Preliminary pharmacognostical and phytochemical analysis of *Calotropis Gigantea*

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***Abstract- Calotropis gigantea*, commonly known as the Crown Flower or Giant Milkweed, holds an important place in traditional medicine. This plant from the Apocynaceae family has been extensively used in Ayurveda, Unani, and folk healing systems to treat ailments such as fever, asthma, digestive disorders, skin diseases, and rheumatism. Various parts of the plantincluding its leaves, flowers, root bark, and latexare recognized for their medicinal properties. The latex is traditionally applied to skin infections, wounds, and tumors, while the root and bark are valued for their analgesic, anti-inflammatory, and antipyretic effects.**

Phytochemical investigations have identified a diverse array of bioactive compounds in C. *gigantea*, including cardenolides, flavonoids, triterpenoids, alkaloids, and glycosides, which are associated with its pharmacological activities such as antimicrobial, antioxidant, anticancer, antidiabetic, and anti-inflammatory effects. However, certain componentsparticularly the latex and cardenolidesexhibit toxic properties, necessitating careful preparation and dosage regulation. Continued research is essential to isolate active constituents, elucidate their mechanisms of action, and validate their safety and efficacy through clinical studies.

This review presents a comprehensive overview of the traditional uses, phytochemistry, and pharmacological potential of *Calotropis gigantea*, while highlighting key directions for future scientific investigation.

***Keywords: Calotropis gigantea*, Giant Milkweed, Traditional Medicine, Phytochemistry**

I. INTRODUCTION

Generally speaking, "medicinal plants" are plants that have therapeutic qualities or have beneficial pharmacological effects on the body of an animal. It is now established that plants that typically produce and accumulate a few optional metabolites, such as alkaloids, glycosides, tannins, volatile oils, and minerals and nutrients, have healing qualities .Each component of the medicinal plant exhibits unique qualities that are used for various objectives. Numerous medicinal plants have been successfully examined using the integrative drug development strategy."Sweta Arka" is the name given to the plant *Calotropis gigantea* in traditional Ayurvedic medicine .*Calotropis gigantea* is the subject of our investigation here. The flowering plant *Calotropis gigantea* is a member of the Apocynaceae family. Other names for it include Akada, Aak, Madar, Aakh, and so on. The plant is a tiny tree or shrub with soft wood that is either semi-deciduous or evergreen. The majority of the leaves are found close to the growing tips. Shrubs frequently have a lot of leaves. The plant develops an airy crown of a few twisted limbs as it grows more tree-like. *Calotropis gigantea*, sometimes referred to as giant milkweed, is a prevalent weed in arid regions. India, Bangladesh, Burma, China, Indonesia, Malaysia, Pakistan, the Philippines, Thailand, and Sri Lanka are among the countries where this plant is indigenous. The plant features clusters of white or lavender waxy blooms, a milky stem, and oval, light green leaves. In India, *C. gigantea* is widely accessible and utilised in traditional medicine for a number of therapeutic uses. Numerous therapeutic benefits of *C. gigantea* have recently been documented by scientists. According to reports, the blooms have cytotoxic, antibacterial, and analgesic properties. There have been reports of antidiarrheal, antibacterial, anti-candida, and antioxidant properties in the plant's leaves and aerial parts. It has been stated that the roots possess antipyretic, cytotoxic, antimicrobial, insecticidal, wound-healing, central nervous system, and load-blocking qualities. It has been observed that plant latex possesses antibacterial, wound-healing, procoagulant, and laxative qualities. There have been reports of hepatotoxic consequences from stem. The current review concentrates on providing a broad overview of C. *gigantea*'s medicinal and biomolecular characteristics as well as its potential for future scientific investigation to produce potent therapeutic molecules.

PLANT PROFILE:

Vernacular names of *Calotropis gigantea*:

Language:	Vernacular names of Saptaparna

English	Giant milkweed, Crown flower
Sanskrit	Arka, Ganarupa, Vasuka, Svetapushpa
Hindi	Aak, Madar, Safed Madar, Akanda
Gujarati	Ankado
Kannada	Ekkadagida, Ekka
Malayalam	Erikku
Telugu	Racha jilledu, Jilledu
Tamil	Erukku, Yerukku, Yerikan
Bengali	Akanda
Unani	Sweta Arka or Arka
Marathi	Rui

Table 1: The *Calotropis gigantea* is known by several local and common names.

Taxonomical Classification:

Taxonomy	*Calotropis gigantea*
Kingdom	Plantae
Subkingdom	Tracheobionta (Vascular plants)
Division	Magnoliophyta (Flowering plants)
Class	Mangoliopsida.Dicotyledon
Subclass	Asteridac
Order	Gentianales
Family	Apocynaceae
Subtribe	Asclepiadinae
Tribe	Asclepiadeae
Genus	*Calotropis*

Table 2: Taxonomic arrangement of *Calotropis gigantea* (R.Br.: 2023).

MORPHOLOGICAL DESCRIPTION OF *CALOTROPIS GIGANTEA*:

1. Habit:
    - A large erect shrub or small tree, 1–5 meters in height.
    - Milky latex is abundant throughout the plant and exudes when injured.
2. Stem:
    - Erect, branched, cylindrical, grayish-green, covered with fine white hairs when young, becoming woody and fissured with age.
    - Contains copious milky latex which is toxic.
3. Leaves:
    - Opposite, simple, sessile or subsessile, ovate to obovate.
    - Size: 10–20 cm long, 5–10 cm wide.
    - Thick, leathery, pale green, covered with a whitish waxy bloom (glaucous).
    - Margins entire, apex rounded or obtuse.
    - Prominent midrib and lateral veins; exstipulate.
4. Flowers:
    - Inflorescence: Terminal or axillary, umbellate cymes.
    - Flowers: Large, showy, pentamerous, bisexual, actinomorphic.
    - Colour: Pale lavender, white, or purple.
    - Calyx: 5 sepals, united at the base.
    - Corolla: 5 petals, fused, forming a rotate corolla with twisted lobes.
    - Corona: A crown-like outgrowth formed by the staminal tube – a key feature in Asclepia Adoideae.
    - Androecium: 5 stamens fused to the corolla and gynoecium forming a gynostegium.
    - Pollination: By insects, using pollinia.
5. Fruit:
    - A follicle, erect, green when young, turning brown on maturity.
    - Size: 8–12 cm long.
    - Surface smooth or slightly roughened.
6. Seeds:
    - Numerous, oblong, flattened, brown, and winged with a tuft of silky hairs (coma) at one end to aid wind dispersal.


Fig 1: Plant of *Calotropis gigantea*

Phytochemistry:

- Alkaloids: Example- Calotropin, gigantin,uscharin.
- Flavonoids: Example- Quercetin, kaempferolInvalid source specified..
- Cardiac Glycosides: Example- Calotropagenin, Calotoxin, calactin.
- Triterpenoids: Example- Lupeol, α-amyrin, β- amyrinInvalid source specified..
- Steroids: Example- Stigmasterol, β-sitosterol.
- Phenolic Compounds: Example- Tannins, gallic acidInvalid source specified..
- Other Secondary Metabolities: Such as Saponins, Coumarins, Resins, Proteolytic Enzymes, and Latex EnzymesInvalid source specified..

Traditional and Local Uses:

- Indian Traditional Medicine: In Ayurveda, *Calotropis gigantea* is referred to as "Arka" and is considered a powerful herb. The plant's latex, leaves, roots, and flowers are widely used for their medicinal properties. The latex is applied externally to treat wounds, cuts, and insect bites due to its antiseptic and anti-inflammatory effects. The leaves are commonly heated and placed on swollen joints to reduce pain and inflammation Invalid source specified.
- Thai Medicine: In Thai traditional practices, *Calotropis gigantea* is used to treat fever, asthma, and digestive disorders. The flowers are believed to have calming properties and are sometimes brewed into teas for relaxation.
- Chinese Medicine: The plant's extracts are utilized for their detoxifying and blood-circulating properties, aiding in the treatment of skin diseases, ulcers, and respiratory conditionsInvalid source specified..
- African Folk Medicine: In certain African regions, *Calotropis gigantea* is employed for its potential to relieve snake bites, control parasitic infections, and reduce symptoms of malariaInvalid source specified..

II. PHARMACOLOGICAL ACTIVITIES

Anti-inflammatory Activity:

Several experimental animal models were used to assess *Calotropis gigantea's* anti-inflammatory properties. Extracts of *Calotropis gigantea* leaves in ethanol, n-butanol, chloroform, and distilled water were tested for anti-inflammatory properties. Using the carrageenan-induced rat paw oedema method, this activity was contrasted with that of the common medication, paracetamol (Mahatma OP 2010). On the other hand, the anti-inflammatory action is assessed using a model of adjuvant-induced arthritis for chronic inflammation and carrageenan-induced kaolin-induced rat paw oedema for acute inflammation (JK 2006). Additionally, the anti-inflammatory properties were demonstrated against the albumin denaturation approach (Jagtap VA 2010).

Analgesics Activity:
It has been claimed that an alcoholic extract of *C. gigantea* flowers has analgesic properties in mice in both thermal and chemical conditions. To evaluate analgesic activity, the HPM and the acetic acid-induced writhing test were employed (J. N. Singh N 2010). An oral dosage of an ethanolic extract of *C. gigantea* flower considerably decreased writhings and postponed paw licking time. An alcoholic extract of *Calotropis gigantea* peeled roots was tested for analgesic effects in albino rats. Acetic acid-induced writhings and Eddie's hot plate approach were both demonstrated to be analgesic. When the root extract was administered orally at doses of 250 and 500 mg/kg, the amount of writhing and the amount of time spent licking the paws were both considerably decreased (P.M. Soares 2005).

Antimicrobial Activity:
Clinical isolates of Candida albicans, Candida krusei, Candida parapsilosis, and Candida tropicalis have been shown to be susceptible to the anti-Candida properties of *C. gigantea* leaf extracts in aqueous, methanolic, and ethanolic forms. Additionally, it is known that the aqueous leaf extracts have antibacterial properties against Pseudomonas aeruginosa, Escherichia coli, Klebsiella pneumoniae, Bacillus cereus, Staphylococcus aureus, and Micrococcus luteus (Kumar G 2011). Additionally, *C. gigantea* exhibits antifungal action against a number of fungi that are harmful to plants, including Fusarium mangiferae. With a minimum inhibitory concentration (MIC) of 7.5 mg/mL, the ethanolic leaf extracts of *C. gigantea* demonstrated antifungal efficacy against Aspergillus niger (Kadiyala M 2013). The plant extract's ability to suppress bacteria and fungi, which are the cause of many illnesses such as respiratory tract infections, diarrhoea, and skin infections, indicates that *C. gigantea* is a potent antimicrobial agent (Pattnaik PK 2017).

Pregnancy interceptive effects:
Rats were used to test the pregnancy-interceptive properties of *C. gigantea* root extracts in various organic solvents. At a dose of 100 mg/kg, the extract exhibited 100% pregnancy-interceptive efficacy. Additionally, when given at a dose of 12.5 mg/kg on days 1–5 and 1–7 postcoitum regimens, the extract demonstrated 100% effectiveness (G. P. Singh N 2014).

Anticancer Potential:
Compounds from *C. gigantea* are thought to have anticancer properties because they can alter a number of molecular pathways that are involved in carcinogenesis and tumour growth. The induction of programmed cell death, or apoptosis, in cancer cells is one of the main processes behind their anticancer effects (A.S. Al-Zubairi 2010). It has been demonstrated that chemicals from *C. gigantea* activate both intrinsic and extrinsic apoptotic pathways, which results in the selective destruction of cancer cells while leaving healthy cells unharmed. These substances also have anti-proliferative effects by preventing cell cycle progression and causing cell cycle arrest at particular checkpoints, like the G0/G1, S, or G2/M phases. Unchecked cell proliferation, a defining feature of cancer, is prevented by *C. gigantea* chemicals that interfere with cell cycle regulation (S.A. Al-Rashed 2018).

Antioxidant Properties:
The *calotropis* plant is also thought to be a strong source of antioxidants, which are what give it its scavenging properties. The presence of phenolic or flavonoid components in plants gives them their oxidant qualities (M.M. Khan 2012). By using the hydrogen peroxide radical test and hydroxyl radical activity at different doses, the antioxidant potential of ethanolic flower extract of *Calotropis* was investigated. The presence of flavonoids and terpenoids in this plant gives it antioxidant properties (D. Moronkola 2011)

Wound Healing Applications:
Calotropis root bark's ability to cure wounds was tested in rats using excision, dead space, and incision wound healing models. Analysis was done on the scar area following complete epithelialisation, the percentage of wound closure, and the epithelialisation time. The proportion of wound concentration rose when *Calotropis* was applied topically to the wound model. Increased wound-breaking strength and lowered scar area and time (A. Basu 1997).

Insecticidal Properties:
Calotropis gigantea root bark methanol extract, petroleum ether fraction, and chloroform were tested for residual film toxicity fumigant and repellent efficacy against a variety of Triboliumcastaneum larvae and adult strains; the methanolic extract demonstrated superior insecticidal activity against T. castaneum, while none of the samples showed signs of fumigant toxicity (Alam MA 2009).

III. MATERIAL METHODS

Collection and Authentication of plant

Fresh, mature *Calotropis gigantea* are collected from the medicinal Garden of Pharmacy College,Itaura, Azamgarh, Uttar-Pradesh, India. The plant was further identified and authenticated from the department of Botany, Banaras Hindu University, Banaras, India by a Voucher Specimen no. Malva. 2023/01.

Preparation of plant material

The leaves of *Calotropis gigantea* were first collect from Pharmacy College, Azamgarh, cleaned, and shade-dried to remove moisture while preserving their active constituents. The dried leaves were then powdered using a mechanical grinder to obtain a fine powder. For the extraction process, 250 mL of distilled water and 250 mL of methanol were combined in a 1:1 ratio to prepare a hydroalcoholic solvent. The powdered leaf material was placed in a Soxhlet apparatus, and the extraction was carried out continuously for approximately two days or until the siphon tube showed a clear solvent, indicating complete extraction. The resulting extract was collected for further analysis (Pawan Kaushik 2011).

Microscopy:

Leaves:

The *Calotropis gigantea* leaves were soaked in water to obtain sufficient moistening for section cutting. The free hand thin transverse section of leaves was prepared and collected in a borosilicate Petridis plate filled with water. The best section was preferred, mounted on glass slide using glycerine, covered slip and observed under light microscope. The presence of some anatomical characters and features were notd and photographed (Materials. 1998).

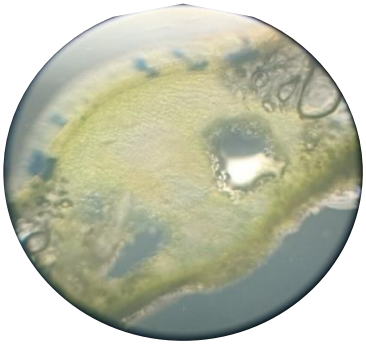

Fig2: TS of Leaf*Calotropis gigantea*

Powder Microscopy:

The *Calotropis gigantea* leaf powder was prepared by grinding by using mortar – pestle. Then the powder was placed on a glass slide, mounted in glycerine and observed under the microscope for the examination microscopic features (Materials. 1998).

Fig 3: Powder Microscopy of *Calotropis gigantea*

Physiochemical Characteristics:

The following physic-chemical properties of *Calotropis gigantea* were measured using conventional procedures: total ash, swelling index, foaming index, water soluble extractive value, and alcohol soluble extractive value ,True density, Tapped density ,Bulk density, Angle of repose, Carrs index Hausner index, Fluorescence analysis . (Materials. 1998) (DR. 2007) (The Ayurvedic Pharmacopeia of India 2016) (Sarvesh Kumar 2020) (Mohammed Shaibu Auwal 2014) (Kokate C.K. n.d.) (Sinha 2018).

Determination of Ash value:

In a crucible that has been previously lit and tared, add roughly 2-4g of the precisely weighed ground air-dried material (typically of platinum or silica). To ensure that there is no carbon present, spread the material evenly and ignite it by progressively raising the temperature to 500–600°C until it turns white. After cooling in a desiccator, weigh. Cool the crucible and moisten the residue with roughly 2 millilitres of water or a saturated solution of ammonium nitrate R if carbon-free ash cannot be produced in this way. After drying in a water bath, place it on a hot plate and light it to a steady weight. After letting the residue cool for half an hour in an appropriate desiccator, weigh it right away. Determine the amount of total ash in milligrams per gram of air-dried material.

% Total Ash value = Wt. of ash/ Wt. of drug X 100

Determination of Foaming Index:

Weigh precisely, then transfer approximately 1 g of the plant material to a 500 ml conical flask with 100 ml of boiling water after reducing it to a coarse powder (sieve size no. 1250). For half an hour, keep

the water at a moderate boil. After cooling and filtering, pour enough water through the filter to dilute the mixture to volume in a 100 ml volumetric flask. 10 stoppered test tubes (height 16 cm, diameter 16 mm) should be filled with the decoction in incremental amounts of 1 ml, 2 ml, 3 ml, etc. until the total volume is 10 ml. The liquid volume in each tube should be adjusted with water to reach 10 ml. Stop the tubes and shake them twice a second for 15 seconds in a longitudinal motion. After letting it stand for fifteen minutes, gauge the foam's height.

Determination of Swelling Index:

Make at least three determinations for any particular substance at the same time. Pour the designated amount of the plant material into a 25 ml glass-stoppered measuring cylinder after it has been precisely weighed and reduced to the necessary fineness. The graduated part, which is marked in 0.2-ml increments from 0 to 25 ml in an upward orientation, should have an internal diameter of roughly 16 mm and a length of approximately 125 mm. Add 25 cc of water, and for one hour, shake the mixture thoroughly every ten minutes, unless the test protocol specifies otherwise. Let remain at room temperature for three hours, or as directed. Calculate how many milliliters (ml) the plant material, including any sticky mucilage, occupies. Determine the average of each determination made in relation to one gram of plant material.

Total swelling index = Final reading – Initial reading

Fluorescence Analysis:

The leaf sample's fluorescence properties are shown in Table 2. The sample had a green hue, and the solvent extracts fluoresced differentially under UV and normal lighting. The data in Table 2 demonstrated that the powdered, shade-dried sample of Hibiscus rosa senisis showed unique fluorescence properties.

Angle of Repose:

Formed between the horizontal plane and the surface of the powder heap. The angle of repose was calculated using the formula. A funnel with a set height was used to apply the finely ground mucilage to the flow characteristics of the powder are gauged by the angle of repose. It is the greatest angle graph paper. An equation was used to determine the angle of repose in accordance with the USP after the height and base of the produced powder heap were measured.

$$\tan\theta = h/r$$

$$\theta = \tan^{-1}(h/r) \qquad \text{Eq. 1}$$

Where, ɵ represents the angle of repose,
H is height in cm
R is radius/base in cm.

Bulk density:

The ratio of a powder's bulk volume to its entire mass is known as its bulk density (BD). 50g of precisely weighed powdered mucilage should be added to a 100 mL graduated barrel. The initial apparent volume (Vo) of mucilage in the combination was meticulously leveled. The value can be expressed in g/ml using the formula for calculating loose bulk density.

$$b = M/Vb \qquad \text{Eq. 2}$$

Where b=bulk density, M=bulk weight of blend, Vb= bulk volume of the blend.

Tap density:

The ratio of the powder's total mass to the tapped volume is known as the tap density (TD). 40 grams of the powder mixture, which has been put in a 100 mL container cylinder for measurement, should be carefully weighed. The final tapped volume (Vf) was measured following three manual taps (1250, 750, and 500) on the cylinder carrying the sample. It is possible to use the tapering bulk density method, which yields a result in g/ml.

Hausner ratio:

One statistic used to assess a powder or granular substance's flowability is the Hausner ratio. It is a measure of the ease of powder flow that is indirect. The Hausner ratio quantifies the flow characteristics of a granular or powdered material. It is an indirect metric used to assess powder flow easiness

Compressibility Index:

Carr's Index, also known as the Compressibility Index the ratio of bulk density to tapped density and the difference between the two is known as the compressibility index. It indicates and quantifies the proportion of powder flowability (Ashish Kumar Yadav 2025).

$$\text{Carr's Index (\%)} = (Dt - Db/Dt) * 100 \qquad \text{Eq.3}$$

Where Dt = Tapped density of the powder, Db=bulk density of the powder

Determination of Extractive value: -

Water soluble extractives:

Two grams of coarsely powdered, air-dried plant material was macerated with 50 ml of water in a

closed conical flask for 24 hours, with frequent shaking during the first 6 hours and left to stand undisturbed for the remaining 18 hours. The mixture was then filtered using Whatman filter paper. A 25 ml portion of the filtrate was evaporated to dryness in a petri dish, dried at 105 °C, and weighed. The percentage of water-soluble extractive was calculated based on the weight of the air-dried material.

Alcohol soluble extractives (Methanol):
Two grams of coarsely powdered, air-dried plant material was macerated with 50 ml of 70% methanol in a closed conical flask for 24 hours, with frequent shaking during the first 6 hours, followed by standing for the remaining 18 hours. The mixture was then quickly filtered, taking care to prevent methanol loss. A 25 ml portion of the filtrate was evaporated to dryness in a petri dish, dried at 105°C, and weighed. The percentage of alcohol-soluble extractive was calculated relative to the weight of the air-dried material.

Chloroform:
Two grams of coarsely powdered, air-dried plant material was macerated with 50 ml of chloroform in a closed conical flask for 24 hours, with frequent shaking during the first 6 hours, followed by standing for the remaining 18 hours. The mixture was then quickly filtered, taking care to prevent chloroform loss. A 25 ml portion of the filtrate was evaporated to dryness in a petri dish, dried at 105°C, and weighed. The percentage of alcohol-soluble extractive was calculated relative to the weight of the air-dried material.

Acetone:
Two grams of coarsely powdered, air-dried plant material was macerated with 50 ml of acetone in a closed conical flask for 24 hours, with frequent shaking during the first 6 hours, followed by standing for the remaining 18 hours. The mixture was then quickly filtered, taking care to prevent acetone loss. A 25 ml portion of the filtrate was evaporated to dryness in a petri dish, dried at 105°C, and weighed. The percentage of alcohol-soluble extractive was calculated relative to the weight of the air-dried material.

Petroleum Ether:
Two grams of coarsely powdered, air-dried plant material was macerated with 50 ml of petroleum ether in a closed conical flask for 24 hours, with frequent shaking during the first 6 hours, followed by standing for the remaining 18 hours. The mixture was then quickly filtered, taking care to prevent solvent loss. A 25 ml portion of the filtrate was evaporated to dryness in a petri dish, dried at 105°C, and weighed. The percentage of petroleum ether-soluble extractive was calculated relative to the weight of the air-dried material.

PRELIMINARY PHYTOCHEMICAL SCREENING: (Khandelwal 2006)
Test for Carbohydrate:
Molish's Test:
Add one or two drops of an alpha-naphthol solution in alcohol to two to three milliliters of aqueous extract, shake, and concoc. A violet ring forms at the intersection of two acids in H2SO4 from the test tube's side.
Test for Amino Acid:
Ninhydrin Test:
In a boiling water bath, heat 3 milliliters of the test solution and 3 drops of 5% Ninhydrin solution for 10 minutes. It turns bluish or purple.
Test for Flavonoids:
Shinoda Test:
Add 5 ml of 95% ethanol, a few drops of concentrated HCL, and 0.5 g of magnesium to dry the powder or extract. A pink tint is seen.
Test for Alkaloids:
Dragendorff's test:
Add a few drops of Dragendorff's reagent to two to three milliliters of filtrate. It forms an orange-brown PowerPoint.
Test for Steroids:
Salkowski reaction:
Add 2 ml of chloroform and 2 ml of concentrated H2SO4 to 2 ml of extract. Get a good shake. The acid layer fluoresces greenish yellow, whereas the chloroform layer glows red.
Test for tannins:
Add a few drops of 5% FeCl3 deep blue-black to two to three milliliters of alcoholic or aqueous extract.
Test for cardiac glycoside:
Legal's test:
Add 1 millilitre of pyridine and 1 millilitre of sodium nitroprusside to an alcoholic or aqueous extract. The colour changes from pink to crimson.
Test for saponins glycoside:
Foam test:
The persistent foam formed after shaking the extract or powder with water suggests the presence of

saponins, which act like natural soap due to their surfactant properties.

IV. RESULT AND DISCUSSION

Result of Phytochemical Analysis:

Table3: Result of phytochemical Analysis

S.No	Test	Hydroalcoholic Extracts
1.	Alkaloids	Positive
2.	Glycosides	Positive
3.	Carbohydrate	Positive
4.	Tannins	Positive
5.	Flavonoids	Negative
6.	Amino Acid	Positive
7.	Protein	Positive
8.	Steroids	Positive

Fig 4: Phytochemical test

Result of Physico-chemical parameter of *Calotropis gigantea*

Table4: Physico-chemical parameter of *Calotropis gigantea*

S.No	Physico-chemical Parameter	Result
1.	Total Ash	4%
2.	Foaming Index	Nill
3.	Swelling Index	12%
4.	Tap Density	0.18g/ml
5.	True Density	0.152
6.	Bulk Density	0.15 g/ml
7.	Carr's Index	20%
8.	Hausner Index	1.2
9.	Angle of repose	35.753°

Extractive value

Table 5: Extractive value

S.No	Test	Result
1.	Chloroform	1.3%
2.	Methanol	1.7%
3.	Petroleum ether	3.4%
4.	Acetone	3.6%
5.	Ethyl acetate	60.25%
6.	Water	2.2%

Fluorescence Analysis:

Table 6: Fluorescence Analysis of *Calotropis gigantea*

CHEMICAL	VISIBLE	SHORT U. V	LONG U. V
Aqueous Iodine solution	Dark green	Dark green	Dark green
Polyethylene glycol	Dark green	Light green	Dark green
Methyl salicylate	Dark green	Dark green	Light green
Tween 20	Dark green	Light green	White
Ethyl acetoacetate	Dark green	Dark green	Dark green
Lactic acid	Brown	Light green	Dark green
Acetone	Dark green	Dark green	Dark green
Acetic acid glacial	Dark Brown	Dark green	Orange
Methanol	Dark green	Dark green	Orange
Glycerin	Light green	Light green	Light green
Chloroform	Dark green	Dark green	Light green
Ethyl acetate	Dark green	Dark green	Dark green
Nitric acid	Dark green	Light green	Black
Hydrochloric acid	Dark green	Light green	Black

Fig 5: Swelling Index

V. CONCLUSION

The present study offers preliminary insights into the pharmacognostical and phytochemical characteristics of *Calotropis gigantea*. Macroscopic and microscopic analyses confirmed key diagnostic features of the plant, aiding in its accurate identification and authentication. Physicochemical parameters and fluorescence analysis further support the standardization of raw material for medicinal use. Preliminary phytochemical screening revealed the presence of bioactive constituents such as alkaloids, flavonoids, glycosides, tannins, and steroids, which justify the plant's traditional therapeutic applications. These findings establish a foundation for further detailed pharmacological and phytochemical investigations. Comprehensive studies involving isolation, structural elucidation, and biological evaluation of the active constituents are essential to validate the medicinal potential of *C. gigantea* and facilitate its development into standardized herbal formulations.

Acknowledgement-

Conflict of interest-

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