

ECLIPTA ALBA

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Fig. 1. Flowering stem of *Eclipta alba*

INTRODUCTION

Eclipta alba Hassk. is a common annual herb, 30-60 cm high and growing in moist places throughout India ascending up to 1700 m. It is commonly known in Hindi as '**safed bhangra**' when in flower and as '**kala bhangra**' when in fruit. In traditional system of medicine, the herb is used as tonic and deobstruent in hepatic and spleen enlargements, and in skin diseases. The juice of the leaves boiled with sesame or coconut oil is used for anointing the head to render the hair black and luxuriant. In Homoeopathy, it is not an official drug in any of the Homoeopathic Pharmacopoeia but is mentioned in Text Book of Pharmacy for Students and Beginners by P. Elias p. 207 and the data for its homoeopathic proving is scanty. The clinical use by some of the homoeopathic physicians cannot be ruled out.

The extract of the herb yields a natural dye which is used in the preparation of Bhringraj hair oil. The present paper describes the pharmacognostic studies along with its common names, medicinal and non-medicinal uses, chemical constituents, pharmacological and toxicological activities of the whole plant.

NOMENCLATURE

***Eclipta alba* (Linn.) Hassk.**

Syn: *Eclipta prostrata* (Linn.) L.

The word Eclipta is originally derived from a Greek word "ekleipo" meaning to be deficient, lacking, leave out, desert (ek and leipo) probably referring to the absence of the pappus and wings.

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The common names of the plant are:

Sanskrit	Bhringaraja, Kesaraja, Ajagara
Hindi	Bhangra, Bhamgra, Mochkand, Babri
Bengali	Kesuti, Keshukti, Keshori, Keysuria, Keshwri, Kesaraya
Marathi	Bhringuraja, Maka
Gujarati	Bhangra, Kaluganthi, Dodhak, Kalobhangro,
Telegu	Galagara, Guntagalijeru
Tamil	Garuga, Kayanthakara, Kaikesi
Kannad	Garagada soppu
Malayalam	Kyonni, Kannunni
Oriya	Kesarda, Kesarda
English	Trailing Eclipta
Arab	Kadim-el-bint

FOLKLORE, MEDICINAL AND NON-MEDICINAL USES

The plant is considered as an astringent in China, and is used for checking haemorrhage, fluxes and strengthening gums. It is rubbed on the gums for toothache, acting as a counter-irritant. The plant is much used as a cure for asthma and bronchitis in Indo China. In India, the natives of Bombay used juice of the plant in combination with aromatics, as a tonic and deobstruent, and gave two drops of it with 8 drops of honey to new born children, suffering from catarrh. In Chota Nagpur, the root is applied in conjunctivitis and galled necks in cattle. It is one of the most favourite drug used for jaundice in South India. In the form of pill made of leaves with black pepper, it has remarkable effect in low fevers in anaemic cases. Given with butter-milk, it improves digestion. The oil prepared with the herb is of great repute as a hair dye and has cooling affect on the brain. In Ayurveda, the herb is considered to be acrid, bitter, thermogenic, alterative, antiinflammatory, febrifuge, anthelmintic, anodyne, carminative, emetic, diuretic, aphrodisiac, haematinic and hair tonic. It reduces *kapha* and *vaata* and is a good rejuvenator. It is specific in

night blindness, eye diseases, headache and expels worms. The herb is reputed as a tonic and deobstruent in hepatic and spleen enlargement. It is good for blackening and strengthening hair and stopping haemorrhages and for strengthening gums. Leaves are useful in scorpion sting. Root is emetic, purgative; applied externally as antiseptic to ulcers and wounds. Seeds are used as aphrodisiac.

The plant is used as a dyeing herb in tattooing. The leaves are used as vegetable in Java; they are used in some parts of India in chutneys.

CULTIVATION, COLLECTION, PRESERVATION AND STORAGE

The plant is cultivated through seeds. The seedlings so produced are planted in a well moistened field at 30 x 45 cm distance. The herb is simply taken out from the soil before flowering and dried in shade, finally garbled to remove the unwanted parts and stored in air tight containers in a cool and dry place.

BOTANY

Eclipta alba (Linn.) Hassk. belongs to the Asteraceae (Compositiae) family. This is the genus of 3-4 species, herbaceous plants with opposite leaves and solitary axillary peduncles. Almost all the species of the genus throw out roots in a wet soil from near the bottom of the stems. This particular species is occurring through out India.

DESCRIPTION

An erect or prostrate, slender, branched, annual, rooting at nodes, stem and branches strigose with appressed white hairs. Leaves opposite, sessile, oblong-lanceolate, 2.5-10 cm long, variable in breadth, subentire, acute or subacute, sparsely strigose with appressed hair on both sides, base tapering. Flower-heads white, 6-8 mm in diameter, solitary or 2 together on unequal axillary peduncles. Involucral bracts 8, outer larger, ovate, obtuse or acute, herbaceous, strigose with appressed white hair. Ray florets ligulate, the ligule small, spreading, scarcely as long as bracts, not toothed, white. Disk- flowers tubular, the corollas often 4-toothed. Pappus O, except occasionally very minute teeth on the top of achenes. Achenes narrowly oblong, compressed and with narrow wing, tipped with ribbed pappus teeth and covered with warty excrescences. The plant flowers and fruits from August to November.

DISTRIBUTION

Common weed in moist places throughout India ascending upto 1700 m on the hills. In Himachal Pradesh, the herb is growing in sporadic to moderate quantity along water channels and in ditches etc.

PART USED

Whole plant.

PHARMACOGNOSY

Microscopial characteristics

Leaf

Dorsiventral; epidermis single layered, wavy, walled with anomocytic stomata on both the surfaces but abundant on lower surface, stomatal index 20-22.5 on upper and 23-26 on lower; cuticle thin; trichomes non-glandular, present on both the surfaces, stiff, mostly 3 celled but occasionally 4-5 celled, uniseriate, warty, wide at the base, middle cell longest, uppermost small, pointed. Palisade single layered, discontinuous over midrib, palisade ratio 3.8-4.5. Spongy parenchyma 5-6 layered, chlorenchymatous with air spaces. Midrib pronounced on lower surface, vascular bundles 3-5, separate, central bundle largest, conjoint, collateral, consists of xylem on ventral side and phloem on dorsal surface and embedded in parenchymatous ground tissue and hypodermal collenchyma.

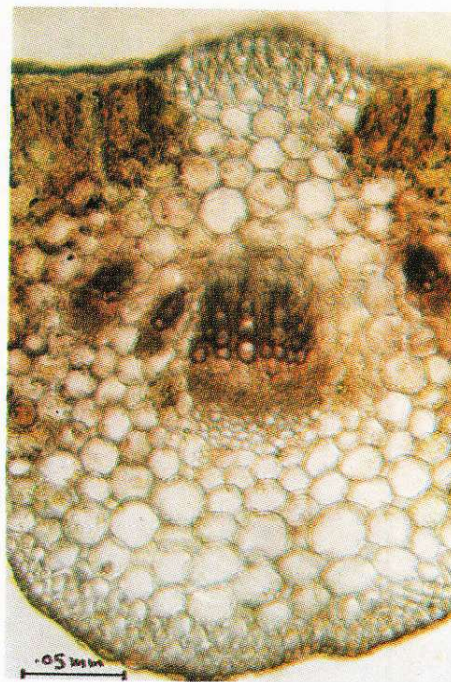


Fig. 2. T.S. Leaf through midrib region showing arrangement of vascular bundles

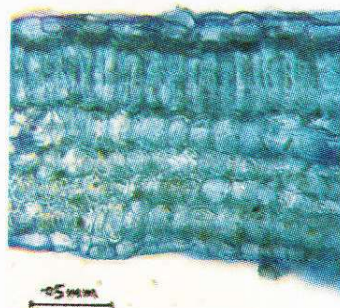


Fig. 3. T.S. Leaf through lamina region showing dorsiventral Lamina

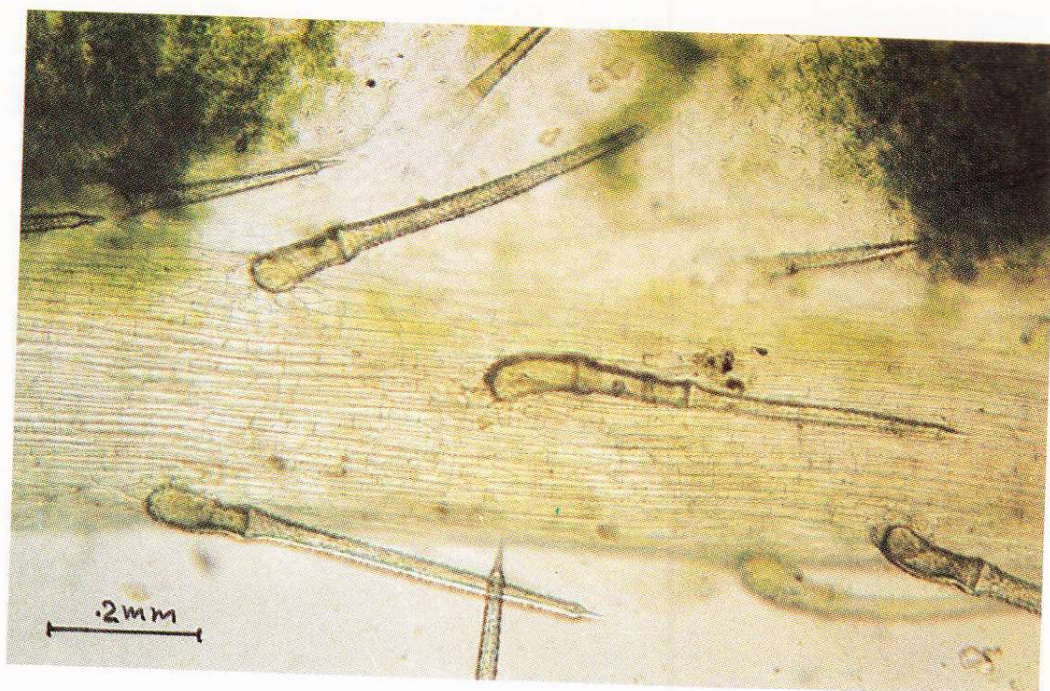


Fig. 4. Surface view of epidermis at mid rib region showing multicellular, uniseriate, warty, trichomes

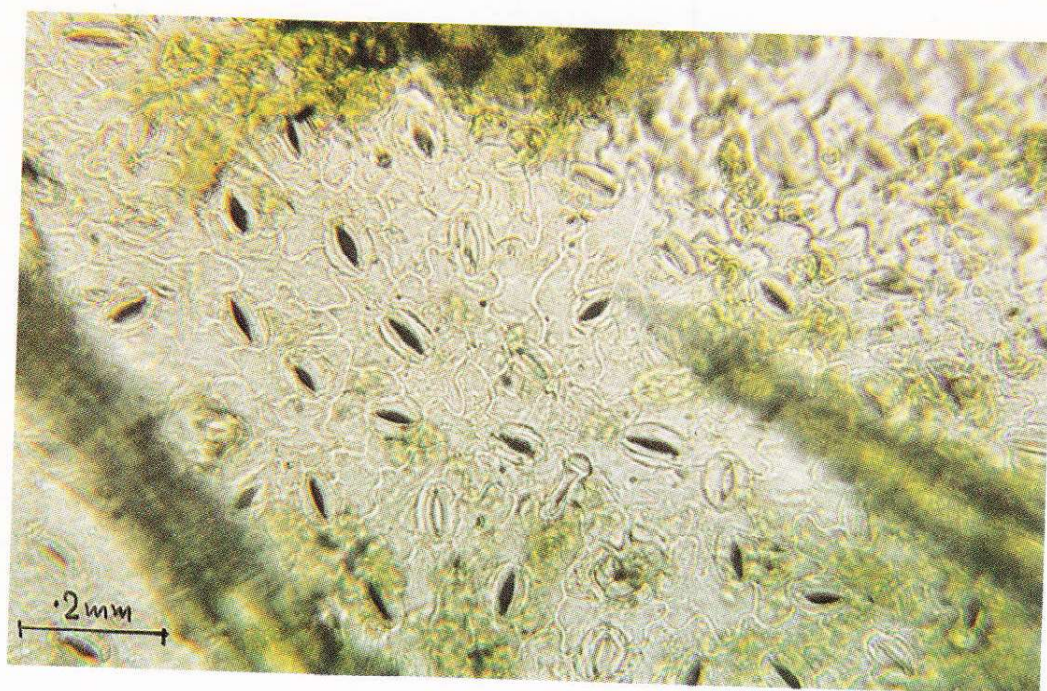


Fig. 5. Surface view of epidermis showing anomocytic stomata

Stem

Transverse section shows circular outline; epidermis, uniseriate layer of barrel shaped cells interrupted by stomata; cuticle thin; trichomes non-glandular, stiff, mostly 2-3 celled, uniseriate, occasionally 4-5 celled, warty, middle cell longest, uppermost cell small, pointed; cork when present poorly developed, consists of thin-walled rectangular

cells; cortex differentiated into outer collenchymatous hypodermis and inner parenchymatous with air spaces; endodermis distinct, wavy, uniseriate; pericycle in the form of crescent-shaped patches outside vascular bundles; stele a polyarch-siphonostele; vascular bundles varying in size arranged in a ring, conjoint, collateral, endarch, open and separated by medullary rays; pith wide, composed of large, thin-walled parenchyma cells.

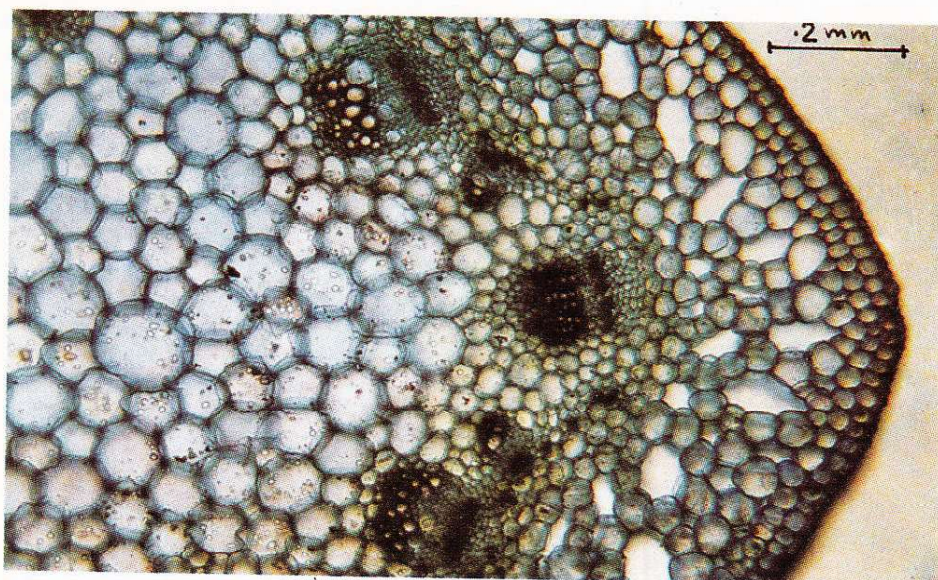


Fig. 6. T.S. Stem, a portion enlarged showing air cavities in cortex, and vascular arrangement

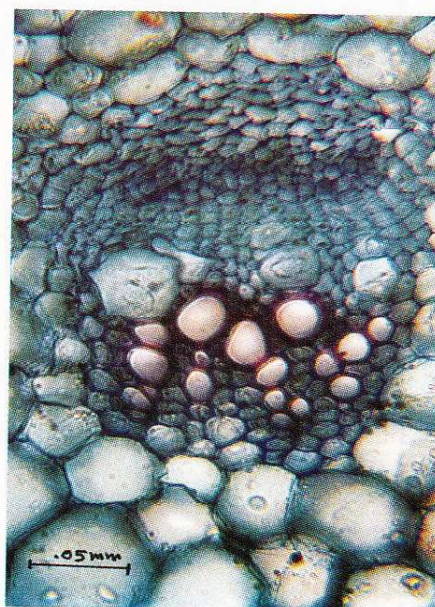


Fig. 7. T.S. Stem, a portion magnified showing vascular bundle

Root

The diagnostic characteristics are: epiblemma of uniseriate layer of thin-walled parenchymatous cells from which arise unicellular root hair; cortex broad, parenchymatous enclosing large air spaces, each air space is separated from each other by septa formed of a single row of cells; endodermis distinct; pericycle of single layer of thin walled parenchymatous cells; vascular bundles radial, tetrarch, protoxylem exarch. Secondary growth normal showing complete cylinder of xylem and phloem. Pith of thin walled parenchyma cells in young root but absent after secondary growth.

hydrolysis gave five amino acids viz. cystine, glutamic acid, phenylalanine, tyrosine and methionine.

PHARMACOLOGY AND TOXICITY

Water soluble fraction of leaves produced apparent sedation and prolonged pentobarbital hypnosis in mice, exhibited significant negative inotropic and chronotropic effects on perfused frog heart; caused hypotension in anesthetized dogs lasting for 10-15 minutes which remained unaltered by prior atropinisation; produced significant decrease in heart rate and transient depression of auricular

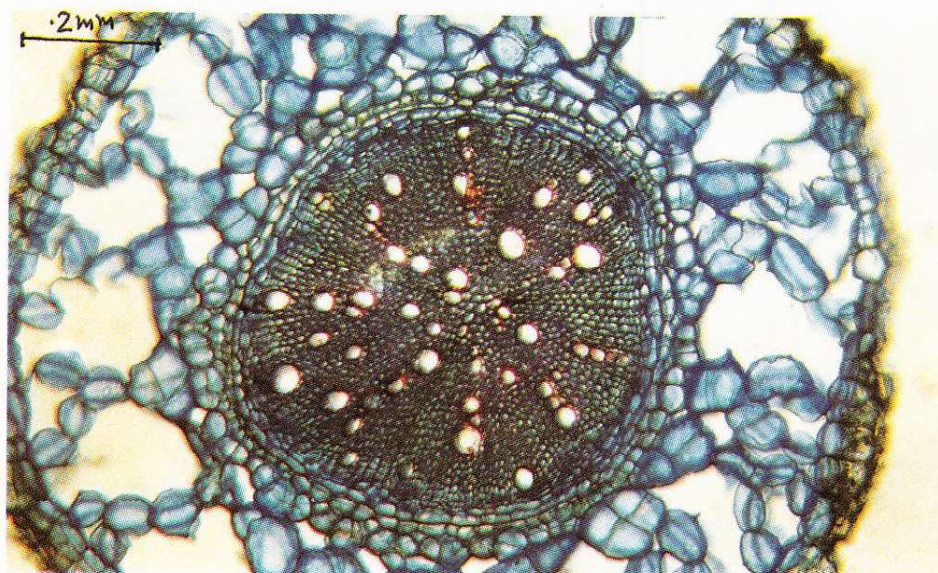


Fig. 8. T.S. Root, showing air cavities in cortex, distinctly endodermis, pericycle and tetrarch vascular tissue

CHEMICAL CONSTITUENTS

Leaves contains, α -terthienyl-methanol, stigmasterol, sixteen polyacetylenic thiophenes, 5'-seneciylomethylene-2-(4-isovaleroxybut-3-ynyl)dithiophene, 5'-tigloyloxymethylene-2-(4-isovaleroxybut-3-ynyl)dithiophene, nicotine, b-amyirin, wedelolactone, desmethyl wedelolactone and its 7-O-glucoside. Minor compounds reported in plant include ecliptal, saponins viz., eclabosaponins I-IV, common sterols and triterpenoids viz., hentriacontanol, 14-heptacosanol, flavonoids e.g. luteolin-7-O-glucoside; alkaloids ecliptalbine, 4beta-hydroxy verazine, 25 beta-hydroxy verazine and polypeptides. Polypeptide on

and ventricular contraction on dog heart in situ and could not affect rhythmicity of rabbit intestine in vitro.

Alcoholic extract caused long lasting sharp fall of blood pressure in anaesthetized dogs blocked by prior atropinisation; antagonised the spasmogenic effect of acetylcholine, histamine and bradykinin on isolated smooth muscle preparations. *Eclipta alba* in a dose of 90mg/kg orally exhibited hepatoprotective effect on CCl_4 induced hepatic damage in albino rats. The plant extracts exhibit antimyotoxic and antihaemorrhagic effects against crotalid venoms. The active constituents wedelolactone and desmethyl wedelolactone also exhibited antihepatotoxic activities in carbon tetrachloride, galactosamine and phalloidin induced liver damage in rats.

Alcoholic extract shows no signs of toxicity in rats and mice and the minimum lethal doses were more than 2.0 g/kg when given orally or intraperitoneally in mice. Steroidal alkaloids from methanol extracts of leaves are DNA-damaging and all the alkaloids showed weak cytotoxicity against the M-109 cell line. However, the drug is traditionally considered safe.

ACKNOWLEDGEMENT

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