



Pharmacognostic studies on *Pergularia daemia* (Frosk) Chio

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Abstract

Pergularia daemia (Frosk) Chio is a hispid perennial herb that grows along roadsides of India and other Tropical and Subtropical Regions of the World. This plant posses medicinal properties hence used in traditional medicine system to cure various ailments like Infantile diarrhoea, Asthma, Malarial fever, Leprosy, Piles etc .because of the presence of various chemicals including alkaloids, saponins, fats, proteins from various plant parts. The present paper deals with the taxonomic and pharmacognostic study of *Pergularia daemia* (Frosk) Chio

INTRODUCTION

Since long time plants and plant products are used as a source of medicine. According to WHO (1993) more than 80% of the world's population specially in poor and less developed countries depends on traditional plant based medicines. The efficacy and safety of herbal medicine have turned the major pharmaceutical population towards medicinal plant research and so there are considerable evidences of increase in demand of medicinal plants (Bhagwati Uniyal, 2004). Use of plants for treating various diseases is an old practice as man himself. India is richly endowed with a wide variety of plants having medicinal values. These plants are widely used by all classes of the society directly or indirectly in pharmaceutical drugs. In recent time focus on plant research has increased all over the world as medicinal plants are used in various traditional systems of medicines like Ayurveda, Siddha and Unani (Dhanurkar *et al.*, 2000). Exploration of the chemical constituents of the plants and pharmacological screening may provide us the basis for developing the novel agents. Among the estimated 400,000 plants species only 6% of the plants have been studied for biological activity and about 15% have been investigated phytochemically (Crag G. M *et al* 1997). This shows a need for investigation of

various chemical constituents, their activity and pharmacognostic evaluation.

The plant *Pergularia daemia* belongs to family *Asclepidaceae* is commonly known as Utarand in Marathi and Uttaravaruni in Sanskrit (Khare, 2007). Traditionally this plant is used as laxative, antipyretic and expectorant, also used to treat infantile diarrhoea and malarial intermittent fever (Nadkarni, 1976; Kirtikar and Basu, 1935). Latex of this plant is used for toothache (Hebbar *et al.*, 2004). Stem bark is used for remedy of cold and fever (Dokshi, 1998). Aerial parts of this plants reported the various medicinal properties like antidiabetic, analgesic and anti inflammatory (Wahi *et al.*, 2002).

MATERIALS AND METHODS

P.daemia plant was collected from road side of the city and brought to the laboratory of Department of Botany, Shri.Shivaji College Parbhani for identification with the help of flora (Naik, 1998; Cooke, 1967) for pharmacognostic studies standard literature is referred (Naik, 1998; Nadkarni, 1976). The plant is preserve in 70% FAA solution for further study. Fresh plant material is used for the study of anatomical details of Root, Stem and Leaf by double staining method.

For Vessel studies thin slices of mature stem and root were treated with macerating fluid (Johnson, 1940). The macerate was thoroughly washed and stained with 1% aqueous Saffranin and measurements were made by ocular scale lens. Camera lucida sketches were drawn. Classification of Radford *et al.* 1974 is followed for categorizing the vessel elements. Fresh hand sections of root, stem and leaf is used for phytochemical studies (Johnson, 1940). The plant sample is made into herbarium and deposited in departmental herbarium as voucher specimen.

RESULTS AND DISCUSSION

Macroscopic Characters

Pergularia daemia is a slender, hispid fetid-smelling perrinial climber. Leaves opposite, membranous, 3-9cm long and about as wide broadly ovate, orbicular or deeply cordate, acute, pubescent beneath. Petiols 2-9cm long. Flowers greenish –yellow or dull white tinged with purple, borne in axillary, long –peduncled, drooping clusters. Follicles (fruits) lanceolate, long pointed, about 5 cm long, covered with soft spines and seeds are pubescent, broadly ovate. Flowering may occur each year between July to February (Plate 1).

Microscopic Characters

T.S.of Root

It is circular in outline. Epidermis is replaced by cork tissue, followed by parenchyma. Secondary tissue forms complete outer ring of secondary phloem and inner of secondary xylem. Intra xylary phloem is observed, pith is obscure. (Plate 2). Macerated root tissue shows presence of vessels of class A (33.33%), class B (43.33%), class C (16.66%) and class D (6.68%) respectively (plate 3).

T.S of Stem

It is circular in outline. Epidermis is unilayered with cuticle and uniseriate hairs. The outer cortex is collenchymatous and inner parenchymatous with isolated patches of bast fibres. Secondary tissue shows a complete ring of sec.phloem outside and sec. xylem on inner side. Laticifers are confined to the medullary rays and pith cells.(plate 4). Macerated stem tissue shows presence of vessels of class A(9.3%),class B(40%),class C(10.60%), and class D (40.10) respectively (plate 4,5)

T.S. of Leaf

Epidermis is single layered on both surfaces,externally covered by uniseriate trichomes having multicellular bases.The mesophyll contains single layered palisade towards adaxial side and chlorenchyma towards abaxial surface.In midrib single vascular bundle is observed.

Stomatas are rubiaceous type with stomatal index 22.80(plate 6)

Trachieds are with multicellular base and uniseriate, average length 358.75micro meter.

Phytochemical Analysis

The ethol extract of the plant was tested for presence of various bioactive compounds like flavonoides,tannins,alkaloids,glycosides,steroids and carbohydrates were analysed and found to be present in all plant parts (Table 1).

DISCUSSION

The plant *Pergularia daemia* has a wide array of pharmacological activities. It is used in various traditional medicine system since long time as a medicine. It has been used as antipyretic, analgesic and anti inflammatory, also used in the treatment of diarrhoea and malarial intermittent fever. Recent research carried out indicates that *Pergularia daemia* is an important source of various types of compounds with diverse pharmacognostic activities. Similar type of the work was done by Bhogaonkar and Ahmad (2012), Mohammad and Suradkar (2011), Ladda *et al.* (2013) in Maharashtra Region.

Table 1-Phytochemical components in the ethanol extract of aerial parts of *P.daemia*

Sr.no	Phytochemical compound	Aerial parts
1	Flavonoid	Present
2	Tannins	Present
3	Alkaloid	Present
4	Glycosides	Present
5	Terpenoides	Present
6	Steroides	Present
7	Carbohydrates	Present



Fig. 1 *Pergularia daemia* plant



Fig. 2 T. S. of *Pergularia daemia* root



Fig. 3 *Pergularia daemia* T. S. of stem



Fig.4 *Pergularia daemia* Vessels elements of root



Fig. 5 *Pergularia daemia* Vessels elements of stem



Fig.6 leaf stomata of *Pergularia daemia*

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