywords: Pharmacognostic study and *Guazuma ulmifolia*

INTRODUCTION

In India there is a alternative system of medicine like Ayurveda, Sidha, Unani and traditional medicine which gain its importance in the recent few years of its high potential in curing various diseases with less side effects as compared to synthetic drugs. Natural products of plant and animal origin offer vast resource of new medicinal agents with potential in clinical use. The value of medicinal plants to the mankind is very well proven. Nature has been a source of medicinal plants for thousands of years and an impressive number of modern drugs have been isolated from natural sources and has potential to treat diseases all over the world. The higher plants are basic sources of medicinal compounds playing dominant role in the maintenance of human health since ancient times.

Medicinal plants are characterized according to microscopic and macroscopic characteristics⁵. The crude drug shows variation in their chemical nature, they can be standardized by estimating chief active constituents. Organoleptic evaluation is done by means of organ of sense. This method provides the simplest and quickest means to establish the identity, purity and quality of crude drug.

There are number of different bases are used for morphological studies and natural variations for preliminary evaluation of crude drugs. The analysis or evaluation of microscopic characters is essential because differences in the species or different types of plants as far as the cell characteristics are concerned.

The Wadawal-Nagnath of Chakur Tahsil of Latur District, Maharashtra has a pocket of numerous medicinal plants. The rustics of the area and people of nearby area have been using various plant and their parts as medicine during Uttra Nakshetra to cure different ailments without knowing the efficacy or medicinal uses. The rustics of this area use the *Guazuma ulmifolia* as an analeptic, antibacterial, anticancer and antidiabetic agent. It also used to treat fever, flu, gonorrhea, sore throat, asthma, diarrhea, and dysentery and to control hair loss. Therefore it is thought essential to establish the pharmacognostic evaluation of *Guazuma ulmifolia* of family Sterculiaceae.

MATERIALS AND METHODS

The plants were collected from Wadawal-Nagnath of Chakur Tahsil of Latur district Maharashtra during September 2010. Herbarium specimen was deposited in Botany research centre Dnyanopasak College, Parbhani (M.S). Plant material was fixed in formalin – acetic acid – alcohol fixative for anatomical study. Identification of plant was done by using standard floras^{6,7,9}.

Anatomical studies of leaves and stem were carried out by usual free hand sections and stained with safranin and light green as a counter stain. This combination gave satisfactory results. The leaves were peeled for the study of stomata. The vessels were studied by using Jeffery's method.

Observations

Guazuma ulmifolia is woody tree. It is commonly found in deciduous forest. It is 30 m in height leaves are alternate with two rows distributed in alternate pattern. Leaves are ovate to lanceolate with toothed margin usually texture is rough. Leaves are covered with small star-shaped hairs. The panicles are in branched pattern around 2.5-5cm in length flowers many and are short stalked small in size, brown to yellow in colour. Seed are many brown coloured.

Parts used: Stem bark, leaves and fruits.

Anatomical peculiarities

T.S. Stem

Stem is circular in outline, differentiated into epidermis cortex and conjoint, collateral open vascular bundles. The epidermis is single layered parenchyma cells covered by thick cuticle. Just beneath it two to three layered collenchymatous hypodermis and multilayered parenchymatous general cortex is present. The endodermis surrounds the vascular tissue. Vascular bundles are conjoint, collateral, open and arranged in ring. Secondary xylem is present. At the center thin walled parenchymatous pith is present. Vessels are long with scalariform thickening on lateral walls and both the end wall plates are oblique (Figure 1).

Table 1: Preliminary phytochemical screening

Plant parts	Tannins	Saponins	Flavonoids	Terpenoids	Cardiac glycoside	Alkaloids	Steroids
Fruit	+	+	+	+	+	+	--
Leaf	+	+	+	+	+	+	+

+: present --: absent

Figure 1 T.S. of Stem

Figure 2 Stomata

Figure 3 Trichome

T.S. of Leaf

Leaf anatomy shows upper and lower epidermis is composed of rectangular cells with thin visible cuticle. The mesophyll tissue differentiated into palisade parenchyma and spongy parenchyma. Trichomes are present on leaves and stem they are unicellular, non glandular and stellate. Anisocytic stomata are confined to abaxial surface (Figure 2-3).

Preparation of Extract

Powder obtained was subjected to successive soxhlet extraction with increasing order of polarity i.e. Acetone (56 To 60⁰ c), Alcohol (60⁰ to 80⁰ c), Petroleum ether (60⁰ to 80⁰ c), Methanol (65.5⁰ c – 70.5⁰ c) and distilled water (60-70⁰)⁴.

Phytochemical Screening

Phytochemical screening of *G. ulmifolia* fruit and leaf showed the presence of different groups of secondary metabolites viz. alkaloids, tannins, saponins, flavonoids, terpenoids, cardiac glycosides, steroids which are of medicinal importance. The aqueous extract showed positive result for most of the test compounds (Table 1).

DISCUSSION

The pharmacognostic evaluation would give valuable information and it is essential to standardize it for use as a drug. The stomata, trichomes, vessels and other determined characters are used in detecting adulteration. The result from preliminary phytochemical screening revealed that plant extracts shows the presence of alkaloids, steroids, flavonoids, terpenoids, saponins which may exhibit antimicrobial activity. Phenolic compounds have been reported for antioxidative, antidiabetic and antimicrobial activities^{1, 8}.

Flavonoids are the major group of phenolic compounds reported for their antiviral, antimicrobial properties^{3, 2}. However, scientific validation like biochemical, clinical and pharmacological are required for the verification of folkloric claims and bring out newer and potent sources for the welfare of society.

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REFERENCES

- Arts JC, Hollman PC. Polyphenols and disease risk in epidemiologic studies. *Amer.J.Clin.Nut* 2005; 81:317S-325S.
- Afolayan AJ, Meyer JM. The Antimicrobial Activity of 3, 5,7-trihydroxyflavone isolated from the shoots of *Helichrysum aureonitens*. *J. Ethnopharmacol* 1997; 57:177-181. [http://dx.doi.org/10.1016/S0378-8741\(97\)00065-2](http://dx.doi.org/10.1016/S0378-8741(97)00065-2)
- Barnard DL, Huffman JH, Mayerson LR and Sidwell RW. Mode of inhibition of respiratory virus by a plant flavonoid. *Chemotherapy* 1993; 39: 212- 127. <http://dx.doi.org/10.1159/000239128>
- Daniel M. *Methods of Phytochemistry and Economic Botany*, Kalyani Publishers Delhi ; 1991.
- Kokate CK, Ghokhale SB. *Practical Pharmacognosy*, 10th Ed, Nirali Prakashan Pune; 2006.
- Naik VN. *Flora of Osmanabad*, Venus Publishers Aurangabad; 1979.
- NaikVN and Associates. *Flora of Marathwada Vol.I&II*Amrut Prakashan Aurangabad; 1998.
- Scalbert AC, Manach C, Morand C Remescy and Jimenez L. Dietary polyphenols and the prevention of diseases. *Cri. Rev. Food Sci Nut* 2005; 45:287- 306. <http://dx.doi.org/10.1080/1040869059096>
- Singh N P, Karthikeyan S. *Flora of Maharashtra State: Dicotyledons Vol. I. Bot. Surv. India, Calcutta; 2001.*

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