A Review: Pharamacological and Phytochemical Profile of Eclipta alba (Linn.)

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Abstract:
A comprehensive "herbal renaissance" is taking place as herbs make a retaliation. In compare to synthetic goods, which are observed as being unsafe to both hominids and the environment, herbal goods now represent safety. With a long antiquity of use in old-style medicine, particularly in tropical and subtropical areas, the small, branching annual non-woody plant Eclipta alba. In the traditional eastern systems of herbal medicine and holistic health known as Ayurveda and Unani, the plant Eclipta alba Hassk (Asteraceae) plays a significant role. It has been claimed that Eclipta alba has hepatoprotective, antibacterial, anti-inflammatory, analgesic, immunomodulatory, anti-viral, and promoter properties used for hair growth and blackening. This species has produced a broad variety of biochemical substances, with polyacetylenes, triterpenes, alkaloids, flavonoids, and their glycosides. This paper presents a systematic exploration of the pharmacological outline, biochemical makeup, and ethnomedicinal applications of the plant.

Keywords: *Eclipta alba*, Pharmacological, Hepatoprotective, Asteraceae.

INTRODUCTION:

In health care systems all around the world, conventional drugs are crucial. The use of various therapeutic plant parts and their extracts is essential to the welfare of about three-quarters of the world's inhabitants. *Eclipta alba* (L.) is a wide-ranging and highly valuable medicinal herb in India. It is usually recognized as "King of hairs" and is hepatoprotective medication used in traditional native remedy (Bhalerao, *et al*; 2013).

The majority of therapeutic chemicals are still found in plants. 20,000 different plant species are employed for medical reasons. Chemical research to identify the active components behind their traditional uses led to the discovery of 74% of plant-derived medicines. Therefore, owing to their diverse therapeutic potential, plants, particularly the higher plants, contain a number of chemicals that are beneficial as food additives, fragrances, and in the treatment of various ailments as medication. The active secondary metabolites are model chemicals for the manufacture of pharmaceuticals or have a variety of medical uses (Neeraja, *et al*; 2012).

Eclipta alba, sometimes referred to for example Bhringraj stands a little perennial herbaceous plant with antiquity of traditional medical usage, particularly in humid and semitropical areas of the world. The Asteraceae are its family. It is a widespread natural plant that grows across all of India. It may be found in the Himalayas, where it can reach an altitude of 1800 m, in grazing meadows, along roadsides in Chotanagpur, and in the provinces of Punjab, Western India, South India, Bihar, Orissa. This plant has a variety of medicinal applications, including A well-known hair tonic for preserving black hair and preventing balding is bhringaraj oil. As "king of the hair," it is frequently translated. It is decocted in coconut oil, which is used superficially for "hot" and inflammatory skull conditions including headaches, sinusitis, and ear infections since it is a "Cooling" oil (Mukhopadhyay, *et al*; 2018).

Plant Profile:

Eclipta alba L. The Asteraceae family of plants includes Hassk. (syn. *Eclipta prostrata* L.), often recognized by way of false daisy and Bhringraj. This one is an upright or flat, heavily bifurcated, coarsely bushy, annual plant. Tap root, branching, brown nodes with brown trichomes on them, and herbaceous stem are the characteristics of the root. Sessile to sub-sessile, opposite, rectangle, narrow and tapering to a pointed apex, sharp leaves with fine fur on equally faces, they range in size from 2.2 to 8.5cm elongated and 1.2 to 2.3cm widespread. The heterogamous inflorescence has a flattened receptacle with a thin plumose palea and bracts that are biseriate and companulate involuce (Neeraja, *et al*; 2012).

Figure: Display the *Eclipta alba*

Scientific Classification of plant: (Mukhopadhyay, *et al*; 2018).

Domain	**Flowering Plant**
Kingdom	Plantae
Division	Magnoliophyta
Order	Magnoliopsida
Class	Asterales
Family	Asteraceae
Genus	*Eclipta*
Species	*Eclipta prostata*

Comman Terms: (Mukhopadhyay, *et al*: 2018).

English	Bhringaraj
Sanskrit	Bhringaraj
Hindi	Bhangara, Bhangaraiya
Bengali	Kesuriya, Kesari
Marathi	Karisalai
Tamil	Maka
Telugu	Guntagalagara

False daisy, also known as *Eclipta alba* (Asteraceae), is a perennial herbaceous plant. The shrubberies are reverse, sessile, and lanceolate. This one is an upright or flat annual with many branches and a rough texture. It is also identified by the names Bhringaraj and Karisilakanni and this one is a extensive weed that cultivates up to six thousands feet in altitude throughout india. In many tropical and subtropical locations, including South America, Asia, and Africa, *Eclipta alba* (L.) has been employed. Nearby exist three varieties of *Eclipta alba*, the snowy-blossoming, the beige-blossoming, and the dark-ripening varieties. Altogether three varieties can be found in India beside swamplands, rivers, and ponds or on the slopes of the Himalayas. Hepatic and splenic enlargement benefit from its usage as a tonic and diuretic. Additionally, it is employed in the treatment of skin conditions and catarrhal jaundice. The plant's alcohol extract has demonstrated an antiviral effect against the virus that causes Ranikhet disease. In India, the shrub is frequently used to make hair emollient for long, strong dark hair. Fresh leaf juice is used to stimulate hunger, enhance absorption, and act for instance a moderate bowel controller. This one is frequently cast-off in virus-related hepatitis to boost memory and learning, preserve the parenchyma, and stimulate bile flow. Polyacetylenes, triterpenes, alkaloids, flavonoids, and their glycosides, among many other chemical substances, have all been identified in this species. Wedelolactone, desmethylwedelolactone, furanocoumarins, oleanane, and taraxastane glycosides exist some of the chief active components in coumestans (Mithun, *et al*; 2011).

Many medicinal applications for this plant include for preserving black hair and reversing baldness, bhringaraj oil is a well-known hair tonic. It is frequently interpreted such as "king of the hair." This one is concentrated in coconut lubricant, which is used topically for "hot" and inflammatory skull conditions like headaches, sinusitis, and ear contaminations. The basil is helpful for issues with heat as well. In addition to these uses, *Eclipta alba* is as well used as an alternative, an anti-inflammatory, a hemostat, an antipyretic, a vulnerary, a stimulant, and a hepatoprotective. The leaves have been used to treat scorpion bites, athlete's foot, eczema, dermatitis, and other conditions in ancient Ayurvedic medicine. The leaf extract is also thought to be a potent liver tonic and rejuvenator. Below is a table that lists *Eclipta alba*'s ayurvedic actions (Mukhopadhyay, *et al*; 2018).

Action of *Eclipta alba* in Ayurveda:

Rasayana Refreshing
Medhya fosters intelligence.
Kesya's hair benefits
Dantya is good for your teeth.
Benefits of Tvacya Burning.
Kusthahaghna eliminates skin conditions.
Raktasodhana cleans the blood.
Raktastambhana reduces hemorrhage.
Visaghna eliminates toxins from the physique.
Caksusya is good for your eyes.
Krmighna eliminates worms.
Anemia is lessened by Pandughna (Mukhopadhyay, *et al*; 2018)

Items Used:

Leaves, stem, roots, seeds, and seed oil; the entire plant

Cultivation and collection:

It thrives in moist, swampy areas. By using seeds, it may be readily spread. Stem cuttings were used to try to propagate the Eclipta alba plant vegetatively. After being dipped in an IBA and GA solution for sixty days, the cuttings were planted. The outcomes showed that roots and shoots may be successfully produced at 100 ppm IBA.

Report of Plant parts:

A. Macroscopic

Root- From the primary root, a number of secondary branches with a maximum diameter of 7 mm and a grayish color emerge.
Stem- Herbaceous, branching, sometimes roots at nodes, cylinder-shaped or flat, coarse from snowy hairs being stifled, different nodes, greenish, rarely brownish.
Leaf- With appressed hair on both surfaces, opposed, from directly attached to a base to sub-sessile, 2.0–8.6cm long, 1.3–2.4cm broad, often quadrilateral or lanceolate.
Fruit- One-seeded, cuneate, warty, excrescence-covered achenial cypsella that is brown and has a slender wing
Seed- Shady brown, hairy, nonendospermic, 0.2-0.25cm long, 0.1cm broad.
Flower- Axillary peduncles, either alone or in pairs; oval, thick or acute, herbaceous, strigose, with around 8 involucral bracts; White, toothless, ligulate ray flowers; tubular disc flowers; pappus missing, with the exception of a few sporadic, extremely tiny tusks on topmost of the achene; nearly as long as bracts; Stamen, epipetalous, open filaments, anthers fused hooked on a tube with an acute base; ovary inferior, unilocular, with single basal ovule; pistil bicarpellary (Jadhav, *et al*; 2009).

Phytochemistry:

There are numerous diverse active constituents in *Eclipta alba* (L.), including coumestans, alkaloids, flavonoids, glycosides, and triterpenoids. Wedelolactone, and demethylwedelolactone-7-glucoside are all present in the shrubberies, along with stigmasterol and β-terthienylmethanol. Hentriacontanol and heptacosanol are formed through the roots. Thiophene, replaced with polyacetylene, is establish in the roots. The midair portion of the shrub includes wedelolactone, luteolin-7-glucoside, a phytosterol glucoside, and a glucoside of a triterpenic acid. It also comprises phytosterols, concentrated n-hexane has β-amyrin. On hydrolysis Cystine, glutamic acid, phenylalanine, tyrosine, and methionine are among the polypeptides produced by the plant. This plant contains nicotine and nicotinic acid (Bhalerao, *et al*; 2013).

Coumestan

A chemical substance called coumestan is coumarin's derivative. Numerous plants contain coumestans, including phytoestrogen and coumesterol. Numerous mixtures have been created that enable the production of coumestans so that their pharmacological properties may be investigated due to the estrogenic activity of particular coumestans. Wedelolactone 0.5-0.55% and desmethylwedelolactone are the main coumestans extracted from *Eclipta alba* (Mithun, *et al*; 2011).

Terpenoids and their Glycosides

Four oleanane glycosides, eclalbasaponins I–VI, and four taraxastane triterpene glycosides are discovered. From an extract of n-hexane of the shoot bark of *Eclipta alba*, two oleanane-type glycosides, eclalbasaponin I, as well as the common steroid stigmasterol, were examined. New triterpenoid glucosides called ecliptasaponin C and D have been sequestered from the entire *Eclipta alba* plant. Wedelic acid, ursolic acid, oleanolic acid, and other novel triterpenes have all been discovered (Bhalerao, *et al*; 2013).

Alkaloids

According to the clinical studies, the plant contains the alkaloid ecliptine. Eight bioactive steroidal alkaloids(1–8) were sequestered from the alcoholic(methonal) concentrated *Eclipta alba* consuming three mold strains(1138, 1140, and 1553) under the guidance of bioassays, six of which are described for the first time in nature (Mithun, *et al*; 2011). The chief alkaloid recognized as Ecliptalbine, which contained a 3-hydroxypyridine moiety in place of the 22,26- imino ring of verazine, displayed similar bioactivity to verazine (Mithun, *et al*; 2011).

Volatile oil

By using hydrodistillation to separate the volatile components from this plant's aerial parts, GC-MS analysis was used to determine their composition. By comparing mass bands with a mass band library (NIST 05.L), an entire of 55 compounds—the majority (91.7%) of the volatiles—were discovered (Jaglan, *et al*; 2013).

Saponins

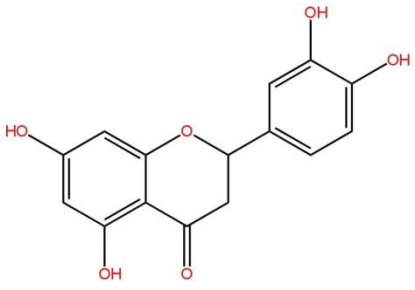
α-amyrin, Ursolic acid, Oleanolic acid, and a novel triterpene saponin known as eclalbatin were all extracted from the complete *Eclipta alba* plant. Dasyscyphin C was extracted from *Eclipta prostrate* and tested for anticancer efficacy using HeLa cells (Jaglan, *et al*; 2013).

Bioactivity

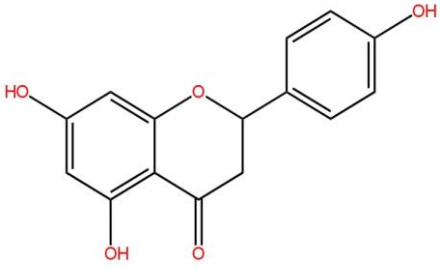
Folk and traditional medicine utilize the herb *Eclipta alba* to treat infectious disorders like cirrhosis. It is thought to stop aging and revitalize memory, sight, hearing, hair, teeth, and bones. Significant insecticidal and antifungal activities of the plant were well established. Two subheadings are used to discuss the plant's biological characteristics: (i) pharmacological qualities, (ii) insecticidal properties, and (iii) additional biological characteristics (Mithun, *et al*; 2011).

Table1. Part Containing Chemical Constituents of *Eclipta Alba*

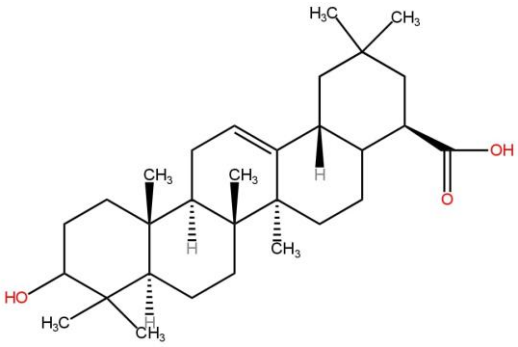
Type of Chemical	**Active Principles**	**Parts in which present**
Coumestan	Wedelolactone, demethylwedelolactone,	Whole plant
Terpenoids and their glycosides	Eclalbasaponins, α-Amyrin, oleanolic acid, ursolic acid	Stem bark
Sterols	Daucosterol, Stigmasterols	Whole plant
Alkaloids	Verazine, Ecliptalbine	Whole plant
Flavonoids	Luteolin-7-glucoside, luteolin, apigenin	Whole plant
Volatile oils	Heptadecane, pentadecane, phytol	Aerial parts
Saponins	Eclalbatin (triterpenesaponin), dasyscyphin C	Whole plant



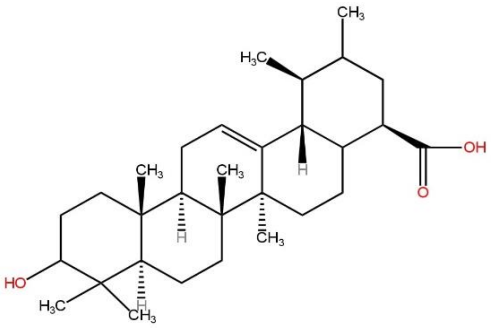
Luteolin



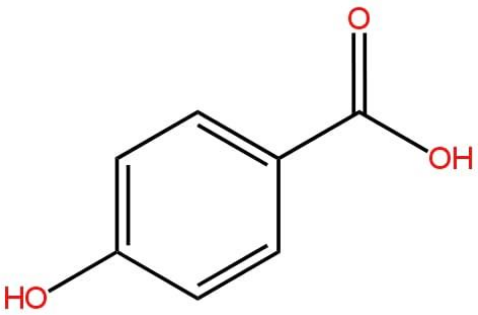
Apigenin



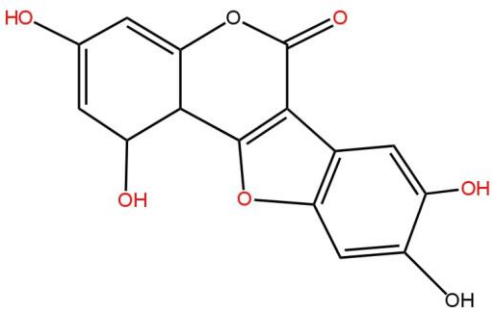
Oleanolic acid



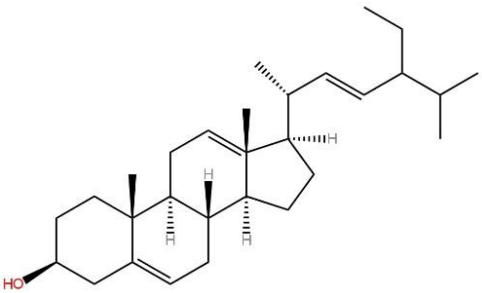
Ursolic acid



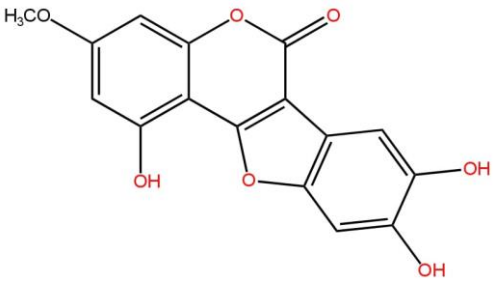
4- Hydroxy benzoic acid



Demethylwedelolactone



Stigmesterol



Wedelolactone

Pharmacological Evaluation:

Hepatoprotective activity:

The hepatic microsomal drug metabolizing enzymes were inhibited by CCl4 because of Eclipta alba, which effectively reversed this effect. *Eclipta alba* effectively reversed the effects of CCL_4 on the depletion of alkaline phosphatase. The study demonstrates that *Eclipta alba* liver protecting action is accomplished by controlling the level of liver microsomal drug processing enzymes. Significant action in lysosomal enzyme reduction was seen in the alcohol(methanol) abstract of the shrubberies and a chloroform abstract of the root of *Eclipta alba* (Bhalerao, *et al*; 2013).

Anti-hyperlipidemic activity:

According to reports, the hydrophilic leaf abstract of *Eclipta alba* was effective in the atherogenic diet-induced hyperlipedema model. Rats were administered prostrata orally, which drastically decreased total cholesterol, triglycerides, and total protein. The levels of highly-density lipoprotein increased significantly. When linked to 150mg/kg of extract, 250mg/kg had greater results. Charles River Sprague - Dawley CD rats (specific pathogen-free 180g) were nourished investigational foods accompanied with 0 mg (control), 25mg, 50mg, or 100mg of a freeze-desiccated butanol fraction of *Eclipta prostrata* per kg of diet for six week, in which the E50 and E100 groups, as related to the control group, showed a substantial decrease in serum triacylglycerol and entire cholesterol, as well as an rise in high-density lipoprotein (Mithun, *et al*; 2011).

Pain-relieving and Anti-inflammatory action:

Rats and mice were castoff in tail riffle method, warm plate method, and wriggling experiments to assessment the pain-relieving efficiency of an alcoholic abstract of *Eclipta alba*. The abstract presented a strong analgesic and antinociceptive effect in altogether three techniques at a dose of 300 mg/kg. Using established experimental paradigms for example the tail pin technique, tail riffle technique, and ethylic acid made wriggling reaction, experiments with albino mice revealed the painkilling effectiveness of an ethanol abstract of *Eclipta alba* entire plant as fine as whole alkaloid fraction. The findings of this investigation demonstrated that in all of the several analgesia models examined, both the alcoholic abstract and the whole alkaloids generated a decent pain-relieving effect.

Carrageenan, mediators including histamine and serotonin that cause foot oedema, and cotton pellets that cause granuloma were used to assess the plant's anti-inflammatory effects on both acute and chronic segment swelling models in rats. The findings showed that the plant had strong anti-inflammatory action in each of the evaluated animal models. Overall, the studies imply that the plant may be useful as a central and peripheral analgesic (Jahan, *et al*; 2014).

Anti-diabetic action:

Oral administered of *Eclipta alba* greenery suspension at 3 and 4g/kg reduced blood glucose levels and glycosylated hemoglobin in diabetic rats caused by alloxan. Fructose 1,6-bisphosphatase and glucose-6-phosphatase activities were both compact, but liver hexokinase activity was elevated. *Eclipta alba* for example a component in a multiherbal preparation Pan-five was methodically and scientifically confirmed to contain anti-diabetic and diuretic action by working upon the pancreas via refurbishment and rejuvenation of pancreatic β-cell action (Mithun, *et al*; 2011).

Hair growth and alopecia:

A popular ayurveda basil for hair development is *Eclipta alba*. In the study, petroleum ether and alcoholic extract were added to oleaginous ointment (a W/O cream base) and administered topically to albino rat hairless, stripped skin. The number of days desired for the start and end of the hair growth cycle were noted. As a positive control for comparison, a topically administered 2% minoxidil solution was used.

The outcome of the 2% and 5% petroleum ether abstract treatments was superior to the positive control minoxidil 2% treatment. Since it encourages hair development and keeps hair dark, *Eclipta alba* is utilized in hair lubricant formulations. 15% w/v of *Eclipta alba* was a key component in the creation of a herbal fur growing product.

Anti-cancer activity:

Eclipta alba's methanolic extract effectiveness in contradiction of Ehrlich Ascites Carcinoma was examined in mice. Starting on day 1 and continuing for nine days straight, *Eclipta alba* extract was orally administered in dosages of 200 and 500 mg/kg body mass. tumor size, tumor cell sum, viable and non-viable tumor cell sum, mean existence time, and increase in life duration in investigational animal representations were used to investigate the anticancer efficacy. In comparison to EAC-bearing animals, the abstract lengthened the life expectancy period of EAC preserved mice and reinstated the hematological domain. Thus, research indicated that the evaluated animal models for *Eclipta alba*'s methanolic extract showed anticancer efficacy. A more recently identified chemical from *Eclipta prostrata* called dasyscyphin-C (saponins) has been shown to exhibit anticancer and cytotoxic activities in HeLa (human cervical carcinoma) and Vero cell outlines at a dose of 50g/ml (Mukhopadhyay, *et al*; 2018).

Immunomodulatory activity:

According to reports, *Eclipta alba*'s immunomodulatory effects may be responsible for the defense of neuronic tissues. As a result, *Eclipta alba* has the capacity to modulate memory. A fish (tilapia, *Oreochromis mossambicus*) was fed an water based leaf extract of *Eclipta alba* at various concentrations as a meal for three weeks. *Aeromonas hydrophila* reactions that are non-specific in terms of humoral (lysozyme, antiprotease) and cellular (building of reactive oxygen and nitrogen species, myeloperoxidase concentration) as well as disease resistance, were detected after each week. It caused the immune system's nonspecific characteristics to become more active. The findings show that consumption of *Eclipta alba* aqueous leaf abstract improves innate immune reactions and disease resistance in *Oreochromis mossambicus* against *Aeromonas hydrophila* (Bhalerao, *et al*; 2013).

Anti-oxidant activity:

When 100mg/kg and 150mg/kg doses of *Eclipta prostrata* were assumed orally to Charles River Sprague-Dawley rats, anti-oxidant properties were observed. These doses decreased blood hydroxyl radical (nmol/mg protein/minute) and serum lipid peroxide (nmol/mg protein) stages in contrast to the raw group. The carbonyl concentration of proteins that had undergone oxidative modification was dramatically decreased by 100 mg/kg dose. FRAP, radical scavenging activity, reducing activity were used to analyse the anti-oxidant action of the plant *Eclipta prostrata*. The concentration of the extract was raised from 35 to 100mg/ml, which improved their anti-oxidant ability. Using ferric thiocynate (FTC), the anti-oxidant action of *Eclipta prostrata* extract in hexane, ethanol, and water was assessed (Jaglan, *et al*; 2013 and Mithun, *et al*; 2011).

Neuropharmacological activity:

The calming, muscle-relaxing, anti-anxiety, nootropic, and anti-stress belongings of the aqueous and hydro-alcoholic extract of *Eclipta alba* must be examined at dosages of 100 and 300mg/kg, orally. The outcomes displayed that the aqueous abstract (350mg/kg p.o.) and its hydrolyzed fraction (40mg/kg p.o.) have cognitive properties. For its potential to improve memory, the aqueous abstract of *Eclipta alba* leaves has been considered. Rats were given doses of 100mg and 200mg of abstract miscible in water (per kg of body mass) to test relocation latency in a raised plus maze. To test spatial habitual learning using this approach, mice were positioned in the central of an open-field apparatus. Rearing was watched for 20 minutes, then for 30 minutes, 24 hr, 96 hr, and 144 hr. Rat transfer latency and mouse rearing levels were both significantly reduced by the extract at both dosages. As a result of the existence of luteolins in the extract, the results show that the extract has an ameliorating effect on cognitive functioning. A rat model of alzheimer's disease that assesses short-range memory exhausting an raised plus maze has validated that a alcoholic(methanol) abstract of the whole *Eclipta alba* plant can reduce oxidative stress-induced mitochondrial dysfunction. The MTT[3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] test was cast-off to analyse mitochondrial function. At a concentration of 200mg/kg, the extract avoided the substantial decline in MTT reduction seen in the synaptosomal fractions of rats treated with scopolamine hydrobromide. In rats, scopolamine considerably lengthened the transfer latency, which is an indication of memory loss or amnesia. The extract also dose-dependently reduced the rats transferal expectancy in the raised plus maze paradigm, reversing the increase caused by scopolamine and exhibiting an improvement in memory. High phenolic and flavonoid content was present in the abstract, which may have helped to reduce oxidative stress (Jahan, *et al*; 2014).

Anti-microbial activity:

Anti-bacterial- It has been shown that the chemicals derived from *Eclipta alba* have decent efficacy contrary to *Salmonella typhimurium* and *Staphylococcus epidermidis* (Bhalerao, *et al*; 2013).

Antifungal- The active chemical 25-β-hydroxyverazine exhibited excellent effectiveness contrary to *Candida albicans*. In vitro anti-fungal action of *Eclipta alba* abstract was tested in contradiction of fungi *Candida tropicalis* and *Candida albicans* (Bhalerao, *et al*; 2013).

Antimalarial- Mice were used to examine the Antimalarial effectiveness of *Eclipta alba* leaf abstract contrary to the *Plasmodium berghei* strain. In early and established infections, the alcoholic leaf extract (250–750mg/kg) had dose dependent schizontocidal activity and high mean existence times values, especially in the group given 750mg/kg/day of extract. Related to benzene, ethyl acetate, and chloroform extract, the methanol extract of *Eclipta alba* leaves allegedly displayed the greatest adulticidal as well as repellant actions against *Anopheles stephensi* (Jahan, *et al*; 2014).

Anti-ulcer activity- Numerous sore models in rats, containing icy resistant pressure and pylorus association, have been used to test the anti-ulcer properties of the alcoholic abstract of *Eclipta alba*.

It was exposed that the extract substantially and dose-dependently decreased ulcerative lesions when given orally twice daily at dosages of 50mg/kg, 100mg/kg, and 200mg/kg. At the same time, abstract admonishing bring about in a significant decrease in lipid peroxidation and an rise in catalase action. When related to the normal (animal without the abstract), the abstract significantly reduced stomach volume, increased gastric pH, and produced significantly less acid (Jahan, *et al*; 2014).

Antihelminthic activity- At dose of 20–100mg/mL, the methanolic abstract of the entire *Eclipta alba* plant was tried for its antihelminthic efficacy in contradiction of the earthworm *Pheretima posthuma*. At dosages of 50mg/ml, 75mg/ml, and 100mg/mL, the extract caused worms to become paralyzed, and at 75 and 100 mg/mL, it killed them. Additionally, the ethanol and aqueous extracts have shown anthelmintic efficacy compared to *Pheretima posthuma* (Jahan, et al; 2014).

Snake bite- The Phospholipase-A2 action of Crotalus durissus terrificus venom has been demonstrated to be inhibited by extracts of E. alba. The coumestans, wedelolactone, found in the extract are responsible for the inhibitory action (Jahan, et al; 2014).

Cardiovascular effect: In mildly hypertensive patients, the effects of the daily ingestion of 3 g of dried E. alba leaf powder were researched. Six capsules (each containing 500 mg of powder) were administered to subjects over the course of 60 days in three doses. The Eclipta-supplemented group significantly reduced mean arterial force by (15%), entire cholesterol by (18%), low density lipoprotein(LDL) fraction by (24%), very low density lipoprotein(VLDL) fraction by (14%), and plasma lipid peroxides by (18%) when compared to placebo-administered control groups. Urine volume (35%), urine salt (25%), serum Vitamin-C (15%), and serum vitamin-K (23%) all increased significantly in the *Eclipta* treated group. The results showed that greenery powder has diuretic, hypotensive, and hypocholesterolemic qualities and aids in reducing difficulties in hypertensives brought on by oxidative stress (Jahan, *et al*; 2014).

Proteolytic and hemorrhage activity- Wedelolactone which were extracted from *Eclipta alba*, showed potent trypsin inhibiting activities. Wedelolactone and the partly cleaned ethyl acetate extract of *E. prostrate* showed potent anti-proteolytic and anti-hemorrhagic efficacy compared to Malayan Pit Viper venom in a dose reliant manner.

Phytochemical screening of *Eclipta alba* extract: (Mukhopadhyay, *et al*; 2018).

Detection of Phytosterol-

Libermann Burchard- Test 1ml of chloroform was used to soften 10 milligrams of extract. After adding 2 ml of strong sulphuric acid, 1ml of acetic anhydride was mixed, and a fuchsia purplish-blue colour appeared, suggesting the existence of steroids.

Salkowaski test- 10mg of the extract were liquified in 1ml of chloroform, and then 1ml of strong sulphuric acid was mixed. The chloroform layer had a reddish-blue hue, while the acid layer fluoresced green, representative the existence of steroids.

Detection of Triterpenoids-

Nollar's test- thionyl chloride solution was add in two milliliters of 0.02% anhydrous stannous chloride, together with the test solution, were mixed to the test tube. After a few minutes, the initially purple color transformed to a deep crimson, signifying the existence of triterpenoids.

Detection of Flavonoids-

Shinoda test- Magnesium turn-offs and then concentrated muriatic acid were mixed to the extract. The result was a red color.

Detection of Alkaloids-

Mayer's test- A test tube was filled with 1.2ml of the extract. Mayer's reagent and 0.2ml of weak hydrochloric acid were also added. An alkaloid test is positive when a golden buff colored precipitate forms.

Dragendroff's test- In a test tube apparatus occupied with a two ml solution of extract, 0.1ml of diluted muriatic acid(HCL) and 0.1ml of Dragendroff reagent were mixed. Precipitation of an orange-brown color revealed the existence of an alkaloid.

Detection of Protein and Amino acid-

Ninhydrin test- Ninhydrin (tri-keto hydrindene hydrate) was applied to the extract solution at a pH range of 4 to 8. A good reaction to amino acids was demonstrated by the development of a purple color.

Detection of glycoside-

Borntrager test- A limited milliliters of weak sulfuric acid were mixed to the test solution. boiled, filtered, and chloroform was used to extract the filtrate. After adding ammonia to the organic layer, which had been separated, an inorganic layer with a pink-red hue was created.

Keller-Killiani test- The taster was liquified in acetic acid(CH_3COOH) comprising a drop of ferric chloride($FeCl_2$) and shifted to the exterior of concentrated sulfuric acid. At the intersection of rust or cinnamon color was created, which eventually became indigo.

Detection of Saponin-

Foam test- 20ml of purified water were mixed to a 1 ml solution of the extract, which was then agitated dynamically for 15 minutes in a graduated cylinder. Saponins were likely existing, according to the development of constant foam.

Potassium dichromate test- 1ml of extract was cured with a 1% lead acetate mixture. The development of a silvery precipitate indicated the being there of saponin.

Detection of phenolic compound and tannins-

Ferric chloride test- 1ml of a 4% ferric chloride($FeCl_2$) solution and 5 ml of the extract solution were given time to react. The presence of tannins was revealed by the greenish black color.

Potassium dichromate test- 1ml of 10% aqueous potassium dichromate solution was mixed to 5ml of the abstract for treatment. The development of a yellowish-brown precipitate revealed tannins were present (Mukhopadhyay, *et al*; 2018).

Conclusion:

A tiny, branching herbaceous medicinal plant called *Eclipta alba* (L.) has considerable therapeutic benefits for treating a number of ailments. A remarkable action for treating a variety of ailments is provided by *Eclipta alba*. It is frequently used as a medication to treat conditions including inflammation of the stomach lining, icterus, xeropthalamia, enlargement of the spleen and liver, etc. It has various spectrum of biological components. Medical studies have been conducted on therapeutic actions such hepatotoxicity, diabetic, hypolipedemic, etc. The wide variety of bioactive substances, including glycosides, coumestans, flavonoids, triterpenoids, and alkaloids etc. Future investigations on the standardization and stability of *Eclipta alba* extract can serve to demonstrate that it is a potential source in the neutraceutical and pharmaceutical industries.

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