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Review Article

Pharmacological Activity of Eclipta Alba Lin

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ABSTRACT

The Bhringraj plant, scientifically known as *Eclipta alba* L., has many uses in Ayurvedic medicine. Common names for this plant include bhringaraj and fake daisy. Its distribution is global, with a concentration in the tropics and subtropics. It also highlights the short pharmacological profile of the chemicals or compounds derived from plant components and their characteristics. Anti-diabetic, anti-inflammatory, hair rejuvenator, antibacterial, analgesic, antiviral, hepatoprotective, immunomodulatory activity, etc., qualities of Bhringraj plant extracts are well-known among many medicinal uses for this plant. The herb *Eclipta alba* L. is ironic in bioactive compounds, including triterpenes, flavonoids, steroids, polypeptides, polyacetylenes, thiophene derivatives, and coumestans (wedelolactone and demethylwedelolactone). The pharmacological actions of this plant are thought to include anticancer, antioxidant, neuroprotective, analgesic, diuretic, hypolipidemic, antifungal, antimalarial, neuroprotective, and memory boosting properties. *Eclipta alba* L.'s taxonomy, phytochemistry, traditional use, medicinal value, and pharmacological activity are all topics that will be covered in this review.

INTRODUCTION

The Asteraceae family includes the medicinal herb *Eclipta alba* L. Bhringaraj and false daisy are two names for the same plant. This plant's traditional medicinal use dates back many centuries in various parts of the world, particularly the tropics. Backyards, gardens, and rice fields are common places to find this plant. In traditional medicine,

this plant has a wide range of uses for treating human health issues. The leaves can be used to make food. Tinnitus, bleeding, loose teeth, and vertigo are all conditions that *E. alba* used for. *E. alba* leaves also have anti-inflammatory and hair loss properties.

Botanical information of Eclipta alba

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Figure1: Bhringaraj Plant

Table 1: Botanical Information

Kingdom	Plantae
Sub- kingdom	Viridaeplantae
Division	Tracheophyta
Sub - division	Sematophytina
Class	Mangoliopsida
Order	Asteranae
Family	Asteraceae
Genus	Eclipta
Species	Alba
Common Name	Bhringaraj

Table 2: Vernacular Name

Language	Name
Latin	Eclipta alba
Hindi	Bhangra
Marathi	Maka
Kokani	Mako
Tamil	Kaikehsi
Gujarati	Bhangaro
Bengali	Kesuriya
Punjabi	Bhangra, dodhak
Arabic	Kadim-ul-bint
Telugu	Galagara
Malyalam	Kanni
Asamese	Kehraj

MATERIAL AND METHOD

Scientific databases provided information on E. Alba. Chinese Pharmacopoeia, Ph.D. theses, M.Sc. dissertations, and local publications were also consulted for information. The database "The Plant List" verified the taxonomy of plants.

Compounds extracted from *Eclipta alba* :

It contains several different metabolites, both main and secondary. These include steroids, alkenynes, alkaloids, flavonoids, coumestans, glycosides, triterpenoids, saponins, and triterpenes. Among these, the most important components are steroids, coumestans, triterpenes, and flavonoids. Hydriacontanol, heptacosanol&thiophene treated with polyacetylene are present in the roots. Additionally, this plant contains glutamic acid, tyrosine, methionine, phenyl alanine, nicotine, and nicotinic acid [21].

Key Chemical Constituents and their Locations

Coumestans:

Wedelolactone: Found in leaves, stems, and aerial parts.

Demethylwedelolactone: Present in leaves.

Desmethyl-wedelolactone-7-glucoside: Found in leaves.

Alkaloids:

Ecliptine: Present in the plant.

Nicotine and Nicotinic acid: Found in the plant.

Flavonoids:

Luteolin-7-O-glucoside

Apigenin: Present in aerial parts.

Triterpenoids:

β-amyrin: Found in aerial parts.

Eclipta saponin C: A new triterpenoid glucoside.

Steroids:

Stigmasterol: Found in leaves, roots, and aerial parts.

Daucosterol: Found in the plant.

Other compounds:

Hentriacontanol and Heptacosanol: Found in roots.

Saponins: Present in the plant.

Sulphur compounds: Found in aerial parts.

Coumestan

The vascular plants typically contain coumestan, a product of the secondary metabolites phytoestrogen. Coumestans are a group of chemicals that form the core of this structure. *Eclipta alba* possesses a high concentration of coumestans, according to phytochemical investigations conducted in many prior studies. Isodemethylewedelolactone, coumestan, strycholactone, and demethylwedelolactone-7-glucoside are the additional coumestans extracted from this plant[5].



Figure 2: Structures Of Major Cumestans

Steroidal Alkaloids

There have been thirteen different steroids isolated from *Eclipta alba* thus far. A chemical compound called verazine, is found in *Eclipta alba*.

Clipitalbine is the other alkaloids found in this plant. These are not the only steroids that have been extracted; stigmasterol, daucosterol, and β -sitosterol are more examples.

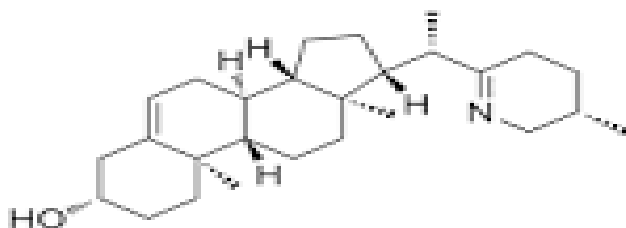


Figure 3: Structure of Verazine

Flavonoids

The medicinal community acknowledges flavonoids for their anti-HIV, anti-inflammatory, anti-HCV, and osteoprotective properties. Plants contain flavonoids, which are significant organic substances with a polyphenolic structure, as secondary metabolites. *Eclipta alba* contains over

ten different types of flavonoids, including flavones, isoflavones, and flavonoids, and it is present in nearly all therapeutic plants. Silica gel and high-performance liquid chromatography were employed. Flavones and glycosides also found in *Eclipta alba*. Paratensein and orobol are isoflavones that have been previously found as isolated compounds in the plant's aerial portions.

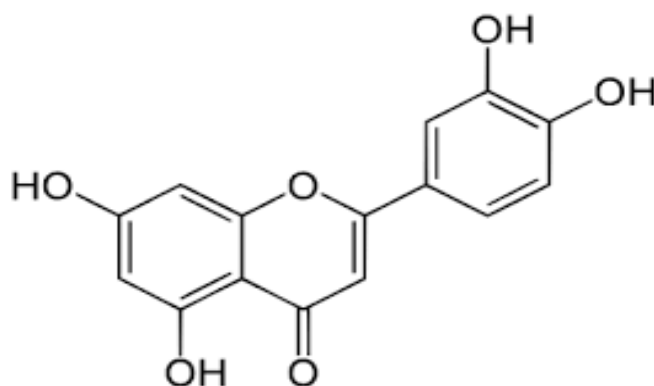


Figure 4: Major Structure of Flavonoids

Triterpenoids

Triterpenoids are one of numerous organic components found in high concentrations in *Eclipta alba*. It includes a wide variety of triterpenoids, which are naturally occurring in plants as glucosides called triterpenoids saponins. The plant yields around 37 triterpenoids. *Eclipta*

alba is home to two forms of triterpenoids—eclalbasaponins and ecliptasaponins—the most dynamic of which are oleanane. Isolated triterpenoids from this plant contain many biological properties, such as anti-fibrotic, antiosteoporotic, hypoglycemic, and cytotoxic effects.

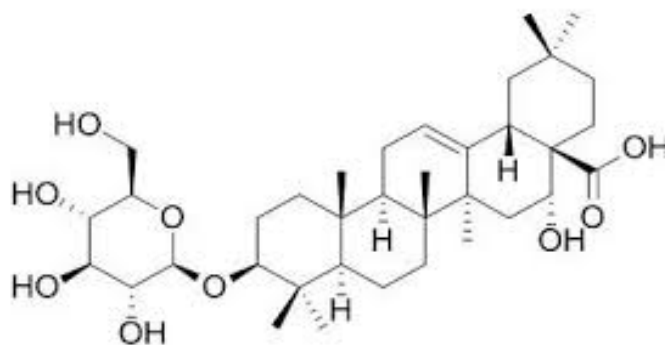


Figure 5: Structure of Eclipta saponin A

Volatile compounds

From the plant's aerial parts, Lin, Xiong-Hao, et al. (2009) extracted 55 different chemicals. By comparing mass spectra with a mass spectra library (NIST 05.L), GC-MS was able to identify the vast majority of the chemical volatiles (91.7% of the total) in their examination. The following were the main volatile components they discovered: 6,10,14-trimethyl-2-pentadecanone (12.80%), heptadecane (14.78%), n-hexadecanoic acid (8.98%), phytol (3.77%), pentadecane

(8.68%), octadec-9-enoic acid (3.35%). Volatile components have a beneficial effect on the main osteoblasts' growth, differentiation, and proliferation.



Figure 6: Structure of Heptadecane

Saponins

Eclalbasaponins: A group of triterpenoid saponins, including eclalbasaponins I-XII and eclalbasaponin XIII.

Ecliptasaponins: Another group of triterpenoid saponins, specifically ecliptasaponin A-D.

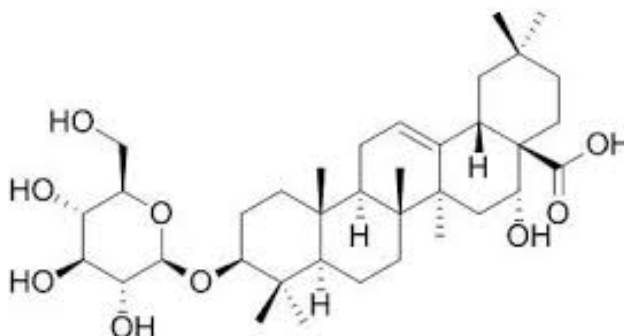


Figure 7: Structure of Eclipta saponin A

Pharmacological Activities:

Neuroprotective effects

Eclipta alba has been the subject of numerous investigations on its potential neuropsychiatric effects in various animal models. The flavonoid luteolin, which is present in this plant, has shown promising results in the treatment of many neurological disorders. In a mouse model of acute pentylenetetrazole-induced convulsions, luteolin isolated from *E. alba* in methanolic solution had anticonvulsant effects. The treatment of epilepsy is another area that this chemical is being considered for. It also helps with traumatic brain injury, diabetes-related cognitive disease[41].

Antivenom properties

The chemical components extracted from *Eclipta alba* have demonstrated remarkable efficacy in counteracting a range of snake bite venoms.

Research by Pithayanukul et al. on this plant's butanolic and pure butanolic extracts revealed its antivenom, hemorrhagic, and phospholipase A2 properties on the *Calloselasma rhodostoma* snake, a species native to Thailand. Another chemical in *Eclipta alba* called wedelolactone has shown antivenom effects against the venoms of South American crotalids and *Agkistrodon contortrix* in a number of other investigations.

Antibacterial effect

There many bacteria that have been shown to be susceptible to the antibacterial effects of chemical components of *E. alba*. Among the compounds isolated from *E. alba*, the two with the strongest antibacterial action were ethanol and ethyl acetate.

Antifungal effect

The saponin fraction, an active component of *E.alba* leaves, has antifungal effects. The

antifungal effects against *Candida albicans* were also demonstrated by another chemical, 25-betahydroxyverazine. *Candida tropicalis*, *Trichophyton* spp., *Rhodotorulaglutinis*, and *Candida albicans* were all inactivated in vitro by *E. alba* extracts[8].

Antimalarial effect

Mice infected with the *Plasmodium berghei* ANKA type of malaria showed encouraging responses to *E. alba* leaf extract, according to an investigation. At 200 ppm, the methanol extract was lethal. This plant may be useful in the battle against malaria due to its larvicidal and ovicidal actions[30]. The methanol extract was lethal to larvae when it was at its peak effectiveness. When tested against *Aedes aegypti*, the methanol extract showed the most effective ovicidal efficacy. The methanol extract was lethal to all organisms (unhatchable) at 300 ppm. All of the extracts had mild adulticide effects. As the concentration of the extracts changed, so did their capacity to ward off mosquitoes.

Hepatoprotective effect

It has been reported that the plant can protect against acute liver damage caused by carbon tetrachloride[3]. Wedelolactone and demethylwedelolactone are examples of coumestans that may contribute to the protective impact on the liver and the prevention of liver diseases. In tests including CCl₄ (carbon tetrachloride), GalN (galactosamine), and phalloidin-cytotoxicity, both chemicals demonstrated antihepatotoxic effects on rat hepatocytes. They also significantly enhanced the regeneration of liver cells. The alcoholic extract of *E. alba* showed good antihepatotoxic activity, as measured by the ratio of albino rats' livers to their body weights, the amount of time pentobarbitone was administered during sleep, the levels of

glutamate pyruvate transaminase (GPT) and glutamic oxaloacetic transaminase (GOT) in their serum, alkaline phosphatase (ALP), and bilirubin. Blood bilirubin, GOT, GPT, and SALP levels were all elevated in CCl₄-treated rats, along with abnormalities in pentobarbitone sleep duration, liver weight, and overall health[2]. When given at a dosage of 200 mg/kg, the alcoholic extract significantly reduced these effects. It may regulate liver microsomal drug metabolising enzyme levels, which in turn exerts its hepatoprotective properties. Through phytochemical analysis, three substances were found in the extract: wedelolactone, luteolin, and apigenin. These compounds inhibited HCV replication in vitro and in cell cultures in a dose-dependent manner. Research suggests that this plant or one of its components may have anti-HCV properties. An ethanol extract of the entire plant was tested in a mouse model of paracetamol-induced hepatotoxicity to determine its hepatoprotective effectiveness.

Antidiabetic effect

In order to determine if an ethanolic extract of *E. alba* could alleviate hyperglycemia and diabetic nephropathy, researchers examined its possible anti-diabetic properties in rats with STZ diabetes. The results demonstrated a 17.6% decrease in blood glucose levels compared to pre-treatment levels following 5 hours of oral administration of 250 mg/kg of the extract[17]. The eye-specific aldose reductase inhibitory activity of the extract was found to be roughly 4.5 µg per mL, while its noncompetitive inhibitory effect on α-glucosidase was approximately 54 µg per mL. Eleclalbasaponin VI was the most effective, having an IC₅₀ value of 54.2 ± 1.3 microM.

Analgesic and anti-inflammatory effect



Experimental studies using albino mice using traditional models of pain response (tail flick, acetic acid-induced writhing reaction, and tail clip) proved that an ethanol extract of *E. alba* whole plants, together with a total alkaloid fraction, had analgesic effects. The ethanol extract and whole alkaloids were determined to have good analgesic efficacy across all pain models in this investigation[7,26]. The entire alkaloid fraction had a stronger analgesic effect than the ethanolic extract. Tests assessing the effects of histamine and serotonin on inflammation, the cotton pellet generated granuloma test, and carrageenan-induced paw oedema were among the models used to evaluate the plant's anti-inflammatory potential in rats[6]. The plant had a robust anti-inflammatory impact. Its potential as a peripheral and central nervous system analgesic is becoming more apparent.

Cardiovascular effect

Mildly hypertensive individuals have been studied to determine the effects of daily administration of 3 g of dried *E. alba* leaf powder. Over the course of 60 days, subjects took three doses of six capsules containing 500 mg of powder daily. Serum vitamin C levels (17%) and tocopherols (23%), as well as urine volume (34% increase), were significantly higher in the *Eclipta* group. Research showed that leaf powder helped hypertensives deal with oxidative stress-related complications and had diuretic, hypotensive, and hypocholesterolemic effects. Isolated frog hearts were tested for cardiac inhibitory activity with an ethanolic extract of *E. alba* leaves and leaf calluses[34]. The extracts reduced cardiac output and exhibited negative inotropic and chronotropic effects. At 20 mg doses, the inhibitory effect on the heart was greater in the callus extract compared to the leaf extract.

Researchers also discovered that the callus extract counteracted adrenaline's effects.

Immunomodulatory effect

Research on the immunostimulatory effects of tilapia (*Oreochromis mossambicus*) fish feeding on an aqueous extract of *E. alba* leaves has been conducted. The fish were given diets containing extract at concentrations of 0.01, 0.1, and 1%. Every week, we checked for disease resistance and nonspecific humoral and cellular responses to *Aeromonas hydrophila*[6,7]. After one, two, or three weeks of feeding fish an aqueous extract, lysozyme activity skyrocketed. Myeloperoxidase concentration and reactive oxygen species generation were both markedly improved following one week of aqueous extract feeding. When exposed to the infection, the percentage of fish that died after consuming the extract also dropped dramatically.

Antiepilepsy effect

The antiepileptic efficacy of *E. alba* leaf powder, which was extracted using methanol, was studied in rats using the Maximal Electroshock Test (MES). One hour after the last treatment, rats were shocked with a 150-mA shock for 0.2 seconds using ear clip electrodes by means of an electroconvulsimeter in order to induce seizures. As a measure of anticonvulsant action, the time of hind leg extension was measured to be decreased. Extensor phase duration was dramatically shortened in rats administered extract at several doses as compared to controls; the magnitude of this impact was dose-dependent. The extract was found to include wedelolactone, luteolin, and β -amyrin, which were found to have antiepileptic properties. Using guinea pigs and mice subjected to pentylenetetrazole and picrotoxin seizure models, researchers investigated the anticonvulsant properties of an ethanol extract



from *E. alba* leaves. Research on the extract's ability to modulate GABAA receptors and its impact on γ -amino butyric acid (GABA) levels in the brains of mice helped to better clarify the process. Researchers believe that the anticonvulsant effect was caused by modulatory actions on GABAA receptors. It was thought that the extract's wedelolactone and luteolin were responsible for the impact. The malfunctioning of GABAA receptors is an important factor in the development of epilepsy. Benzodiazepine (BZD) binding site on GABAA receptors is the one that wedelolactone is said to have a high affinity and selectivity for. Additionally, luteolin binds to the GABAA receptors at the BZD location and has neuroprotective effects.

Anticancer effect

Researchers looked for anticancer effects in a hydroalcoholic *E. alba* extract. The extract inhibited cell growth in a way that was dose-dependent, as shown by the IC₅₀ values of 22 ± 2.9 , 25 ± 3.6 , and 50 ± 8.7 $\mu\text{g/mL}$ for the HepG2, A498, and C6 glioma cell lines, respectively. Extremely low amounts of matrix metalloproteinase 2 and 9 were detected. Additionally, nuclear factor κB (NF κB) expression was shown to be decreased. After 72 hours of extract treatment, DNA damage was identified, leading to apoptosis. Also, the drug-resistant hepatocellular cancer cell line DR-HepG2 demonstrated antiproliferative properties in response to the hydroalcoholic extract of the plant. Researchers discovered that *E. alba* juice prevented the migration of hepatocellular carcinoma S102 (HCC-S102) cells. The migration of all the cell lines that were tested—liver, lung, and breast cancer cells—was decreased by the juice, with IC₅₀ values ranging from 31–70 $\mu\text{g/mL}$. It appears that the plant could have potential as a tool in the battle against the spread

of cancer. Additionally, the antiangiogenic effects of the juice were demonstrated.

Antiulcer effect

The antiulcer action of the methanolic extract of *E. alba* was further demonstrated by its successful treatment of ulcers caused by aspirin, ethanol, or pylorus ligation + aspirin in Sprague Dawley rats that had been fasted for 36 hours. Oral *E. alba* groups showed a markedly decreased rate of gastric ulcer and inflammation compared to control groups in all three studies, even after 4 hours of therapy. Rabeprazole, a medicine that blocks the proton pump, has activity levels similar to those of the extract.

Anthelmintic effect

The anthelmintic potential of a methanol extract of the entire *E. alba* plant was tested at doses ranging from 25 to 100 mg/mL against the earthworm *Pheretima posthuma*. Anthelmintic action against *P. posthuma* was likewise demonstrated by the water and ethanol extracts.

Hair growth promoting effect

The telogen hair growth phase was also used to select pigmented C57/BL6 mice, and the plant extract's capacity to stimulate hair growth during this phase was assessed. The truncal epidermis does not include melanin-producing melanocytes, and melanin synthesis is closely associated with the anagen phase of hair growth in these species.

Anti-hyperlipidemic effect

The albino mice, who are prone to hyperlipidaemia due to dietary fat, were utilised to study the hepatoprotective and antihyperlipidemic effects of *E. alba*. After being administered *E. alba*, hypercholesterolemic mice showed a substantial decrease in serum levels of both LDL & VLDL



cholesterol. *E. alba* significantly improved the markers of SGOT, SGPT, and ALP, which are elevated in high-fat diets.

Antioxidant effect

In various extract solutions, *Eclipta alba* demonstrates antioxidant properties. Research conducted by Karthikumar, S. et al. indicated that the antioxidant activity of hexane, ethyl acetate, ethanol, and water extract varied with concentration, as assessed by ferric thiocyanate (FTC)[11]. The researchers also found that the activity of polyphenols, flavonoids, and flavanone increased strongly with increasing polarity.

Antidepressant effect

This study shows that *Eclipta alba* leaf extract has an antidepressant effect in animal models of depression that is comparable to Imipramine and Fluoxetine. To determine its medicinal value, phytochemical analysis, active ingredient separation, and additional research in this area are crucial.

CONCLUSION

The little, branching annual medicinal plant *Eclipta alba* (L) offers vital characteristics against a number of diseases. Due to the presence of important chemical components for management of numerous infections and diseases, plant has garnered a lot of interest. There may be a treatment for every ailment, but unfortunately, most of them come with worrying side effects. Metabolite treatments derived from *Eclipta alba*, on the other hand, are completely safe because they are all-natural. Various pharmacological activities, such as those with anti-diabetic, anti-proliferative, hypolipidemic, hepatoprotective, antioxidant, anti-epilepsy, anti-cancer, anti-malarial, and other potential medical uses, have

been the subject of clinical trials. Additionally, this plant may be able to prevent the growth of fungi and bacteria to a higher extent. Finally, protecting the planet from economic and environmental losses can be achieved through additional research into the plant, which can pave way for modern medicine by allowing for isolation of novel bioactive molecules. These molecules will aid in investigation of various pharmacological activities aimed at curing incurable human diseases.

REFERENCES

1. Kumari IS, Kaurav HE, Chaudhary GI. *Eclipta alba* (bhringraj): a promising hepatoprotective and hair growth stimulating herb. Asian Journal of Pharmaceutical and Clinical Research. 2021 May 31;14(7):16-23.
2. Kambli S, Khaire P, Kushwaha M. Ayurvedic, Phytochemical and pharmacological information of Bhringraj (*Eclipta alba*): A review. World J. Pharm. Res. 2022 Sep 5;11(15):531-50.
3. Jahan R, Al-Nahain A, Majumder S, Rahmatullah M. Ethnopharmacological significance of *Eclipta alba* (L.) hassk.(Asteraceae). International scholarly research notices. 2014;2014(1):385969.
4. Jadhav VM, Thorat RM, Kadam VJ, Sathe NS. *Eclipta alba* Linn-“kesharaja”: A review. J Pharm Res. 2009 Aug;2(8):1236-41.
5. Mithun NM, Shashidhara S, Vivek Kumar R. *Eclipta alba* (L.) A review on its phytochemical and pharmacological profile. Pharmacologyonline. 2011;1(1):345-57.
6. Chokotia LS, Vashistha P, Sironiya R, Matoli H. Pharmacological activities of *Eclipta alba* (L.). International Journal of Research and Development in Pharmacy and Life Sciences. 2013 Jun;2(4):499-502.
7. Bhalariao SA, Verma DR, Teli NC, Murukate VR. *Eclipta alba* (L): An overview.



- International journal of bioassays. 2013;2(11):1443-7.
8. Boregowda RS, Murali N, Udayashankar AC, Niranjana SR, Lund OS, Prakash HS. Antifungal activity of Eclipta alba metabolites against sorghum pathogens. plants. 2019 Mar 22;8(3):72.
9. Bakht J, Islam A, Shafi M. Antimicrobial potential of Eclipta alba by well diffusion method. Pak. J. Bot. 2011 Dec 1;43:161-6.
10. SollepuraBoregowda R, Murali N, C. Udayashankar A, R. Niranjana S, S. Lund O, S. Prakash H. Antifungal activity of Eclipta alba metabolites against Sorghum pathogens. Plants. 2019 Mar 22;8(3):72.
11. Samson G, Adama H, Roland MN, Nabere O, Martin T, Jeanne MR, Germaine NO. Screening of antioxidant, anti-acetylcholinesterase and antifungal activities and HPLC-MS identification of the bioactive phenolics of Eclipta alba (L.) Hassk. International Journal of Phytomedicine. 2012 Oct 1;4(4):469.
12. Feng L, Zhai YY, Xu J, Yao WF, Cao YD, Cheng FF, Bao BH, Zhang L. A review on traditional uses, phytochemistry and pharmacology of Ecliptaprostrata (L.) L. Journal of ethnopharmacology. 2019 Dec 5;245:112109.
13. Thakur VD, Mengi SA. Neuropharmacological profile of Eclipta alba (linn.) hassk. Journal of Ethnopharmacology. 2005 Oct 31;102(1):23-31.
14. Uddin N, Rahman A, AhmedBhalerao SA, Verma DR, Teli NC, Murukate VR. Eclipta alba (L): An overview. International journal of bioassays. 2013;2(11):1443-7. NU, Rana S, Akter R, Chowdhury AM. Eclipta alba. Int J Biol Med Res. 2010;1(4):341-6.
15. Saxena AK, Singh Mukhopadhyay G, Kundu S, Sarkar A, Sarkar P, Sengupta R, Kumar C. A review on physicochemical & pharmacological activity of Eclipta alba. The Pharma Innovation Journal. 2018 Jul 16;7(9):78-83.
16. Roy RK, Thakur M, Dixit VK. Hair growth promoting activity of Eclipta alba in male albino rats. Archive Mukhopadhyay G, Kundu S, Sarkar A, Sarkar P, Sengupta R, Kumar C. A review on physicochemical & pharmacological activity of Eclipta alba. The Pharma Innovation Journal. 2018 Jul 16;7(9):78-83.s of dermatological research. 2008 Aug;300(7):357-64.
17. Ananthi J, Prakasam A, Pugalandi KV. Antihyperglycemic activity of Eclipta alba leaf on alloxan-induced diabetic rats. The Yale journal of biology and medicine. 2003;76(3):97.
18. Wagner H, Geyer B, Kiso Y, Hikino H, Rao GS. Coumestans as the main active principles of the liver drugs Eclipta alba and Wedelia calendulacea1. Planta Medica. 1986 Oct;52(05):370-4.
19. Jayathirtha MG, Mishra SH. Preliminary immunomodulatory activities of methanol extracts of Eclipta alba and Centellaasiatica. Phytomedicine. 2004 Jan 1;11(4):361-5.
20. Chaudhary H, Dhuna V, Singh J, Kamboj SS, Seshadri S. Evaluation of hydro-alcoholic extract of Eclipta alba for its anticancer potential: an in vitro study. Journal of ethnopharmacology. 2011 Jun 22;136(2):363-7.
21. Kokate CK, Purohit AP, Gokhale SB. Pharmacognosy by CK kokate. NiraliPrakashan. 2001:181-3.
22. Dhaka N, Kothari SL. Micropropagation of Eclipta alba (L.) Hassk—an important medicinal plant. In Vitro Cellular & Developmental Biology-Plant. 2005 Sep;41:658-61.
23. Patel MB, Panchal SJ, Patel JA. Antianaphylactic activity of alcoholic extract

- of *Eclipta alba*. Journal of young pharmacists. 2009;1(3):244.
24. Jaiswal N, Bhatia V, Srivastava SP, Srivastava AK, Tamrakar AK. Antidiabetic effect of *Eclipta alba* associated with the inhibition of alpha-glucosidase and aldose reductase. Natural Product Research. 2012 Dec 1;26(24):2363-7.
25. Swati M, MONALISA J, ABHISEK P. Evaluation of antidepressant activity of *Eclipta alba* using animal models. Asian Journal of Pharmaceutical and Clinical Research. 2013 Aug 1:118-20.
26. Kumar SS, Sivakumar T, Chandrasekar MJ, Suresh B. Evaluation of Anti-Inflammatory Activity of *Eclipta alba* in rats. Ancient Science of Life. 2005 Jan 1;24(3):112-8.
27. Yadav NK, Arya RK, Dev K, Sharma C, Hossain Z, Meena S, Arya KR, Gayen JR, Datta D, Singh RK. Alcoholic extract of *Eclipta alba* shows in vitro antioxidant and anticancer activity without exhibiting toxicological effects. Oxidative medicine and cellular longevity. 2017;2017(1):9094641.
28. Govindarajan M, Karuppannan P. Mosquito larvicidal and ovicidal properties of *Eclipta alba* (L.) Hassk (Asteraceae) against chikungunya vector, *Aedes aegypti* (Linn.)(Diptera: Culicidae). Asian Pacific Journal of Tropical Medicine. 2011 Jan 1;4(1):24-8.
29. Soni KK, Soni S. *Eclipta alba* (L.) an ethnomedicinal herb plant, traditionally use in Ayurveda. Journal of Horticulture. 2017;4(3):1-4.
30. Tambe R, Patil A, Jain P, Sancheti J, Somani G, Sathaye S. Assessment of luteolin isolated from *Eclipta alba* leaves in animal models of epilepsy. Pharmaceutical biology. 2017 Jan 1;55(1):264-8.
31. Upadhyay RK, Pandey MB, Jha RN, Pandey VB. Eclalbatin, a triterpene saponin from *Eclipta alba*. Journal of Asian Natural Products Research. 2001 Jul 1;3(3):213-7.
32. Diogo LC, Fernandes RS, Marcussi S, Menaldo DL, Roberto PG, Matrangulo PV, Pereira PS, França SC, Giuliatti S, Soares AM, Lourenço MV. Inhibition of snake venoms and phospholipases A2 by extracts from native and genetically modified *Eclipta alba*: isolation of active coumestans. Basic & Clinical Pharmacology & Toxicology. 2009 Apr;104(4):293-9.
33. Lunavath V, Mamidala E. Preliminary phytochemical screening and antibacterial studies of the leaves of *Eclipta alba* (L). Int J Pharma Biosci. 2013;4:380-4.
34. Rangineni V, Sharada D, Saxena S. Diuretic, hypotensive, and hypocholesterolemic effects of *Eclipta alba* in mild hypertensive subjects: a pilot study. Journal of medicinal food. 2007 Mar 1;10(1):143-8.
35. Shaikh MF, Sancheti J, Sathaye S. Phytochemical and pharmacological investigations of *Eclipta alba* (Linn.) Hassak leaves for antiepileptic activity. International Journal of Pharmacy and Pharmaceutical Sciences. 2012 Sep;4(Suppl. 4):319-23.
36. Chandra T, Sadique J, Somasundaram S. Effect of *Eclipta alba* on inflammation and liver injury.
37. Franca SC, Bertoni BW, Pereira AM. Antihepatotoxic agent in micropropagated plantlets of *Eclipta alba*. Plant cell, tissue and organ culture. 1995 Mar;40:297-9.
38. Uddin J, Julie AS, Ali MH, Islam MN, Khan SA, Labu ZK. Antimicrobial, thrombolytic, membrane stabilizing activities and total flavonoid content of various partitionates of aerial parts of *Eclipta alba* (L.) Hassk. Dhaka University Journal of Pharmaceutical Sciences. 2015;14(2):207-13.
39. Lenza VA, Morel LJ, Coppede JS, Fernandes VC, Martinez-Rossi NM, Franca SC, Beleboni

- RO, Pereira PS, Fachin A. Antimicrobial activities of ethanol extract and coumestans from *Eclipta alba* (L.) Hassk.(Asteraceae). Latin American Journal of Pharmacy. 2009 Nov 1;28(6):863-8.
40. Kumar V, Das BK, Swain HS, Chowdhury H, Roy S, Bera AK, Malick RC, Behera BK. Immunomodulatory potency of *Eclipta alba* (Bhringaraj) leaf extract in *Heteropneustes fossilis* against oomycete pathogen, *Aphanomyces invadans*. Journal of Fungi. 2023 Jan 21;9(2):142.
41. Bhatia G, Singh J, Nehru B. Neuroprotective effects of hydro-alcoholic extract of *Eclipta alba* against 1-methyl-4-phenylpyridinium-induced in vitro and in vivo models of Parkinson's disease. Environmental Science and Pollution Research. 2021 Feb; 28:9390-406.

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