



# **ECLIPTA ALBA: AN APPROACH TO OVERVIEW ITS MORPHOLOGICAL CHARACTER, PHYTOCHEMICAL CONSTITUENTS, AND PHARMACOLOGICAL PROPERTIES.**

**Kavita Patle<sup>1</sup>, Nitish Kumar<sup>1</sup>, Sumit Sahu<sup>1</sup>, Urvashree Sahu<sup>1</sup>, Priya Komre<sup>1</sup>, Rashmi Sahu<sup>1</sup>, Alisha Banafar<sup>1</sup>, Praveen Kumar Dewangan<sup>1</sup>, Puja nayak<sup>1</sup>, Priya Patel<sup>2</sup>, Kushagra Nagori<sup>1</sup>, Mukesh Sharma<sup>1\*</sup>**

<sup>1</sup>Rungta College of Pharmaceutical Sciences and Research, Bhilai 490024, India

<sup>2</sup>Rungta Institute of Pharmaceutical Education and Research, Bhilai, Chhattisgarh, India

\*Corresponding Author: [drmukeshsharma28@gmail.com](mailto:drmukeshsharma28@gmail.com)

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## **Abstract**

There are around 2000 natural medications, of which 400 are produced from minerals and 400 are derived from animals. The Ayurvedic, Siddha, and Unani medical systems account for the remaining 600–700 medicinal plant species. People have relied on the plant's medicinal properties known as *Eclipta alba* for millennia. In the form of powder, juice, or oil, the plant's leaves, seeds, and even the entire plant itself are used to treat a wide variety of illnesses. The leaves are sessile, whole, oblong, and lanceolate in shape, and they are 3.5 centimeters in length. They have a surface that is rough due to the presence of white trichomes, which also give them a greenish and occasionally brownish coloration. Above ground, the herbaceous stem is cylindrical, branches out at the nodes, and does not have a permanent wooden stem. There are several different types of chemical components found in *Eclipta alba*. consists of more than one component altogether. Numerous studies have found a connection between *E. alba* and the initiation of and promotion of hair development. *E. alba* has been traditionally regarded as a hair tonic. On nude mouse skin with inherited hair follicular abnormalities, petroleum ether extract (PEE) created a large increase in hair covering area and density by encouraging follicular keratinocyte proliferation and delaying terminal differential from day 8. This suggests that it may be helpful. Beneficial in the treatment of certain types of alopecia..

## **Introduction**

Only Earth is capable of supporting life, and it is rich in a wide range of plant and animal species. Many millions of extinct biological species are included in the biodiversity observed on Earth today. With only 2.4% of the world's land area, India is home to one of the world's most diverse ecosystems. [2][17]. In India, medicinal

plants have been used for centuries and are an integral part of the country's healthcare system, and have various traditional names (Table 1). The use of medicinal plants dates back centuries in India, yet they remain an integral part of the country's healthcare infrastructure today. About 400 medications in Indian *Materia Medica* are from minerals and animals, while the

remaining 1600 are from the Ayurvedic, Siddha, and Unani systems. From 600-700, unique plant species are used for therapeutic purposes. [3][18][19]. The human health of around three-quarters of the world's population is dependent, in some capacity, on different parts of medicinal plants and the extracts derived from those plants. Plants have long been used as a key source of active pharmaceutical ingredients (API), which are necessary for the development of novel treatments. Plants that have the ability to treat a wide range of illnesses are in high demand in every region of the world. Medicines derived from natural sources play an essential role in the public healthcare systems of all nations. [1][9][10].

*Eclipta alba* is a famous Indian plant. *Bhringraj*, or false daisy, is an Asteraceae plant. It is a traditional medicinal plant. India's weeds grow to 1800 meters. The Himalayas, upper Gangetic plains, grazing meadows, and roadside in Bihar, Orissa, Punjab, and western, and southern India. It is widespread in India, Brazil, Thailand, and China. It has treated ringworm, athlete's foot, eczema, and dermatitis for centuries. For generations, Indians have used it to treat jaundice, headaches, and night blindness. Powder, juice, and oil from leaf, seed, and sometimes the whole plant treat many ailments. [53].

### Traditional names

**Table:1 Traditional names.**

Language	Names
<b>English</b>	Trailing Eclipta, False daisy
<b>Hindi</b>	Bhamgra, Michakand, Babri, Bhangra
<b>Sanskrit</b>	Kesaraja, Tekaraja, Bhrnga, Markava, Bhrngaja

<b>Bengali</b>	Bheemraja, Kesuriya, Kesari, Kesuti, Keshwri.
<b>Gujrati</b>	Bhangra, Kaluganthi, Dodhak, Kalobhangro.
<b>Kannad</b>	Garagada, Soppu.
<b>Malyalam</b>	Kannunni, Kayyonni.
<b>Marathi</b>	Maka, Bhringuraja.
<b>Tamil</b>	Kaikesi, Garuga, Kayanthakara.
<b>Telgue</b>	Guntakalagara, Guntagalagara.
<b>Arabic</b>	Kadim-el-bint.
<b>Assami</b>	Bhrngaraja.
<b>Oriya</b>	Kesara, Kesarda
<b>Santhal</b>	Lal Kesari.
<b>Punjabi</b>	Bhangra
<b>Urdu</b>	Bhangra
<b>Saramacca (Africa)</b>	Totobia
<b>Tongo (Argentina)</b>	Luisawiwiri
<b>Spanish</b>	Yerba De Tago

### Propagation and cultivation

It is only found in settings that are wet and swampy. The utilization of seeds allows for simple and quick reproduction of it. Stem cuttings were utilized as a tool in the process of conducting experiments relating to the vegetative growth of *Eclipta alba*. After being submerged in the solution containing IBA and GA, the cuttings were planted, and then they were monitored for a period of one month after that. The research concluded that a concentration of IBA equal to one hundred parts per million was optimal for fostering healthy root and shoot growth. It can be acquired in each and every one of the four seasons. [53].

## Description of plant part

### A. Macroscopic character

**I. Root-** It has a form of root system known as adventitious, and its roots are cylindrical with a diameter of up to 7 mm and a greyish colour(Fig 5).. The primary root is the point from which a number of subsidiary branches originate.

**II. Stem-** Herbaceous refers to a stem that does not have any persistent woody stems above ground, and it is branched and has roots at the nodes(Fig3). The stem is planar and cylindrical in shape, with a rough surface that is caused by the presence of white trichomes on its surface. The stem is greenish and occasionally brownish in color..

**III. Leaves-** The length of each leaf is around 3.5 centimeters. Each of the two sides is opposing, sessile, entire, oblong, and lanceolate, and it has trichomes on it(Fig 4).

**IV. Flower-** Ray flowers are distinguished by their solitary growth on uneven axillary peduncles. ligulate, with a tubular white disc flower, a corolla with four teeth, five stamens, an anthers that are joined, and an inferior ovary (Fig 1). It blooms once a year between the months of October and November.

**V. Fruit-** Achenial cypsella, brown, one-seeded, cuneate, with a narrow wing as well as warty excrescences (Fig1).

**VI. Seed-** The seed does not include an endosperm, is the color of dark brown, and has hairs on it. Its length is around 0.2–0.25 centimeters, while its breadth is 0.1 centimeters. [2][3][53].

### B. Microscopic character

**I. Root-** Air-holed, elongated or spherical secondary cortical cells on the outer rows. Elongated and irregular inner secondary cortical cells. Stone cells fill the secondary cortex. Phloem rays grow and cells round out near the periphery. Pitted cells have strong tangential xylem rays that are rarely uniseriate or biseriate.

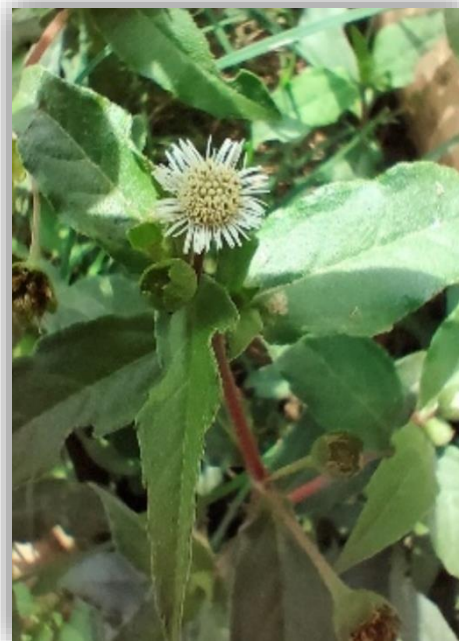
**II. Stem-** Elongated epidermal cells form non-glandular trichomes. Wide, spherical parenchymatous cells with lots of space make up the secondary cortex. Rings of endarch, collateral, and vascular bundles. Some xylem fibres fork into two. Biseriate or uniseriate xylem rays.

**III. Leaf-** Both surfaces have non-glandular trichomes and stomata, with more on the bottom. Five midrib vascular bundles, the largest central one and four lesser ones on either side. [3].





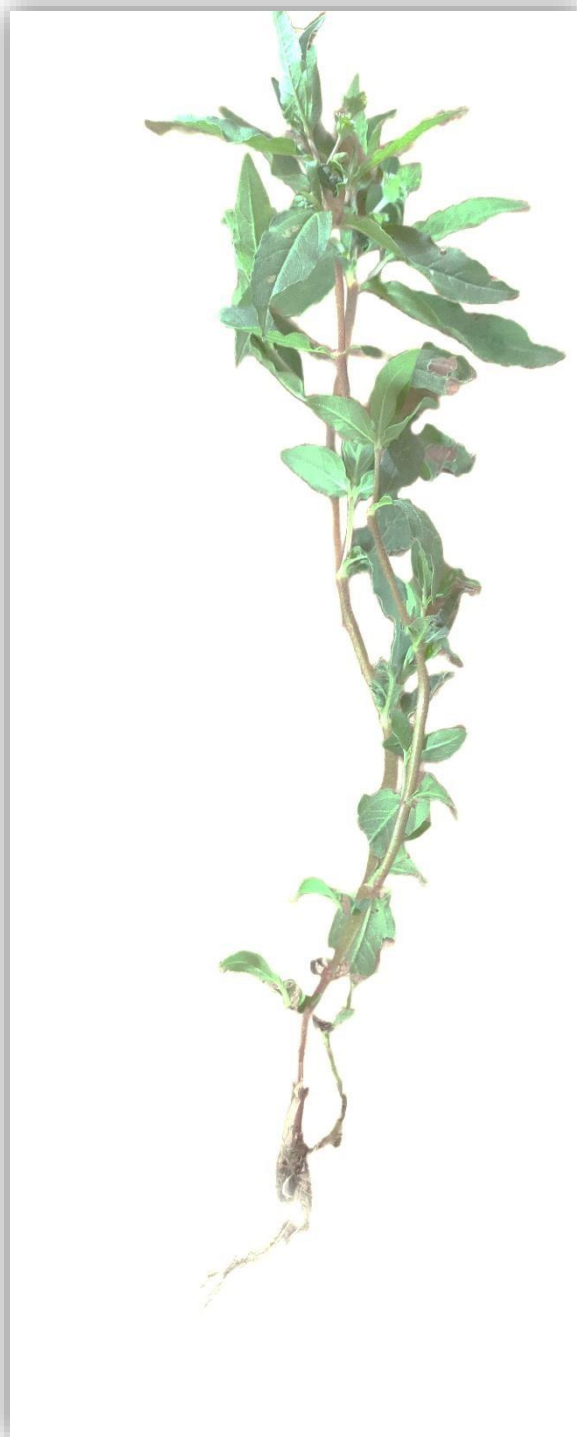
**Fig 1: Flower and fruit**



**Fig 2: Aerial part and flower**



**Fig 3: Stem and Fruit**



**Fig 4: Leaf Fig 5: Whole plant**

**Phytochemical constituent/Active constituent**

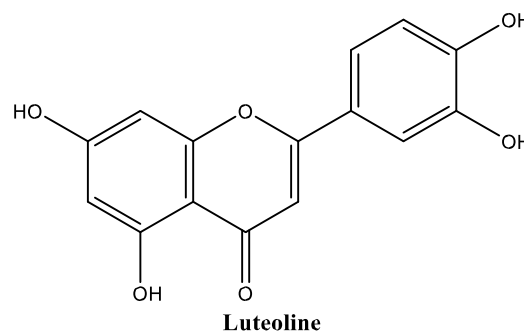
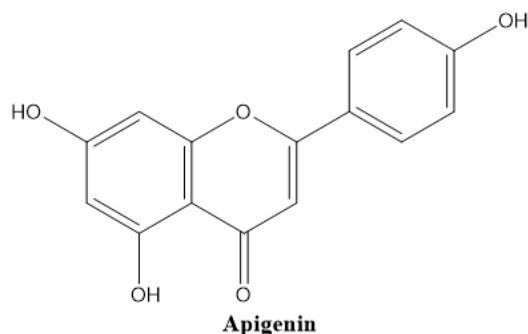
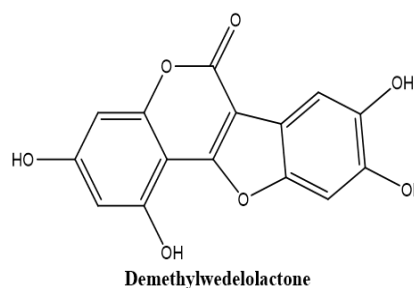
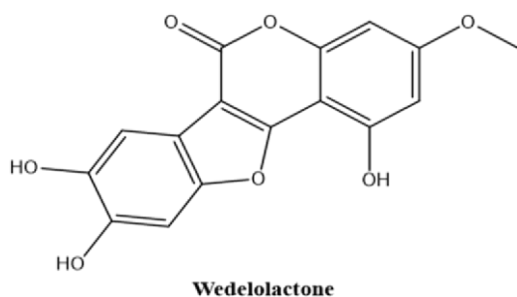
The *Eclipta alba* plant contains a diverse assortment of chemical constituents. Each part contains distinct chemical elements that are responsible for its own unique

pharmacological effect. There are many different kinds of chemical compounds that have been extracted from *E. alba* and identified. The following table contains all of the components along with their respective chemical constituents (Table 2).

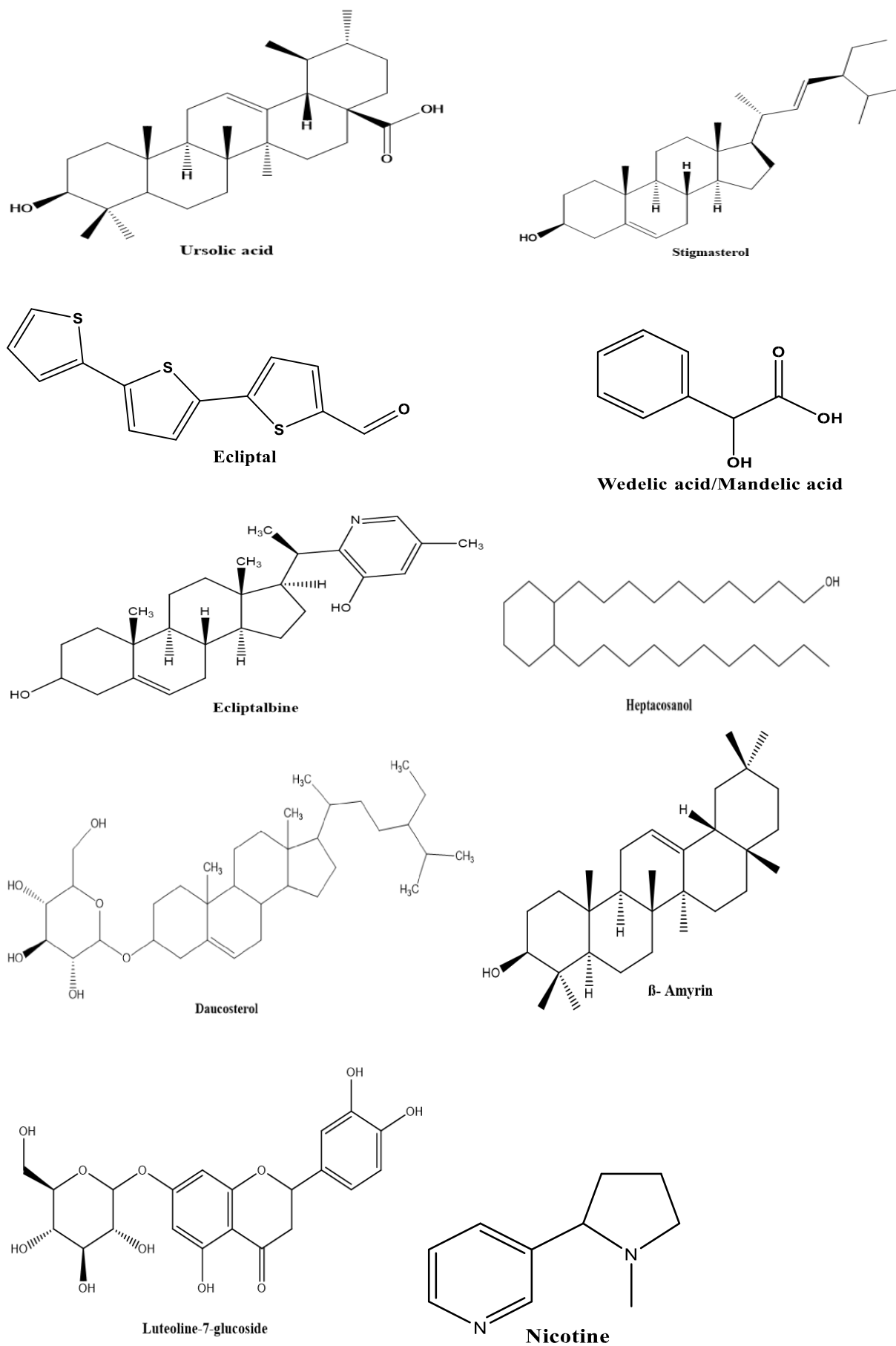
**Table 2: Phytochemical constituent**

Plant part	Chemical constituent (Fig 6)
<b>Whole plant</b>	Resin, Ecliptine, Reducing sugar, Nicotine, Stigmasterol, Triterpene saponin, Eclalbatin, Ursolic acid, Oleanolic acid [2][3].
<b>Leaves</b>	Wedelolactone (1.6%), Desmethylwedelolactone, Desmethylwedelolactone-7-glucoside, Stigmasterol [2][3].
<b>Root</b>	Hentriacontanol, Heptacosanol and Stigmasterol, Ecliptal, Eclalbatin and Thiophene Acetylenes [2][3].
<b>Arial parts</b>	$\beta$ -amyrin, Luteolin-7-O-glucoside, Apigenin, Cinnaroside, Sulphur compounds, Eclalbasaponins I-VI, phytosterol [2][3].
<b>Stems</b>	Wedelolactone, Wedelic acid, L-terthienyl menthol, Apigenin, and Luteolin [2][3].
<b>Seeds</b>	Sterols, Ecliptalbine(alkaloid) [2][3].
<b>Twigs</b>	Unnamed alkaloid [3].

**Chemical structure**







**Fig. 6** Chemical structure

## Pharmacological properties

The pharmacological action of various components and extracts based on their traditional usage has been studied extensively in the recent several decades for the contribution of *E. alba* in ethnomedicine. Based on traditional applications, my main focus in this review is on the plant's hepatoprotective, anti-osteoporotic, anti-inflammatory, hypoglycaemic, hypolipidemic, cardiovascular, anti-tumor & cytotoxic, analgesic, antimicrobial, neuroprotective, hair growth promoter, anti-venom, antioxidant, nephroprotective nature.

### 1. Hepatoprotective properties

Hepatitis, jaundice, and hepatic diseases are treated using *Eclipta alba*, a liver tonic. Wedelolactone and dimethyl wedelolactone are effective hepatoprotectants in mice. Coumestan-derived wedelolactone. Wedelolactone 50-100 mg/kg decreases hepatic inflammation and hepatocyte death in rats. *Eclipta alba* reduces centrilobular necrosis, hydropic degeneration, and hepatic parenchyma cell fat loss in CCl<sub>4</sub>-induced acute hepatotoxicity. The chloroform and methanolic extracts of *Eclipta alba* roots and leaves significantly reduce lysosomal enzymes. [1][5][14].

### 2. Anti-osteoporotic properties

Osteoporosis weakens bones and prevents bone growth. Simply put, there is too much osteoclastic bone resorption and too little osteoblastic bone creation. Aqueous extract of *Eclipta alba* at a high dose (1.4g/kg for 12 weeks) enhances bone mass without side effects compared to untreated groups. Alkaline phosphate activity (ALP) enhances osteoblast development in methanolic extracts of diosmetin, prarensein, and 3'-o-methylorobol. Osteoclast differentiation is unaffected. [6][26][27].

### 3. Anti-inflammatory and Analgesic properties

Anti-inflammatory substances diminish swelling and inflammation. Analgesic is any agent that relieves pain. *E. alba* contains anti-inflammatory and bronchodilator coumarin. Ethanol extract and whole alkaloids are effective analgesics in all models. The total alkaloidal % worked best in all testing models. Oral methanolic extract at 100–200 mg/kg has dose-dependent anti-inflammatory effects. [5].

### 4. Anti-diabetic properties

Diabetes is a metabolic disorder that impairs carbohydrate, protein, and lipid metabolism due to insulin imbalance or incorrect insulin activity. The methanolic extract 100, 200, and 400 mg/kg lowered serum glucose by 11.94%, 46.90%, and 49.92% in alloxan-induced diabetic rats after four weeks. When provided 600 µg/kg, glibenclamide reduces blood glucose by 45.35%. *Eclipta alba* in polyherbal formulations Pan-five's pancreatic regeneration and β-cell activity restoration have been demonstrated to have anti-diabetic and diuretic benefits. [5][6].

### 5. Hypolipidemic properties

Hyperlipidemia raises blood lipids. Cardiovascular disease risk factors include high total cholesterol (TC), LDL, VLDL, and TG levels, as well as low HDL levels. Inducing G1 and S phase cell cycle arrest, blocking mitotic clonal growth, and inhibiting the AKT/mTOR pathway, ethanol extract ethyl acetate reduces adipocyte differentiation and promotes lipolysis. The author found dyslipidaemia in hamsters fed a high-fat diet (HFD) for 7 days at 100 mg/kg fenofibrate. The E50 and E100 groups had lower serum triacyl glyceride, total cholesterol, and low-density lipoprotein-cholesterol than the untreated control group. [5][15][16].

### 6. Cardiovascular properties

*Eclipta alba* leaf and leaf callus ethanolic extracts had negative inotropic and



chronotropic effects on the isolated frog heart. Callus extract has a greater cardiac inhibitory effect than leaf extract and antagonises adrenaline. In moderate hypertensive subjects, dried leaf powder of *E. alba* at 3 g/day for 60 days reduced mean arterial pressure by 15% compared to placebo. Urine volume increased 34%, serum vitamin C 17%, and serum tocopherol 23%. [6][47].

### 7. Anti-tumour and cytotoxic properties

Abnormal tissue growth causes tumours. The formation of neoplasm is called neoplasia. Malignant tumours can spread from one organ to another, but benign tumours stay in one area. *Eclipta alba* methanolic extract anticancer activity was tested. The extract suppressed cell proliferation dose-dependently in HepG2, A498, and C6 glioma cell lines with IC50s of  $22 \pm 2.9$ ,  $25 \pm 3.6$ , and  $50 \pm 8.7$   $\mu\text{g/ml}$ , respectively. DNA damage caused apoptosis 72 hours after extract treatment. Metastasis kills most cancer patients. Fresh *E. alba* juice suppressed cancer invasion and migration in vitro and angiogenesis in vivo better than water and methanol preparations. The juice also inhibited cell migration in human endothelial cells and liver, lung, and breast cancer cell lines with IC50 values of 31–70  $\mu\text{g/ml}$ . *Eclipta alba* crude methanol extract inhibits colon cancer cell proliferation. For the multidrug-resistant hepatocellular carcinoma cell line (DR-HepG2), the hydroalcoholic extract of dose 10 or 20  $\mu\text{g/ml}$  shows anti-proliferative activity, while the standard anticancer drug doxorubicin of dose 0.5  $\mu\text{g/ml}$  was inactive, suggesting that *E. alba* may be a cancer adjunctive agent. [49][51][52].

### 8. Antiulcer properties

Ulcers are painful, slow-healing sores that can return. Peptic ulcers occur when excess acid secretion damages the stomach epithelial lining, causing sores and agony. Gastric ulcers are peptic ulcers. Stomach and small intestine peptic ulcers can occur. The ethanolic extract of *E. alba* was tested in rat ulcer models including pylorus

ligation (PL) and cold resistance stress (CRS). Oral dosages of 50, 100, and 200 mg/kg of the extract twice a day reduced ulcerative lesions and demonstrated dose-dependent efficacy. Antisecretory activity reduces stomach volume, acid output, and gastric pH in rats compared to rats that did not receive the extract. *E. alba*'s methanolic extract fights ulcers. Three tests induced ulcers in 36-hour fasting Sprague Dawley rats using aspirin, alcohol, or pylorus ligation + aspirin. Oral administration of the methanolic extract of *E. alba* before ulcer induction significantly reduced gastric ulcers and stomach inflammation. Rabeprazole and the extract had identical activity. [6][52].

### 9. Antimicrobial properties

○ Antimicrobials destroy or prevent bacteria. Benzene, chloroform, acetone, methanol, and an aqueous extract of *E. alba* were clinically active against oral cancer and bacteria like *Staphylococcus aureus*, *Escherichia coli*, *S. epidermis*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Proteus mirabilis*, and *P. Vulgaris*.

#### ○ Antibacterial property

Ethanol and ethyl acetate extracts of the plant's leaves have been shown to kill *E. coli*, *K. pneumoniae*, *Shigella dysenteriae*, *Salmonella typhi*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, and *Staphylococcus aureus* at 4.5–90  $\mu\text{l/ml}$ . The hexane extract of aerial plant parts has antibacterial action against *S. aureus*, *Bacillus cereus*, *E. coli*, and *S. Typhi*. *Klebsiella pneumoniae*, *Streptococcus pyogenes*, and *P. aeruginosa*, while acetone, ethanol, methanol, and aqueous extract of *E. alba* show intermediate effectiveness against *S. aureus*, *B. cereus*, *E. coli*, *S. Typhi*, *K. pneumoniae*, *P. mirabilis*, and *S. pyogenes*. [6][23].

#### ○ Antifungal property

Against *Candida tropicalis*, *Rhodotorula glutinis*, and *Candida albicans*, petroleum ether, chloroform, acetone, and *Eclipta alba*

extract were highly antifungal. Amphotericin B and Nystatin inhibited *E. alba* growth similarly. [6][41].

25- $\beta$  hydroxyverazine showed the good activity of antifungal against *C. albicans* [1].

### ○ Anthelmintic property

The methanolic extract of the whole plant of *Eclipta prostrata* is one of the most effective natural anthelmintics drugs. In Africa, it is used as anthelmintics medicine [7][33].

### ○ Antimalarial property

Plasmodium-infected female anopheles mosquitoes spread malaria. *E. alba* leaf extract kills Plasmodium berghei ANKA mice. The methanolic extract had dose-dependent chemosuppression or schizontocidal effects during and after infection at 250 to 750 mg/kg, and at 750 mg/kg/day, it extended mean survival time (m.s.t.). The early third-instar larve of *Anopheles stephensi* was larvicidal and ovicidal to hexane, ethyl acetate, benzene, chloroform, and methanol leaf extracts. Different extracts observed larval mortality for 24 hours. The methanol extract was more larvicidal at LC50=112.56 ppm and LC90=220.68 ppm. Extract concentration also decreased hatchability. *Eclipta alba* leaf extract in benzene, hexane, ethyl acetate, methanol, and chloroform was investigated for larvicidal and ovicidal activities in dengue vector and *Aedes aegypti*. Methanol extract larvicidal activity was highest. The LC50 of all solvent extracts of *E. alba* against third-instar larvae of *A. aegypti* is benzene 151.38 ppm, hexane 165.10 ppm, ethyl acetate 154.88ppm, methanol 127.64ppm, and chloroform 146.28ppm. The methanol extract was more ovicidal against *A. aegypti*. At 300 ppm, methanol extract kills all hatchlings. [6][43][44][45].

### 10. Anti-HIV properties

HIV, the human immunodeficiency virus, affects the immune system and is spread through body fluids like blood and saliva,

especially during unprotected intercourse. HIV untreated can cause AIDS. Wedelolactone and orobol from *E. prostrata* suppress anti-HIV1 integrase activity. *Ecliptal*, acetate, and tiglate also inhibited HIV-1 protease inhibitor. [4][24].

### 11. Anti-venom properties

Antivenom properties come from stigmasterol, sitosterol, and wedelolactone. Stigmasterol 2.3 mg/animal, Sitosterol 2.3 mg/animal, and wedelolactone 0.54 mg/animal neutralise venom. where *Bothrops jararaca*, *jararacussu*, *Lachesis muta*, and *Crotalus durissus terrificus* showed antivenom action. The inhibitory mechanism is anti-phospholipase and anti-myotoxic. Coumestns are tromatic chemicals found in *E. alba* and other strong antivenom plants. Both native and genetically engineered *E. alba* inhibited snake venom phospholipase A2 activity and contained coumestans in various regions. [7][34][35][36][37][38].

### 12. Neuroprotective properties

*E. prostrata* improves memory, learning, and prevents neurodegenerative diseases like Alzheimer's and Parkinson's. A scopolamine-induced cholinergic blockade paradigm was used to evaluate *E. prostrata*'s cognitive impairment therapy effectiveness. The ethanol extract's neuroprotective potential was assessed using passive avoidance, Y-maze, Morris water maze, and hippocampal LTP in mice. The extract (100 mg/kg) protected against scopolamine-induced learning and memory impairment and improved hippocampus LTP at 100 g/mL due to Akt-GSK-3 pathway activation. Age-related neurotransmitter production and oxidative stress can impair memory and recognition, leading to dementia. [5][30].

### 13. Hair growth-promoting properties

*E. alba* is a traditional hair tonic, and studies have shown it can stimulate hair growth. Ethanol and petroleum ether extract of *E. alba* were given topically to albino rats for hair growth. The extract was combined into

a 5% oleaginous cream and applied to male albino rats' shaved skin. The extracts significantly boosted hair growth time and anagenic hair follicles compared to the untreated group, outperforming 2% minoxidil. Petroleum Ether Extract (PEE) stimulated follicular keratinocyte proliferation and delayed terminal differentiation from day 8 on nude mouse skin with inherited hair follicular abnormalities, resulting in a significant increase in hair coverage area and density. It may be useful for treating certain types of alopecia. [5][6][31][32].

#### 14. Nephroprotective properties

In rats, excessive doses of gentamicin, an aminoglycoside, can cause nephrotoxicity and ototoxicity. When induced in rats, methanolic extract of *E. prostrata* leaf at 300 or 600 mg/kg for 7 days reduces wedelolactone-induced gentamicin nephrotoxicity. Nowadays, *E. prostrata* and glucocorticoids are used commercially to

treat various kidney diseases. *E. prostrata* increases the activity of 11 $\beta$ -hydroxysteroid dehydrogenase in rats' livers and kidneys, reducing the side effects of glucocorticoids and controlling human renal mesangial cell proliferation. [5].

#### 15. Antioxidant properties

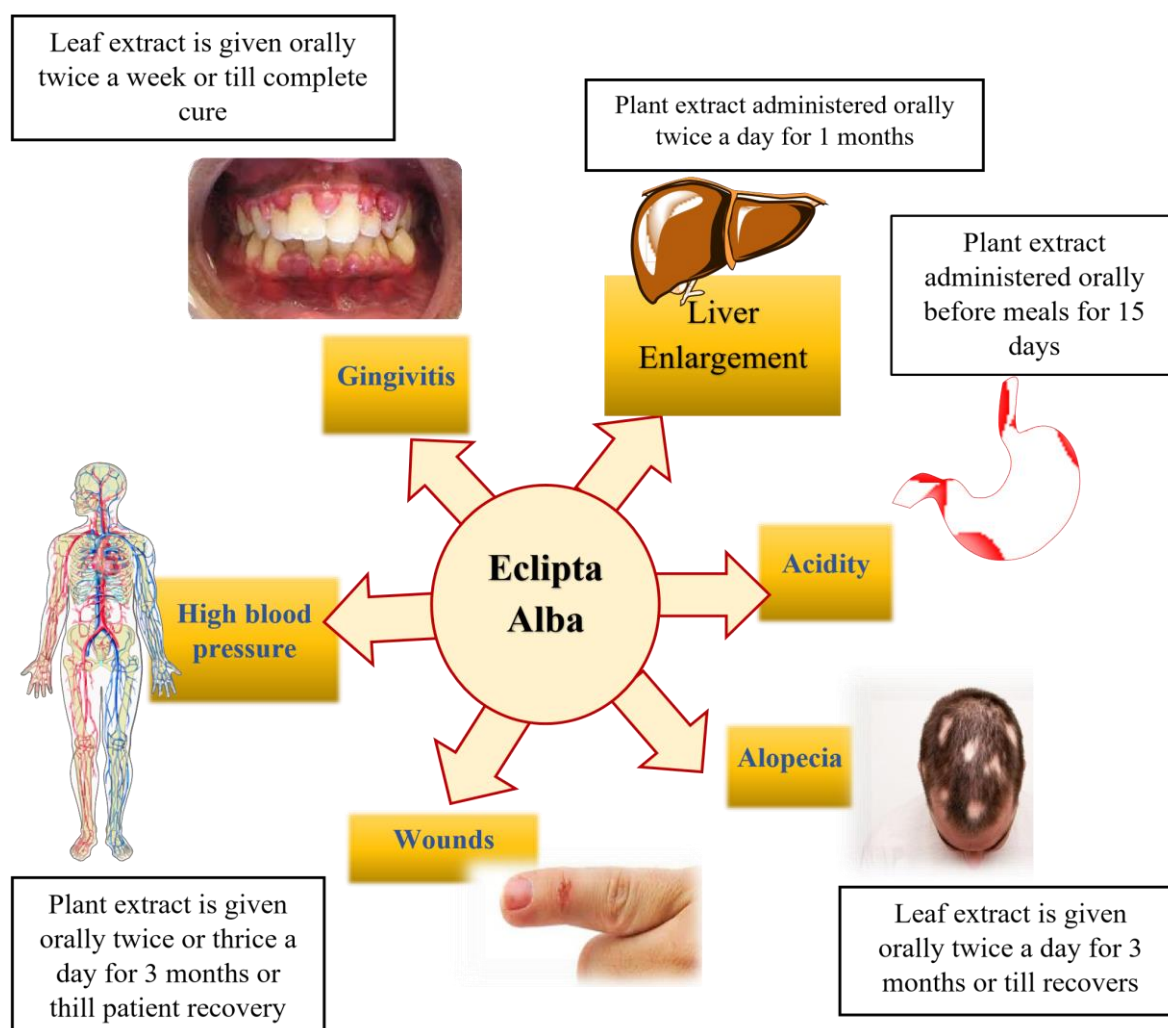
*E. prostrata*, another species of *E. alba*, has great antioxidant qualities and is used to treat eczema and atherosclerosis. Butanolic extract of *E. prostrata* has showed a huge rise in serum lipid and oxidant metabolism, decreasing lipids. It also scavenges reactive oxygen species, which cause many skin diseases. Antioxidant properties of tocopherol were studied. Ethyl acetate, hexane, ethanol, and water extracts of *E. prostrata*'s ariel portion all showed antioxidant activity, but ethanolic extract at 500  $\mu$ g/ml showed 77.62%, which is near to tocopherol's antioxidant activity. [6][39][40].

**Table. 3 Summery pharmacological properties of Eclipta alba.**

Pharmacological properties Plant part	Bioactivity	Bioactive fraction/compound
Leaves and Roots	Anti-hepatotoxic	Ethanol extract of Eclipta alba
Leaves	Anti-inflammatory activity	Methanolic extract
Leaves	Anti-diabetic activity	Aqueous extract of the formulation
Whole plant	Analgesic activity	Ethanolic and alkaloid extracts Whole plant
Whole plant	Anti-breast tumour	Methanol extract of Eclipta alba- chloroform fraction
Whole plant	Anticancer activity	Crude methanol extract; The hydro alcoholic extract

<b>Aerial parts</b>	Anti-bacterial activity	acetone, ethanol, methanol, aqueous and hexane extract
<b>Whole plant</b>	Anti-aggression activity	Aqueous extract of <i>Eclipta alba</i>
<b>Whole plant</b>	Hair growth promoter activity	The methanol extract
<b>Dried leaves</b>	Memory enhancing activity	Aqueous suspension of <i>Eclipta alba</i>
<b>Leaf</b>	Nephroprotective activity	Methanolic leaf extract

### Health benefits of *Eclipta alba*



**Fig 7: Health benefits**



**Table . 4 Use of *Eclipta alba*.**

Traditional uses	Country/ Region	Used plant parts	Formulations
Acidity	<b>India</b>	Whole plant	Plant extraction is prepared with cow milk 3 times a day for 15 days before each meal
Alopecia	<b>India</b>	Leaf	Leaf extract with other plant extract is given orally twice a day for 3 months
Asthma	<b>India, Thailand</b>	Whole plant	Plant ash is given orally with honey thrice a day for 3 months
Body pain	<b>India</b>	Leaf	Treated with fresh leaf extract orally twice a day for 5 days or till the patient recovers
Bronchitis and Pneumonia	<b>India</b>	Whole plant	Decoction of the whole plant is given orally with honey twice a day for 7 days
Burns	<b>India</b>	Whole plant	Leaf paste is used for external uses and also plant extract is given orally twice a day for 15days.
Constipation	<b>India</b>	Root	The powder is given orally once a day for 3 days
Diarrhoea and dysentery	<b>India</b>	Whole plant	Whole plant decoction is given orally thrice a day for 7 days or till a complete cure is obtained.
Fever	<b>India</b>	Whole plant	Plant extract is given orally twice or thrice a day for 7 days or until the patients recover fully.
General weakness	<b>India</b>	Whole plant	Plant extract mixed with 3 gm of <i>Phyllanthus Emblica</i> L. power is given orally twice a day for 6 weeks or till the patient fully recovers.
Gingivitis	<b>India</b>	Leaf	Leaf extract is given orally twice a day for 3 weeks or till a complete cure is achieved.
Hemorrhoids	<b>India</b>	Root	Root extract 3 times a day
Hair fall	<b>India</b>	leaf	Leaf extract 2 times daily with cow milk
High blood pressure	<b>India</b>	Whole plant	Leaf extract is given orally twice a day for 3 weeks or till a complete cure is achieved.
Jaundice	<b>India</b>	Whole plant	Plant extract with honey is given twice or thrice daily for 15 days.
Liver enlargement	<b>India</b>	Whole plant	Plant extract 2 times a day
Loss of appetite	<b>India</b>	Leaf	Leaf extract before each meal for 15 days.
Oedema	<b>India</b>	Whole plant	Herb extract 2 times a day
Palpitation	<b>India</b>	Leaf	Leaf extract with honey 3 times a day.
<i>Pimple</i>	<b>India</b>	Leaf	Fresh leaf extract with honey given orally

<i>Premature greying of hair</i>	<b>India</b>	leaf	Leaf extract used on hair
<i>Skin disease</i>	<b>India</b>	Whole plant	Paste used externally for 15 days.
<i>Spleen enlargement</i>	<b>India</b>	leaf	Extract mixed with honey,2-3 times a day
<i>Snakebite</i>	<b>India</b>	Whole plant	Oral administration of plant extract
<i>Urinary tract infection</i>	<b>India</b>	Whole plant	Plant extract is administered orally,2-3 times a day. Also used to wash genitalia externally
<i>Weakness of vision</i>	<b>India</b>	Leaf	Leaf extract with cow milk is given orally twice a day.
<i>Wound</i>	<b>India</b>	Leaf	Leaf extract is used to wash wounds.
<i>Wrinkles</i>	<b>India</b>	Leaf	Leaf extract combined with other herb's root powder is given with cow milk 2 or 3 times a day for 3 months.
<i>Chickenpox</i>	<b>Bangladesh</b>	Leaves and stem	Plant extract with mustard oil applied to the skin
<i>Hair falling</i>	<b>Bangladesh</b>	Leaf	Leaf extract with cow milk two times a day
<i>Amoebiasis,</i>	<b>Thailand</b>	Stem	A specific method is still to discover <i>Anemia</i>
<i>Blood tonic, abscess, itching, hemorrhoid, anaemia, tuberculosis, amoebiasis, asthma</i>	<b>Thailand</b>	Stem	N/A
<i>Hair dying</i>	<b>Thailand</b>	Whole plant	The specific method of use is unclear
<i>Haemoptysis of pulmonary tuberculosis</i>	<b>Philippines</b>	Whole plant	Dried plant or tincture used to treat
<i>Allergy, Athlete's foot, Ringworm</i>	<b>India, Pakistan</b>	Leaves	Leaf paste is used on the affected part.
<i>Catarrhal problems</i>	<b>Nepal</b>	Whole plant	Plant juice with essential oil
<i>Cuts and wounds</i>	<b>Nepal</b>	Whole plant	Plant extract is applied to the affected parts.
<i>Cold</i>	<b>Sidha</b>	Leaf	Leaf juice with an equal amount of honey is administered

## Conclusion

*Eclipta alba* is a diverse multi-constitutional medicinal plant, which is used not only for the treatment of acute disease but also in various life-threatening diseases, Despite being cosmopolitan in nature it is an annual herbaceous plant which is known for the existence of its various organic compounds which are employed in the treatment of disease like hepatotoxicity, osteoporotic, analgesic and anti-inflammatory, anti-diabetic, hypolipidemic, cardiovascular, anti-tumor, anti-ulcer, antimicrobial including anti-bacterial, anti-fungal, anti-helminthic, antimalarial, anti-HIV, anti-venom, anti-oxidant, and nephrotoxic disease. Treatment of all these diseases with current allopathic generic drugs leads to various unusual toxicities, management of which requires a lot of therapeutic monitoring, despite of comparing the risk-benefit ratio of standard generic drugs and extract of various phytoconstituent of *E. alba*, *E. alba* has evolved as a superior gift to medical sciences which is capable of treating all the above mention diseases, hence exploration of this plant should be of utmost priority of modern scientist which not only helps the society but also to the human needs, hence more such compounds must enter into clinical trials belonging to this plant, for proper analysis of its advance yet most useful therapeutic properties.

## Finding

**Hair Growth** – Traditionally known as a hair tonic, *E. alba* has been linked to initiating and promoting hair growth in numerous studies. By encouraging follicular keratinocyte proliferation and delaying terminal differential from day 8 on nude mouse skin with inherited hair follicular defects, petroleum ether extract (PEE) generated a considerable increase in hair covering area and density, indicating it may be effective. Beneficial for treating specific alopecias.

**Nephroprotective property** - *E. prostata* and glucocorticoids have recently been

utilised commercially to treat a variety of kidney related illnesses.

**Neuroprotective property** – It has been demonstrated that *E. prostata* enhances learning ability ,memory and the prevention of chronic neurological disease like Parkinson's and Alzheimer's.

## Future Prospects

The discovery of new medicines is aided by the isolation, identification and characterisation of significant chemical components from this plant. Protection and conservation. The management of these plant communities will eventually produce novel medications. According to histopathological tests, mice given various doses of *E. alba* combined with paracetamol showed significantly less fatty degeneration and centrilobular necrosis than the control group.

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