



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 11, Issue 9, September 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.118

 9940 572 462

 6381 907 438

 ijirset@gmail.com

 www.ijirset.com

Pharmacognostic Interpretation of Marker Compounds and Medicinal Review of Aerial partsof *Asteracanthalongifolia* (L.) Nees.

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ABSTRACT: *Asteracanthalongifolia* (L.) Nees., also known as *Hygrophilaauriculata* and frequently called "Neermulli, Talmakhana, Kokilaksha&Iksura," is a common plant that grows in marshy and waterlogged places. It is a member of the Acanthaceae family. The plant is a significant medicinal herb that is found throughout India and is employed for a variety of therapeutic applications. The Ayurvedic medication "Kokilaksha" and the Unani drug "Talimakhana" come from the family Acanthaceae. The plant's aerial portions, which are used to treat blood diseases, are aphrodisiac, bitter, tonic, sedative, antitumor, hypoglycemic, aphrodisiac, antibacterial, free radical scavenging and lipid peroxidation, hepatoprotective, and haematopoietic activity of the plant are all known properties. Lupeol, stigmasterol, butelin, fatty acids, and alkaloids are among its constituents. In some over-the-counter (OTC) formulations for liver disorders and those that are prescribed by general tonic, it is also utilized commercially as an ingredient. The plant *Asteracanthalongifolia* has been shown to have a wide range of substances. In the current work, phytoconstituents were isolated and purified from *Asteracantha. Asteracanthalongifolia's* aerial portions as a marker by utilizing column chromatography, gradient elution with several mobile phases, and silica gel as the stationary phase, phytoconstituents were isolated. Fatty acids and lipids were separated from petroleum ether fractions using gas chromatography. Gas chromatography was used to separate four fatty acids. The substances are, in order, palmitic acid, stearic acid, oleic acid, and linoleic acid.

KEY WORDS: Antibacterial, Aphrodisiac, Haematopoietic, Hepatoprotective, Hypoglycemic.

I. INTRODUCTION

The Kokilaksha plant is an annual herb that can reach a height of 60 cm. The nodes of the plant stem are thickened, square, and hairy. The leaves are hispid, elliptic-lanceolate, and have a dark brown bark. This herb has violet and somewhat purple-blue blooms. The fruit is oblong, linear, glabrous, and measures about 1 cm in length. It contains brown, hairy, spherical seeds. (MukherjeeP.2002)





LEAF: The leaf has a very pronounced midrib and is dorsiventral, smooth, and even. In a sectional view, the midrib is Plano convex, with a flat adaxial side and a wide semicircular abaxial side. The midrib measures 1 m in the horizontal plane and 750 m along the median vertical plane. The epidermis is substantial in the adaxial portion, with squarish cells and a pronounced cuticle. There are around three layers of tiny collenchyma cells below the epidermis. There are four or five layers of broad, thin-walled parenchyma cells below the collenchyma. The midrib's abaxial portion possesses an epidermis that resembles that of the adaxial side. These collenchyma layers may be one or two layers deep within the abaxial epidermis. Parenchyma cells with large, compact, thin walls make up the residual ground tissue. The vascular bundle has a single cross-section that is oval. It is 350 meters long and 150 meters tall. It is made up of 8–10 parallel rows of narrow, angular xylem components with thin walls. Along the abaxial side of the xylem, phloem appears as a thin sheath. On the adaxial section, there are two tiny, less noticeable circular supplementary strands. They are round and contain a little nest of phloem and a group of xylem cells. VliethinkA.2001[12]

STEM: The stem has a large arenchymatous cortex and a roughly four-angled stele in sectional view. The epidermis is delicate and barely noticeable. Small, tightly packed, squarish parenchyma cells that are radially aligned make up the four to five layers that make up the outer cortex. This area is consistently 150 m wide. Reticulate layers of small arenchyma cells create the much bigger, circular air chambers that are roughly five rows across that make up the inner cortex. The stele has two smaller bundles placed across from each other and four thicker, semicircular bundles at each of its four corners. A slender cylinder of compact, tiny xylem components connect the bigger and smaller bundles. The radial rows of xylem vessels, thin arcs of phloem, and thick xylem fibers make up the collateral vascular bundles. The pith cells are rounding, less dense, and have thin walls, whereas the pith is broad and parenchymatous. IndiaWo.A;2002.[3]

ROOT: The root comprises two layers of tangentially oblong, compact outer cortex on top of an intact, continuous rhizodermis (epidermis). Wide arenchymatous describe the inner cortex. Thin, uniserate partition filaments comprised of parenchyma cells with thin walls generate large, radially elongated air chambers. Some of the partition cells are rectangular, dilated, and have thick walls. A thin endodermal layer and a pericyclic layer are present on the vascular cylinder. Five exarch threads make up the xylem, which also has a few large angular vessels between them. The major xylem strands alternate with five tiny groups of phloem. Sharma P., 2002[4]

The herbal medications naturally contain a variety of chemical substances. Those substances, referred to as active ingredients, that have a therapeutic impact must be distinguished from other substances. There are numerous instances where the active ingredients of the pharmaceutical preparations differ somewhat from those of the raw medications, which might advance desired effect. It is evident to employ isolated active ingredients because they have a consistent and distinct physiological effect. So many of the active ingredients are yet unknown. Therefore, isolating the components and using them in formulations will increase the activity.

DISTRIBUTION: *Asteracanthalongifolia*(L.) Nees. found in Malaysia, Myanmar, Indonesia, Sri Lanka, and other countries throughout the world In India's plains, in moist environments like the marshy margins of canals, and in the tropical Himalaya, VliethinkA 2001[12]; Kirtikar, K. R. & Basu, B. D. 1999 [22], and a few terra firma areas in Maharashtra.

1. Taxonomic classification Nagendra Singh et al., 2010[9]

Class: Equisetopsida C. Agardh

Subclass: Magnoliidae Novák ex Takht.

Superorder: Asteranae Takht.

Order: Lamiales Bromhead

Family: Acanthaceae Juss.

Genus: *Asteracantha* Nees

Species: *Asteracanthalongifolia* (L.) Nees

II. METHODOLOGY

SEPARATIONS OF BIOLOGICALLY ACTIVE COMPOUNDS: It is possible to separate distinct and biologically active components ones that can be used as ingredients in the contemporary medical system through the process of

isolation, which is a component of natural product chemistry. The chemical components of natural medications are separated, isolated, and purified using column chromatography. Anonymous 2003[1]

PREPARATION OF THE PLANT EXTRACT: Plants of the *Asteracanthalongifolia* species were gathered in the Galle district of Sri Lanka's southern region. By comparing the sample to a herbarium specimen kept at the National Herbarium in the Botanical Gardens in Peradeniya, Sri Lanka, the sample's authenticity was confirmed. The Department of Biochemistry at the University of Ruhuna in Sri Lanka received a voucher specimen. (R. P. Hewawasam, et al 2003). Small sections of *Asteracantha* plants were cut up and dried for two days at 40 degrees Celsius. The dose was estimated to mice using the standard therapeutic dose for humans (Dhawan & Srimal 1998). After being refluxed in 30 mL of distilled water for an hour, 2.625 g of the dry plant material was concentrated to 20 mL. A dose of 0.9 g kg⁻¹ was given orally into each mouse. The dried herb was used to make the extract each day.

A. longifolia aerial parts were gathered in Hassan District, Karnataka State, dried for 10 days in the shade, ground up, and kept in up until the processing of the extract, in an airtight container. 100g of the powder were combined with 1000 ml of petroleum ether, which was stored for five days and periodically utilizing an electric shaker to shake. In five days, Whatmann Filter Paper No. 1 was used to filter the contents and a rotary flask was used to further concentrate it. at 39–40 °C in an evaporator (Superfit India Ltd., Mumbai). After storing the remaining ether at room temperature, extract in a petri dish at 60°C in a vacuum oven the 25 psi pressure. Next, the extract was weighed. For yield calculation and storage in an airtight container. Santosh Kumar *et al.* 2014[15]

The Dehradun Hills in Uttarakhand provided the *Asteracanthalongifolia* aerial pieces. A herbal medicine is a plant-based medicinal preparation that can be either a more advanced version of the herb, typically created through extraction using a solvent like water or an organic solvent, or a fresh, dried, or powdered herb or seed (e.g., methanol, ethanol). Standardized extracts are a common name for such sophisticated herbal formulations, which are frequently treated in a way that establishes relatively defined parameters. The aerial components were broken. Aerial sections were placed into a Soxhlet device, and extraction was carried out for 48 hours, or until the powder was completely depleted. After the extraction was finished, the solvent was recovered using distillation, and the leftover material was then evaporated over a water bath to produce a solid mass. The extract was then used for HPTLC research. Studies using HPTLC were conducted on the solvent solution that exhibits the best separation in TLC. steadfast phase Aluminum TLC plates with pre-coating and mobile phase Ethyl acetate, GAA, methanol, and toluene (3:4:1:3). R.N. Chopra., 1986[17].

COMPOSITION OF *ASTERACANTHA LONGIFOLIA*

THE LEAVES CONTAIN: The aliphatic esters 25-oxo-hentriacontanylacetate and methyl 8-n-hexyltetracosanoate, Butelin, Lupeol 0.051% , Stigmastero and β -sitosterol (0.069%) (The Ayurvedic Pharmacopiea of India. 1999)

THE STEMS CONTAIN: Lupeol 0.121% P.C. Sharma 2002[4], β -sitosterol 0.029% P.C. Sharma 2002[4]

THE ROOTS CONTAIN: Lupeol (0.25% dry weight) P.C. Sharma 2002[4], β -sitosterol 0.06% P.C. Sharma 2002[4], In a preliminary qualitative analysis of the compounds in *Asteracanthalongifolia* leaves the classes of steroids, saponins (0.68 +/- 0.12%), tannins (4.92 +/- 0.18%), Phenolics (0.16 +/- 0.10%), and cardiac glycosides were found while terpenoids, alkaloids, and flavonoids were absent. along with this, in the quantitative analysis there was an estimated alkaloid (1.14 +/- 0.14%) and flavonoid (0.24 +/- 0.19%) content searched in Anonymous. 2003[1].

THE SEED CONTAIN: A seed oil containing linoleic acid (11%), palmitic acid (8%) and stearic acid (0.6%) India Wo. A 2002[3], Asterol I-IV. R.N. Chopra 1986[17], Asteracanthine and steracanthinine (alkaloids) (Mukherjee P. 2002; R.N. Chopra 1986[17]), Lupeol 0.044%, β -sitosterol 0.031%. P.C. Sharma 2002[4]

PHYTOCHEMICAL SCREENING OF *ASTERACANTHA LONGIFOLIA* (Doss A, 2009). Fresh plant materials were cleaned with running water, allowed to air dry, then homogenized to a fine powder and stored in airtight containers. A conical flask was filled with 100 ml of water, 25 g of air-dried powder, and cotton wool. The mixture was shaken at room temperature for two days. The supernatant was collected after two days and the solvent evaporated to reduce the final volume to one-fourth of the initial volume before being stored in sealed bottles at 4°C. The mixture of



25 g of air-dried powder and 100 ml of methanol was placed in a conical flask, plugged with cotton wool, and shaken for two days at room temperature. The solvent was removed from the supernatant after two days, reducing the final volume to one-fourth of the initial volume, and it was then stored at 4°C in airtight bottles. G.V.Satyavati 1976 [18]; L.V. Asolkar 1992 [2]

S.No.	Phytochemicals	Methanol	Aqueous
1	Carbohydrate&Glycoside	Present	Present
2	Protein&Aminoacids	Present	Present
3	Saponins	Absent	Present
4	Steroids	Present	Absent
5	Alkaloids	Present	Absent
6	Anthraquinones	Absent	Absent
7	Flavonoids	Present	Present
8	Terpenoids	Absent	Absent
9	Phenoliccompounds	Present	Absent
10	Tannins	Present	Present

COLUMN CHROMATOGRAPHIC STUDIES: The hydro alcoholic extract was submitted through column chromatographic analysis employing several solvent systems. In column chromatography, silica gel 100–200 was utilized as the stationary phase to separate components. Glass columns were used for the column chromatography process. The column was packed with silica gel 100–200 using the wet packing method, which involves placing a layer of glass wool at the bottom of the column and then filling it with the lowest polarity eluting solvent (Petroleum ether). To create a bed of silica, the needed volume of stationary phase (Silica) was then poured into the column. The solvent eluted and raised to the top of the bed. A layer of glass wool was added on top of the extract after it had been adsorbed in silica gel, and more solvent was poured over it. The column was then run using the gradient elution technique.

Column	BPX-70
Column description	30 meters x 0.25 μm I.D x 0.25 μm
Carrier gas	Nitrogen at 1 ml/minute
Detector	F.I.D
Injector	Split ratio 1:20
Oven temperature	120°C held for 4 minutes and ramp 5°C/minute to final temperature 230°C and held for 5 minutes at 230°C.
Injector temperature	250°C
Detector temperature	275°C

Spectroscopic analysis of the isolated compounds

Solvent system	Visualization
1. Pet. Ether: ethylacetate (8:2)	UV at 254 nm, 366 nm, ANS spray and I ₂ Chamber
2. Pet. Ether: ethylacetate (7:3)	UV at 254 nm, 366 nm, ANS spray and I ₂ Chamber
3. Ethylacetate: methanol (6:4)	UV at 254 nm, 366 nm, ANS spray and I ₂ Chamber
4. Ethylacetate: methanol (5:5)	UV at 254 nm, 366 nm, ANS spray and I ₂ Chamber
5. Ethylacetate: methanol (7:3)	UV at 254 nm, 366 nm, ANS spray and I ₂ Chamber

STANDARD PREPARATION: Place 25 mg of each free fatty acid (palmitic, stearic, oleic, linoleic, and myristic) separately in a round flat-bottomed flask with a capacity of 250 ml, then dissolve in methanol.



SAMPLE PREPARATION: A 250 ml round, flat-bottomed flask with a flat bottom was filled with precisely weighed 100 mg of sample, to which 5 ml of a solution of sodium hydroxide in methanol (2 percent w/v) was added. The etherification process was then performed, including a 15-minute reflux at 800°C.

REAGENT USED:

Sodium hydroxide: 2g/l in methanol

Sodium chloride solution: saturated aqueous solution (26% w/v) in water.

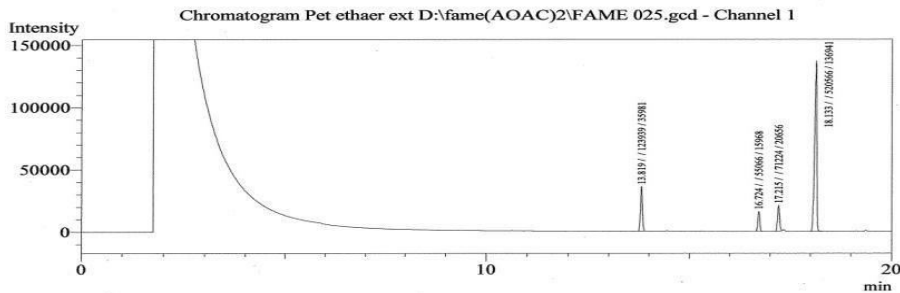
Boron trifluoride reagent: 14 ml of boron trifluoride dissolved in a 100 ml volumetric flask containing 50 ml of methanol slowly. Volume was made up to the mark with methanol.

CALCULATION:

The AUC of the standard peak, and the corresponding peak in the sample was calculated by edited below =
 AUC of sample peak corresponding Concentration of standard and Purity of standard.

$$\% \text{ Content} = \frac{\text{AUC of sample peak corresponding}}{\text{To standard peak}} \times \frac{\text{Concentration of standard (mg/ml)}}{\text{Concentration of sample (mg/ml)}} \times \text{Purity of Standard}$$

Sample Information
 Analysis Date & Time : 12/31/2010 2:42:14 PM
 User Name : Admin
 Sample Name : Pet ether ext
 Sample ID : 2
 Sample Description : 100.2 mg in 10 ml TMP

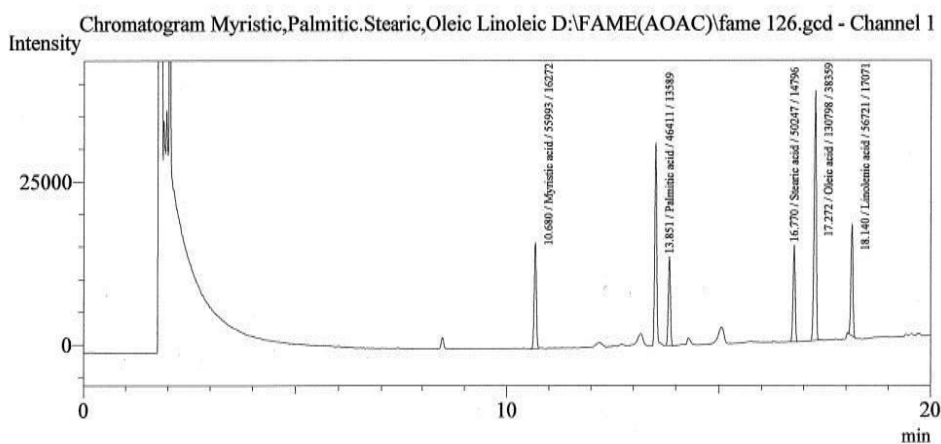


Peak#	Ret. Time	Area	Height	Name
1	13.819	123939	35981	
2	16.724	55066	15968	
3	17.215	71224	20656	
4	18.133	520566	136941	
Total		770795	209546	



Gas chromatography details:(Nigam V. *et al.* 2015)

Analysis Date & Time : 8/9/2010 10:14:00 AM
 User Name : Admin
 Sample Name : Myristic,Palmitic.Stearic,Oleic Linoleic
 Sample ID : STD
 Sample Description : Myristic-0.15,Palmitic-0.12.Stearic - 0.12,Oleic-0.4 Linoleic-0.15 mg/ml in TMP



Peak Table - Channel 1

Peak#	Ret.Time	Area	Height	Name
1	10.680	55993	16272	Myristic acid
2	13.851	46411	13589	Palmitic acid
3	16.770	50247	14796	Stearic acid
4	17.272	130798	38359	Oleic acid
5	18.140	56721	17071	Linoleic acid
Total		340170	100087	

MEDICINAL USES:

- Effective in treating blood problems, rheumatoid arthritis, inflammation, calculus, hyperthirst, diarrhea, poisoning, pain, anemia, stomach disorders, flatulence, and urinary retention.
- Leaf from it can be used for coughing.
- It helps with anal fistula.
- Blood diseases can benefit from its seed.
- Consuming root decoction helps treat jaundice.
- The plant's veggie helps with anemia.
- In Prameha, using the leaf paste topically is beneficial.
- Its root can be used in calculus.
- Rheumatoid arthritis can benefit from its root and whole part decoction. Rao, B .Rama 2009[19].
- Leaf paste can be applied topically to treat arthralgia and lumbago.
- Consuming Talimakhana ash with water or cow pee reduces inflammation. Gaur, BanwariLal 2007[13].
- Consuming a decoction made from Talimakhana and other therapeutic herbs helps with sleeplessness. Tripathi,Brahmanand., 2009[10].
- Consuming a root decoction is beneficial for anasarca.Its entire component is helpful in dropsy. Sharma. P.V.2011; Pullaiah, T.2006[6].
- Consuming a powder made from Talimakhana fruit powder, sugar, and milk has aphrodisiac properties.Sharma.,PriyaVrat.,2007[7].
-

III.REVIEW OVER PHARMACOLOGICAL ACTIVITIES

LIVER PROTECTING ACTIVITY:Hewawasamet *al.*, 2003[20], Ushaet *al.*, 2007. studied the aqueous extract of whole plant and root of *Asteracanthalongifolia* and they proved that hepatoprotective and antioxidative properties

against CCl₄-and paracetamol induced hepatotoxicities. Petroleum ether extract of *Asteracanthalongifolia* affects liver and kidney functions and metabolism and hematological parameters in high doses (40 and 80 mg/kg) whereas low weekly dose (20mg/kg) and low and moderate daily/therapeutic dose (2 and 4 mg/kg) does not exhibit any appreciable toxic action.

Methanolic extracts of the leaves showed hepato protective activity against paracetamol and thioacetamide intoxicification in rats Singh & Handa, 1999[9]. The protective efficacy of *Asteracanthalongifolia* on Acetaminophen-induced liver damage in rats. (Shivashangari et al. 2004).

Shanmugasundaram & Venkataraman (2006) studied the aqueous extract of the roots for hepatoprotective in CCl₄-induced liver toxicity in rats and *In-vitro* antioxidant activity using ferric thiocyanate (FTC) and thiobarbituric acid (TBA) methods. Shailajan et al. (2005) showed that the whole plant slurry of *Asteracanthalongifolia* was hepatoprotective activity against CCl₄ induced liver dysfunction in rats. Later they also reported that the slurry, aqueous extract and ethanolic extract of whole plant powder showed hepatoprotective effect against galactosamine induced hepatotoxicity.

R. P. Hewawasamet et al. 2003[20] studied the protective effect of *Asteracanthalongifolia* Linn plant extract on carbon tetrachloride (CCl₄)- and paracetamol-induced acute hepatotoxicity in mice. They showed that Pre-treatment was given better results than post-treatment in both hepatotoxic models. Overall results indicate that the aqueous extract of *Asteracanthalongifolia* possesses hepatoprotective effects on CCl₄- and paracetamol-induced hepatotoxicity in mice.

APHRODISIAC ACTIVITY:

The ethanolic extract of aerial parts improves the histo-architecture of the testis, increases the concentration of sperm count in the epididymis, and raises testosterone levels in rats while also improving androgenic and sexual behaviour in a dose-dependent way. The impact of *Asteracanthalongifolia* aerial parts on the sex behaviour of male albino rats for a period of 28 days, groups of rats received dosages of 100, 150, and 200 mg kg⁻¹ of the ethanolic extract of aerial portions of *Asteracanthalongifolia*. The rats' actions were compared to control rats. Changes in body weight, organ weight, sexual behaviour, histo-architecture, and seminal vesicle fructose levels were noted. By measuring variables including mount frequency (MF), intromission latency, mount latency (ML), and post-ejaculatory delay, behavior was evaluated. Gains in the weight of the body and reproductive organs in the treated animals showed the ethanolic extract to have strong anabolic effects. Transverse section patients who received extracts also experienced increased spermatogenesis. The animals' sexual behavior was also significantly impacted by the drug, as seen by the decrease in ML, rise in MF, and improved capacity to attract females. Both the number of sperm and the fructose content of seminal vesicles significantly increased.

HYPOGLYCEMIC ACTIVITY:

An ethanol extract (Al Eth) of aerial portions of *Asteracanthalongifolia* when given to rats for three weeks (100 and 250 mg/kg body weight) significantly decreased blood glucose levels. Additionally, there is a decrease in hydroperoxide and thiobarbituric acid reactive compounds (TBARS) in the liver and kidney. In the drug-treated group, which is comparable to the control group, the Al Eth treatment dramatically boosted the levels of glutathione (GSH), glutathione peroxidase (GPx), glutathione S-transferase (GST), and catalase (CAT). Rats given Al Eth also displayed reduced lipid peroxidation, which is connected to elevated superoxide dismutase (SOD) and catalase activity Vijayakumar et al., 2006[11].

Fernando et al. (1991) studied the effects of hot water extracts of the total plant material of *Asteracanthalongifolia* on the glucose tolerance of healthy human volunteers and patients with maturity-onset diabetes. Rats given an aqueous extract of *Asteracanthalongifolia* prior to glucose loading had hypoglycemic activity as evidenced by a large rise in the liver and muscle glycogen content and a considerable increase in the adipose tissue triacylglycerol content when compared to control rats. However, neither the kidney's ability to produce gluconeogenesis nor the intestinal absorption of glucose were impacted by the plant extract Vijayakumar M, et al. 2006[11]

HAEMATOPOIETIC ACTIVITY:

Asteracanthalongifolia root extract in petroleum ether considerably raises WBC count. In comparison to the vehicle-treated control rat, ethanol extract (100 and 200 mg/kg, p.o.) from the aerial portions of *H. spinosa* significantly enhanced haemoglobin, haematocrit, RBC, and total WBC. The extract dramatically raised haemoglobin, hemocrit, and RBC count in anaemic male albino rats (Gomes *et al.*, 2001). Leaf extracts in petroleum ether and chloroform exhibit haematopoietic activity since they markedly raise erythrocyte, leukocyte, and haemoglobin counts Pawar *et al.*, 2006a; 2006b[14].

R. S. Pawar *et al.* 2006 [14] Anaemic albino rats were used to test the effects of chloroform extract of *Asteracanthalongifolia* leaves at different doses (250 and 500 mg/kg body weight) on various haematological parameters, including erythrocyte count, leukocyte count, and haemoglobin count. On the 22nd day (d), following 7 days of continuous cyclophosphamide (3 mg/kg body weight) treatment, chloroform extract was shown to significantly (b,b1,b2,b3P 0.05) enhance erythrocyte and haemoglobin count. In comparison to the cyclophosphamide alone treated group (6.2106), treatment with chloroform extract together with cyclophosphamide was observed to significantly (P 0.001) increase the bone marrow cellularity (11.5106). In comparison to the cyclophosphamide alone treated group (650/4000), the administration of extract enhanced the number of a-esterase positive cells (1062/4000) in the bone marrow of cyclophosphamide-treated animals. *longifolia*'s main function may be to promote the growth of stem cells. *A. longifolia* could lessen the toxicity caused by cyclophosphamide may suggest potential value in the treatment of cancer.

Since antiquity, medicinal herbs classed as Rasayana in Ayurveda have been thought to be helpful in boosting a person's immunological and hemopoietic systems. Iron deficiency is the main cause of the nutritional illness known as anaemia, which is quite common. Both developed and developing nations are affected by it. Because of their inadequate intake or absorption, infants, children, women of childbearing age, pregnant women, and the elderly are thought to be more susceptible to iron deficiency. The ability of Ayurvedic medicines to offset the toxicity of contemporary therapy needs to be assessed. The Ayurvedic and Unani medicines are derived from Kokilaaksha and Talimakhana are derived from it. The seeds are bitter, acrid, aphrodisiac, tonic, sedative, and helpful for blood disorders. Information about its impact on the blood profile and stem cell growth is not yet known, though. The study was also carried out to examine the haematological and stem cell proliferation profile in experimental rats exposed to *A. longifolia* extracts.

ANTIOXIDANT ACTIVITY:

Phenolic and flavonoid-containing leaf methanolic extract exhibits promising antioxidant activity. In numerous *In-vitro* models, aqueous extract of *A. longifolia* leaves has strong antioxidant activity. Antioxidants are essential for preventing and scavenging free radicals, which protects against infections and degenerative diseases in humans. Due to its safe treatments, current study is focused on natural antioxidants derived from plants.

Folk medicine uses the plant *Asteracanthalongifolia*, often known as "*Hygrophila*." According to reports, plants have natural anticancer properties and exhibit antioxidant activity *In-vitro*. Therefore, the antioxidant activity of *A. longifolia* petroleum ether extract was assessed by chemically generating breast tumors using 7, 12-Dimethylbenzidine (a)anthracene (DMBA) in Sprague Dawley rats. Test groups were treated with *A. longifolia* extract @ 600, 900 and 1200 mg/kg and the antioxidant activity is compared with the group of rats administered with Vitamin C (ascorbic acid) @ 200mg/kg body weight for 45 days. Mammary tumor, liver and kidney tissue were processed for antioxidant enzyme assay. The antioxidant activity were correlating with increased dose of plant extract, the data obtained from this study suggests that the extract of *A. longifolia* have potent antioxidant activity and prevent oxidative damage to major biomolecules and afford significant protection against oxidative damage seen in cancer.

NEUROLOGY

NEURPROTECTION: Rats given the terpenoid fraction of *Asteracanthalongifolia* (100-200mg/kg) orally for seven days before transiently undergoing global cerebral ischemia showed improved cognitive performance and decreased levels of brain lipid peroxidation, with a potency comparable to 500mg/kg Vitamin E.

APHRODISIA: When rats were given an ethanolic extract of the seeds over a 28-day period, it increased mounting frequency (380–472% of control) and decreased mounting, intromission, and post-ejaculatory latencies in a dose-

dependent manner. However, none of the doses significantly increased libido compared to the active control of 0.5 mg/kg testosterone injections.

CARDIOVASCULAR HEALTH

Following cyclophosphamide-induced anaemia, levels of blood cells indicative of haematopoietic potential could be restored by administering 250–500 mg/kg of chloroform extract of *Asteracanthalongifolia* leaves intraperitoneally for 22 days. After 15 days, the levels returned to normal.

Asteracanthalongifolia therapy also helped to restore the bone marrow cell count, and in rats with haloperidol-induced anaemia, an intraperitoneal injection of an ethanolic extract of the aerial parts (100–200 mg/kg) was able to almost restore blood cell parameters (hematocrit, RBC count, haemoglobin) to normal after 19 days. Administration of the supplement does not seem to stimulate erythropoiesis in rats that are not anaemic and are given 200 mg/kg of the ethanolic extract (injections), and is instead accompanied by a slight (possibly clinically irrelevant) decline in haemoglobin levels compared to the untreated control group. Pawar R S, et al. 2010[14].

GLUCOSE METABOLISM INTERACTIONS:

ABSORPTION: High oral doses of a water extract from the plant's aerial parts, such as the leaves and stem, administered to rats at a dosage of 5 g/kg body weight, did not alter the absorption of glucose.

GLYCOGEN: After an oral glucose tolerance test, oral consumption of the water extract did not alter gluconeogenesis in the rat liver. Prior to glucose loading, rats who received a water extract (5g/kg bodyweight) had enhanced glycogen store in their muscles (57.8+/-4.2%) and liver (108.5+/-9.5%). However, there was also an increase in triglyceride storage in adipose tissue (10.2+/-1.8%).

DIABETES: Giving diabetic rats 100–250 mg/kg of an ethanolic leaf extract for three weeks will lower fasting blood sugar levels and normalize lipid peroxidation and antioxidant enzyme levels (glutathione peroxidase, catalase, and glutathione-S-transferase). Normal persons can lower their exposure to glucose after an oral glucose tolerance test by 25% by ingesting 10mL/kg of a hot water leaf extract; in diabetics, the drink was slightly more efficient, reducing exposure by 36%. Each ml is comparable to 1g of plant material.

Vijayakumar M., et al. 2006[11].

CANCER METABOLIC INTERACTIONS

HEPATOCARCINOMA : In rats with hepatic tumors, an extract of the seeds in methanol (200–400 mg/kg every other day for eight weeks) appears to be able to lessen recurrent foci. development by up to 51% (compared to control), which was accompanied by a reduced toxin-induced reduction in glutathione peroxidase and catalase. Shivashangari KS, et al. [8]

IV. DISCUSSION AND CONCLUSION

Hygrophilaauriculata (K. Schum) Heine demonstrated that it is a well-liked medicine used by many ethnic groups, vaidyas, Hakim, and practitioners of Ayurveda to treat a variety of illnesses. Nevertheless, despite assertions made by practitioners of traditional medicine, little work has been done by researchers to examine this plant's therapeutic potential. *Asteracanthalongifolia*, a member of the Acanthaceae family, was exposed to the separation of phytoconstituents from its aerial portions. *Asteracanthalongifolia* crushed aerial portions were extracted using methanol: water (50:50) and pet ether separately. The hydro alcoholic extract underwent column chromatography and underwent additional processing to isolate phytoconstituents. By using the gradient elution method and the polarity of the solvent, components were isolated. There are several different solvents used, such as Petroleum ether, Ethyl acetate, and Methanol. Even though the yield of the fractions was high, just a small fraction of them are crystallizing when using the recrystallization process. The aerial parts of *Asteracanthalongifolia* were found to contain a higher percentage of oil, according to the extraction value analysis. Gas chromatography was used to identify four fatty acids like palmitic acid, stearic acid, oleic acid, and linoleic acid. Comparing Linoleic acid to Palmitic acid, Stearic acid, and Oleic acid, it was discovered that Linoleic acid had a higher proportion (13.60). The majority of the pharmacological research to date has been carried out on animals, both *In-vivo* and *In-vitro*. Clinical research is therefore urgently required to support the traditional uses of phototherapy. It's interesting to note that earlier studies of this plant, *Hygrophilaauriculata* (K. Schum) Heine, revealed that the crude extracts had a number of beneficial effects, including analgesic, antitumor,



antioxidant, antimicrobial, hepatoprotective, hypoglycemic, haematinic, diuretics, free radical scavenging, anthelmintic, anti-inflammatory, antipyretic, anabolic and androgenic properties etc.

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INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.118



ISSN INTERNATIONAL
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