



**ANTI-MICROBIAL ACTIVITY OF EUPHORBIA NERIIFOLIA: A
PHARMACOLOGICAL REVIEW**

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ABSTRACT

Euphorbia neriifolia is an herb broadly utilized within the Indian system of medicine; it may be a little deciduous tree of the family Euphorbiaceae. As a tree having number of branches so as Neriifolia having tremendous employments. As conventional pharmaceutical the plant is valuable in stomach inconveniences, bronchitis, tumors, leucoderma, heaps, irritation, and broadening of spleen, iron deficiency, ulcers, and fever and in unremitting respiratory inconveniences. The plant is detailed to contain sugar, tannins, flavonoids, alkaloids and triterpenoidal saponin etc. The plant has been detailed to have pain relieving, hepatoprotective, immunostimulant, anti-inflammatory, gentle CNS depressant, wound mending Radioprotective. It is presently considered as a important source of unique common items for improvement of drugs against different infections additionally for the advancement of mechanical items. This survey gives a bird's eye see primarily on the pharmacognostic characteristics, conventional employments, phytochemistry and pharmacological activity.

KEYWORDS: Euphorbia neriifolia, pharmacological activities, phytochemistry, traditional uses.

INTRODUCTION

In later period of globalization, Restorative plants have pulled in worldwide intrigued. Presently a day therapeutic plants are portion and divide of human society to combat infections, rom the day break of civilization.^[1] Medicinal plants have been of incredible significance to the wellbeing care needs of people & Communities. In creating nations the utilize of home grown arrangements made from therapeutic plants is broadly utilized Restorative herbs are moving from periphery to standard utilize with a more prominent number of individuals seeking remedies and wellbeing approaches free from side effects.^[2] According to the World Wellbeing Organization, 2003 almost 80% of the populace of creating nations are incapable to manage pharmaceutical drugs, so they goes to plant based solutions to support their essential wellbeing care needs. Since of their wide organic and restorative exercises, higher security edges and lesser costs. Homegrown medications are in extraordinary request within the created as well as creating nations for essential healthcare.^[3] India has an authoritative recorded list of 45,000 plants species and estimation put the list of 7500 species of restorative plants developing in its 16 agroclimatic zones beneath 63.7 million hectares of timberland scope. Within the past few decades, pioneer's work in distinguishing proof, documentation and acknowledgment of traditional pharmaceutical was tired India. Examination of conventional medication is

exceptionally critical for the welfare of provincial and tribal communities for the treatment of different diseases.^[4] Herbal definitions are broadly acknowledged helpful operators as anti-diabetics, anti-arthritics, aphrodisiacs, hepatoprotective, hack cures, memory enhancers and adaptogens. Euphorbia neriifolia Linn.(Euphorbiaceous) was chosen for survey since of wide verities of employments in conventional medication, thorough literature study, to coordinate the claimed restorative possibilities of different researchers on this plant. The particular title, neriifolia, implies "Leaves like an oleander." The show endeavor is to audit and compile overhauled data on various aspects of Euphorbia neriifolia Linn.

LOCAL NAMES

Common milk hedge (Eng.). Bait (Pamp. Tag.); karimbuaya (Ilk.); lengua de perro (Sp.); soro-soro (Tag.); sorog-sorog (Pamp. Tag.); sudu-sudu (P.Bis.);

VERNACULAR NAMES OF EUPHORBIA NERIIFOLIA

Malaysia: Sesudu
English: Common Milk Hedge, Hedge euphorbia, oleander spurge
Thailand: Som chao (Central)
Phillipines: Carambuaya, Karimbuaya, Sobog-sobog, Sobo-soro, Sorogsorog
Burma: Thassaung, Thazavn-mina

India: Snoohi, Vajra, Vijri, Patrasnuk, Svarasana (Sanskrit); Sehund, Sij, Patton-ki-send, Thohar (Hindi); Mansasij, Hij-daont, Patasij (Bengali) 1 Akujumudu (Telugu) 1 Haikkali (Tamil)
Arabic: Dihung Minguta.^[5]

CLASSIFICATION DETAILS OF EUPHORBIA NERIIFOLIA

Division : Magnoliophyta
Class : Magnoliopsida
Subclass : Eurosida
Order : Malpighiales
Family : Euphorbiaceae
Subfamily : Euphorbioideae
Tribe : Euphorbieae
Sub Tribe : Euphorbiinae.^[6]

ORIGIN AND DISTRIBUTION

The particular title, *neriifolia*, implies "Leaves like an oleander." There are over 1500 species of Euphorbias" family within the world extending from yearly weeds to trees. *Neriifolia* Linn. (Euphorbiaceae) develops broadly around the dry, rough and uneven ranges of North, Central and South India. *E. Neriifolia* is an herb full of spine, famously known as „sehund“ or „thohar“ in Hindi. It is additionally called Drain Fence in English. The clears out are thick succulent, 6-12 inches long, ovular in shape.^[7,8,9] *Euphorbia neriifolia* is an erect bush, 4 m tall, base diam. 6cm, fleshy and marginally juicy, sharp, branching, as a rule with terminal clears out; stem and branches without verbalization, base about terete, or something else with 5 ill defined points (not winged) and spine-shields in 5 particular columns, more youthful branches c. 15 mm in diam., sinuses between spine-shields shallow to missing. Spine-shields 2-3 cm separated, spines in sets, 2 mm long, grey-brown to blackish, diligent but Indumentums are truant. Stipules changed into spines. Leaves sub sessile, obviate in shape 10-18 by 3-4 cm, base attenuate, margin entire, apex rounded, persistent during the vegetation period. Cyathia not seen in Thailand, outside of Thailand arranged in axillary groups of 3, the central one subsessile, the lateral ones with a peduncle of 6-7 mm, bracts 4 mm long, cyathial glands 5, 1 by 3 mm. Flowers and fruits not seen.^[10]

BOTANICAL DESCRIPTION

Euphorbia neriifolia, is a xerophytic, erect, prickly, succulent, fleshy, large, much branched shrub, which sometimes grows into a small tree of 2-6 metres height or more with rounded branches. The tree looks somewhat like a cactus.

Stem: Green and cylindrical stem and large branches also being round and terete, spiral ridge portion, Sharp stipular thorns, with hollow space in centre containing white reticulate mass. The younger branchlets are somewhat verticillate, with two or more whorls without articulations, fleshy, cactus-like, swirled, lightgreen, glabrous, 8-30(-40) mm thick, often leafless, and spine

shield in 5 distinct rows on more or less distinct angles (not winged) which are visible for a long time.

Stipular thorns: The spines are short, about 1-4mm long, grayish brown to black in color, sharp, persistent, from low conical truncate distant, spirally arranged tubercles 2-5 mm height and 2-3 cm apart.

Leaves: plant is leafless for most part of the year, except during monsoon when fresh leaves appear. Apex rounded, base attenuated, margins entire, hairless, oval shaped leaves, fleshy, alternate, sub sessile, ovate, oblong or spatulate (5-)10-18(-30) cm long by (1.5-)3-4(-7.5) cm, are present towards the end of the branches. During vegetation period they are deciduous but in the late summer they fall.

Flowers: Both male and female flowers are found in the same bunch. 3 to 7 flowered cymes or panicles appearing laterally in the axils of the upper leaves on short, rigid and forked peduncles, Flattened-globose, 1.5-2 mm x 4-5 mm, reddish, prominent in groups of tree, the central one is subsessile, the lateral ones with a peduncle of 6-7 mm, cyathial glands 5 oblong, 1-3 mm broad. Corolla absent but the involucre has two nearly round to ovate, bright red bracts 3-7 mm long. Inflorescence or the arrangement of flowers in a bunch on the plant is cyathium type (one female and several male flowers are found on a same bunch).

Fruits: Fruits (capsules) are three chambered or 3-lobed, smooth, 10-12 mm in diameter.

Phenology of flowers and fruits: They appear in different climatic conditions and can be seen only in February and March.^[11]

HARMFUL EFFECTS

The latex parcel of the plant is really respected as the poisonous portion within the plant. The plant is harmful and skin contact with the sap can cause rankling: The smooth latex or sap of *Euphorbia* species is found to be poisonous and may cause seriously aggravation of the skin and the eye. Visual harmful response ranges from gentle conjunctivitis to extreme kerato-uveitis. Corneal inclusion for the most part takes after a ordinary arrangement with declining of edema with epithelial sloughing on the moment day. It is accepted that a few species are more poisonous than the others. Few cases have too been detailed approximately the changeless visual deficiency happening due to the coincidental vaccination of the *Euphorbia neriifolia* latex. When treated early and overseen fastidiously, the irritation for the most part settle without sequelae. The clears out and roots is utilized as a angle harm.^[12] The ingestion of the latex causes Disturbance, Vomiting, Diarrhoea, Burning sensation within the midriff, Shakings and Coma. On contact with the skin there will be Burning of skin and vesication. There will be Irritation of eye and transiently Blindness. Treatment for the individual who has been

come in contact with the latex can be washing the contact portion with running water. It holds great indeed for the contact with the eyes. The symptomatic treatment incorporates: On ingestion: Gastric lavage is prescribed with typical saline or Actuated charcoal. On contact: with the skin -Topical corticosteroids are utilized, with Eye Antibiotic eye drops, Tears substitute, IOP (Intra visual weight) bringing down solutions. The post mortem examination appeared the Signs of aggravation of contact portion, gangrenous patches within the stomach and spoiled spleen. The medico-legal significance incorporates inadvertent harming, Murderous and self-destructive purposes, which are exceptionally uncommon and utilized for getting criminal premature births.^[13]

MACROSCOPY

The trunk is secured with reticulate bark. Stem is round and hollow, juicy, glabrous, internodes are 4–10 cm in length and 2–6 cm in breadth. Hubs are contracted 1–4 cm in breadth which appear spirally running lines of tubercles embedded on level and creamish white corky bases. A little circular organ is being found at the base of the tubercle. The nodal locale appears shorter spines having 1–5 mm length and a bud adjoining to it. Taste is harsh or astringent. Dried stems are intense, wilted, longitudinally furrowed, wrinkled and wrinkled. It is effectively breakable at the hub which uncovering empty substance connected with white parenchymatous papery scales.

MICROSCOPY

Transverse area of stem appeared a layer of epidermis implanted with stomata and protected remotely with a well created striated fingernail skin. The hypodermis could be a wide zone comprising of vertically put and radially prolonged limit cellular groups of chlorenchyma substituting with parenchymatous groups. The hypodermis is inserted with bounty of little measured oil globules and latex tubes. The cortex is wide and centrally found parenchymatous substance encompassed by persistent ring of pentagonal stellar locale. The deepest cells have cortical zones and are inserted with bounty of starch grains. The essence is exceptionally wide composed of exceptionally enormous measured thin walled parenchymatous cells. The stellar locale could be a contract ring of precise xylem comprising of disconnected or assembled radially organized 2–3 vessels, lean walled filaments, parenchyma and medullary beams in continuation with phloem.

The pericycle is distinct, parenchymatous and embedded with isolated spherical thick walled non-lignified fibres. Laticiferous vessels are embedded with grandular latex.

Seed

Seeds are flat containing soft hairs.

Powder

Powder is cream yellow in colour. It has parts of straight walled cells of epidermis implanted with bounty of

actinocytic and few paracytic stomata. Striated fingernail skin cells are straightforward with branched laticiferous vessels and dumb-bell molded starch grains. Bounty of stone cells were watched in powder. They have thick and lean walled strands and sclereids from the spine. The fine powder was mounted in glycerin and recolored with iodine, phloroglucinol, conc. HCl. Watched highlights uncovered that the leaf powder contains various idioblastic, rosette, square, kaleidoscopic and acicular formed calcium oxalate gems and starch grains. The powder too appeared the nearness of well organized annular vessels, anomocytic stomata, unicellate multicellular trichome with limit tip. The epidermal cells, springy parenchyma, xylem parenchyma, vittae-volatile contain schizogonous cells, polyhedral or sharp calculated starch grains and lignified xylem filaments were show. After treatment with HCl, the calcium oxalate crystals are changed into needle shaped crystals from the acicular shape.^[14]

CHEMICAL CONSTITUENTS

In one of the consider, the hydroalcoholic extricate of *E.neriifolia* was found to contain sugar, tannins, flavonoids, alkaloids, triterpenoidal saponins on preparatory phytochemical examination. A few triterpenoids like Glut-5-en-3 β -ol, Overabundance 5(10)-en-1-one, taraxerol and β -amyryn have been confined from the powdered plant, stem and takes off of *E.neriifolia*. Antiquorin has been confined from ethanolic extricate of new root of *E.neriifolia*. Neriifolione, a triterpene and a unused tetracyclic triterpene named as nerifoliene beside euphol were confined from the latex of *E.neriifolia*.^[15] Latex parcel was found to contain Euphol, neriifoliol, neriifolene, Euphorbon, Gum, gum, caoutchouc, malate of calcium, etc. Euphol, monohydroxy triterpene, neriifoliol, taraxerol, beta-amyryn, glut-5-(10)-en-1-one, neriifolione, cycloartenol. Phytochemical examinations on *Euphorbia neriifolia* yielded within the segregation of a few classes of auxiliary metabolites, numerous of which communicated natural exercises such as triterpenes(neriifolione) flavonoids and steroidal saponins. *E.neriifolia* predominantly contains sugar, tannins, flavanoids, alkaloids and triterpenoidal saponin. 9,9-cylolanost-20(21)ene-24-ol; 24-euphadien-3 beta-ol-3-one(neriifolione). Fresh latex yields 10.95% solid with 18.32% total resinous matter, and 24.50% and 16.23% of total diterpene and triterpene respectively. Euphorbon, resin, gum, caoutchouc, malate of calcium.^[16]

CULTIVATION NEEDS

Needs full exposure to the sun but can also succeed to grow in light shade. They prefer rocky areas.^[17]

TRADITIONAL USES

1. The vaidhyas from antiquated times utilized to utilize the smooth juice radiated from the harmed stems as extreme cathartic and to calm ear infection. They are utilized as a extreme laxative within the extension of liver and spleen, syphilis, dropsy, common anasarca,

sickness, etc. It has been found useful for Asthma. The strategy as found by a Ayurvedic specialist is by the arranged succus comprising of break even with parts of the juice of this plant and straightforward syrup; managed in dosages of 10 - 20 drops three times a day; has been found to diminish asthma assaults completely. In truth individuals within the towns utilize it as a domestic cure for treating Asthma. Regularly, as found by the overview, Asthma patients take the latex by blending it with nectar.

2. Juice blended with ghee is given in syphilis, in visceral hindrances and in spleen and liver extensions due to long proceeded irregular fevers. Remotely the juice is connected to expel warts.

3. Juice is generally utilized with clarified or new butter as an application to unfortunate ulcers and scabies. When connected to glandular swellings it avoids suppuration. Blended with Margosa oil it is connected to rheumatic appendages. Turmeric powder blended with the juice of *Euphorbia neriifolia* is prescribed to be connected on heaps. String soaks within the over specified blend is utilized in ligaturing outside Hemorrhoids.

4. Root- bark bubbled in rice-water and arrack is given in dropsy. Root blended with black-pepper is utilized in scorpion- stings and wind chomps, both inside and remotely. The stem is broiled in fiery debris and the communicated juice with nectar and borax is given in little dosages to advance expectoration of mucus. Mash of the stem blended with new ginger is utilized to avoid hydrophobia.

5. *Euphorbia* is an herb. The parts of the plant that develop over the ground are utilized to create pharmaceutical. *Euphorbia* is utilized for breathing disarranges counting asthma, bronchitis, and chest clog. It is additionally utilized for bodily fluid within the nose and throat, throat fits, roughage fever, and tumors. A few individuals utilize it to cause spewing. In India, it is additionally utilized for treating worms, serious loose bowels (diarrhea), gonorrhea, and stomach related issues.

6. The tribal populace of Chattishgarh locale employments the smooth latex as an fixing of love potion blend. The juice of the plant is utilized in Gujarat for spreading cuts made by decreases on *Borassus flabellifer* (Linn) in arrange to avoid the palm from the assault of ruddy weevil. Stem or leaf juice is utilized in case of hack and cold blended with nectar.

7. *E.neriifolia* latex is one of the constituents of "Kshaarasootra", which is utilized in Indian medication to recuperate analfistula. A multicentric randomized controlled trial carried out by Indian Committee of Therapeutic Inquire about uncovered that the long term out come with "Kshaarasootra" was superior than with the surgery advertising an successful, mobile and secure treatment for patients with fistula-in-ano.^[18]

PHARMACOLOGICAL ACTIVITY

Hepatoprotective activity

Presently day's Hepatic harm basically due to the viral contamination is common issue. There's barely any remedy accessible within the present day framework of

pharmaceutical, counting corticosteroids and immunosuppressive specialists which bring around symptomatic help supporting as it were the method of recuperating or liver recovery. Consequently expanding consideration is being given to plant suggested for the treatment of hepatic disarranges within the conventional framework of medicine.^[19] Papiya Bigoniya et al. (2010) explored the hepatoprotective impact of saponin division disconnected from the leaf of *Euphorbia neriifolia* on CCl₄-induced hepatotoxicity on rodent. CCl₄ (1.5 mg/kg, i.p) may be a powerful hepatotoxic operator, which actuates peroxidative degeneration of film lipids causing hypoperfusion of the membrane. During the think about they affectionate that Cytosolic chemicals like SGPT, SGOT and High mountain hoists within the blood and hepatic glutathione and Grass diminishes. The hepatoprotection of triterpene was compared with silymerin, a well known standard hepatoprotectant Euphol was separated from *E. Neriifolia* leaf add up to sapogenin division after division and instrumentation. Pretreatment with add up to saponin division (50, 125 and 175 mg/kg, p.o once a day for 4 days some time recently CCl₄ and proceeded encourage for 3 days) weakened.^[20]

Anti-Inflammatory and Analgesic Activity

An aggravation is characterized by torment, fever, redness and wheel. It has distinctive steps; the primary step is caused by an increment in vascular penetrability, the moment one by penetrate of leucocytes and the third one by granuloma formation. Kalpesh Gaur had watched the anti-inflammatory and pain relieving action of 70% v/v hydro-alcoholic extricate of dried takes off of *Euphorbia neriifolia* by verbal organization at measurements of 400 mg/kg/day of body weight to solid pale skinned person rats. The hydro-alcoholic extricate was too assessed for pain relieving movement utilizing Eddy's hot plate strategy and tail-flick strategy in pale skinned person rats. It showed significant (P<0.05) diminishment within the carrageenan-induced paw edema in rats and pain relieving movement prove by increment within the response time by Eddy's hot plate strategy and tail-flick strategy in pale skinned person rats. The hydro-alcoholic extricate also showed a more noteworthy anti-inflammatory and pain relieving impact when compared with the standard drugs, indomethacin and diclofenac sodium respectively. The display perception shown critical (P<0.001) action of the hydro-alcoholic extricate of *Euphorbia neriifolia* within the treatment of irritation and pain.^[21] Anti-inflammatory movement of latex of *Euphorbia* plant was examined by Papiya Bigoniya (2010). by carrageenan actuated rodent paw edema strategy. Topical anti-inflammatory movement of latex pet. Ether division at 750 and 500 mg/ml dosage appeared 42.40 and 35.25% restraint of carrageenan actuated paw edema in comparison to 71.22% restraint of topical diclofenac sodium (100 mg/ml). It was recognized that anti inflammatory substances which applies their impact due to their aggravation property can be recognized from the genuine

anti-inflammatory specialists by administering them locally within the carrageenan test. In the event that a blend of the plant extricate and carrageenan produces decrease in paw edema, the impact of the plant extricate are not due to counter aggravation movement. It has long been thought that torment can be soothed and recuperating advanced by aggravating an zone of the skin. Body starts an aggravation in reaction to injury; this is often ruddy swollen and sore occasion that happens on harm or contamination. Pet. Ether division contains triterpenes euphol, nerifoliol and cycloartenol having Antiinflammatory and Pain relieving action. This consider investigates secure topical utilize profile of *E. Neriifolia* latex holding its anti-inflammatory efficacy.^[22]

Antioxidant activity

Oxidation is essential cause of maladies in human being since it produces free radicals so there's require of antioxidant agent. P. Bigoniya and A.C. Rana et al found out the impact of sub-acute organization of *Euphorbia neriifolia* Leaf extricate on a few hematological, biochemical, histological and antioxidant protein status of rodent liver and kidney taking after 21 and 45 days treatment. The creatures were watched for net physiological and behavioral reactions, nourishment and water admissions and body weight changes. Free radical rummaging movement and histopathology was done on liver and kidney tests. *Euphorbia neriifolia* extricate treatment extraordinary essentially ($p < 0.001$) diminished serum lipid profile together with glucose setting up its catabolic property. *E. neriifolia* appeared an amazingly significant ($p < 0.001$) rise in liver and kidney Grass beside liver catalase and diminish in liver lipid per oxidation. These highlights show that *E. neriifolia* up to 400 mg/kg every day dosage is secure and has potential to be devoured for long time in administration of different diseases.^[23]

Immuno-modulatory Activity

Resistance is capacity of human body to stand up to disease. Modification of the resistant reaction through incitement or concealment, offer assistance in keeping up a disease free state. The specialists that an Move forward have guard instrument within the nearness of an disabled resistance is better treatment than routine chemotherapy.^[24] Immuno stimulation in a drug-induced immune suppression and immune suppression in an exploratory hyper-reactivity show by the same planning can be called as genuine immune modulation.^[25] The balance of safe reaction with the help of different bioactive in arrange to move forward certain maladies is an dynamic zone of intrigued. The property of any substance to improve non-specific resistance of body against pathogens is named "adaptogenic". This can be an important region of inquire about in which we don't have any breakthrough, which is utilized in inoculation program or immunosuppressant and which can be securely utilized in organ transplantations and immune system illnesses. Different plant items are broadly utilized for their immune modulating activity.^[26] The

nearness of immunostimulant compounds in different plants were looked into but as it were a constrained sum of immunosuppressive items of plants had detailed. The items, which are well tolerated by the persistent, may be created as an elective within the treatment of disarranges caused by an overstated or undesirable resistant reaction, such as in immune system maladies, sensitivities, glomerulo nephritis, unremitting hepatitis, etc.^[27] Kalpesh Gaur et al decided the immune modulatory action of 70%v/v hydro-alcoholic extricate of dried takes off of *Euphorbia neriifolia* by verbal organization at dosage of 400 mg /kg/day of body weight to healthy albino rats divided into four groups consisting of six animals each. The determination of immune modulatory activity was done by testing the survival rate of rats against abdominal sepsis caused by *E.Coli*. Also determination of hematological parameters & phagocytic index was determined by carbon clearance method. The humoral resistant reactions was decided by haemagglutination counter acting agent titre strategy and cellular resistant reactions decided by footpad swelling strategy. The hydroalcoholic extricate of *Euphorbia neriifolia*, having noteworthy assurance against *E.Coli* initiated stomach sepsis, critical increment in add up to leucocyte number, differential leucocyte check and phagocytic list was decided. It strikingly potentiates haemagglutination counter acting agent titre and cell intervened resistance by encouraging the footpad thickness reaction in ordinary and Betamethasone initiated immunesupressed rats.^[28]

Radioprotective and In-Vitro Cytotoxic Sapogenin from *Euphorbia neriifolia* (Euphorbiaceae) Leaf.

Papiya Bigoniya Affirmed The sapogenin applied direct antioxidant action with profoundly critical ($p < 0.001$) lessening of gamma radiation-induced chromosomal distortions (33.5% compared to 71.5% for radiation treatment alone at 4 Gy). It moreover shown cytotoxic movement on melanoma cell lines ($IC_{50} = 173.78 \mu\text{g/ml}$). The sapogenin division appeared antioxidant, radioprotective and cytotoxic exercises. This consider gives a logical premise for the claimed conventional anti carcinogenic possibilities of *E. neriifolia*. Euphol was disconnected as a major constituent from the triterpenoidal sapogenin division of *Euphorbia neriifolia* leaf. Its in vitro antioxidant action was assessed by decreasing control test, 1, 1 – diphenyl –2-picryl hydrazyl (DPPH) test, as well as hydroxyl radical and superoxide radical rummaging activities. Radioprotective action was surveyed against radiation-induced chromosomal aberrations and cytotoxicity on murine F1 B16 melanoma. *E. neriifolia* Leaf is wealthy in rough sapogenin, and euphol (0.023%) was distinguished as a major constituent. The sapogenin division appeared antioxidant, radioprotective and cytotoxic movement against dangerous melanoma cells. Our think about bolsters the utilize of *Euphorbia neriifolia* as an anti tumour home grown cure in Indian conventional pharmaceutical. This think about reports for the primary time the potential anticancer properties of *E. neriifolia*

triterpenes. However, the sapogenin substance has to be examined encourage to confine other dynamic constituents and to explain its in-vivo anticancer action profile; this advance work is in advance in our laboratory.^[29] The ethyl acetic acid derivation extricate of *E. neriifolia* appeared critical cytotoxicities against the taking after cell lines: Lewis lung carcinoma, B16F10 melanoma and SW480 human colon adenocarcinoma in a dose dependent manner.^[30]

Wound healing activity

Surgically created cutaneous wound when treated with topical application of 0.5% and 1.0% sterile aqueous solution of the watery extricate of the latex of *E. Neriifolia* appeared encouraged mending handle as prove by the increment in malleable quality, DNA substance, epithelisation and angiogenesis. *E. Neriifolia* is effectively accessible in huge amount within the dry sloping ranges of North and Central India. This plant can be utilized as a cheap source of dynamic therapeutics as Proliferation of these plants is simple and cheap which can be developed in huge number with exceptionally less costs. *E. Neriifolia* latex appeared wound recuperating action in guinea pig by expanding epithelization, angiogenesis, malleable quality and DNA substance in wounds.^[31]

Diuretic activity

Diminish in Pee volume, and GFR rate will lead to Extend in poisonous Metabolites of drugs and squander material of body. Too it'll lead to maintenance of Sodium in body which can be destructive for hypertensive quiet. Papiya Bigoniya had examined that *E. neriifolia* leaf extricate produces strong diuresis, expanding the urine volume three times than the control by expanding pee sodium and chloride concentration beside water.

Urine output along with electrolyte concentration

Creatures were denied of nourishment and water for 16 hours. All the rats gotten preparing dosage of typical saline 25 ml/kg orally. Instantly after organization of vehicle, diverse measurements of extricate and standard medicate frusemide (5 mg/kg, p.o) all the rats were set in metabolic cages (bunch astute) uncommonly outlined to partitioned pee and defecation at room temperature of $25 \pm 0.5^\circ\text{C}$ (23). The pee was collected in measuring barrel up to 5 h after sedate organization. Amid this period no nourishment and water was made accessible to creatures. Concentration of Na^+ and K^+ in pee was measured by Fire photometer (Elico, India). Chloride ion concentration was estimated by titration with silver nitrate solution (N/50) using 3 drops of potassium chromate solution as indicator.

Antiulcer Activity

Papiya Bigoniya Studied models for antiulcer study as follows, Loric ligation-induced gastric ulceration Beneath light ether anesthesia, the guts was opened by a little midline entry point of 1 cm underneath the xiphoid handle. Stomach was uncovered and a

tight hitch was connected around the pyloric sphincter. The stomach was put carefully and midriff divider closed by hindered sutures. Vehicle, ranitidine (20mg/kg) and test extricate were managed orally 15 min some time recently pyloric ligation. After 4 hours creatures were slaughtered by beheading, guts was opened and the stomach was separated after suturing the lowed esophageal conclusion. The stomach was at that point cut open along the more prominent ebb and flow and ulcer file was decided employing a hand focal point. Gastric substance were collected in a graduated centrifuge tube, volume measured, pH decided, centrifuged at 1000 RPM for 10 min and subjected to biochemical analysis.^[32]

Psychopharmacological activity

In a study done on the pharmacological activities of the leaf extract of *E. neriifolia* the investigators found that the leaf extracts has anti-anxiety, anti-psychotic and anticonvulsant activities in mice and rats.^[33]

Antibacterial activity

Ethanol extricate of take off and petroleum ether extricates of the cases of *E. neriifolia* were tried for their antibacterial exercises against *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Escherichia coli*. The comes about appeared that these extricates were more viable in restraining *E. coli* development than for *P. aeruginosa* and *S. aureus*.^[34]

EXPLORATION OF ANTIMICROBIAL POTENTIAL OF METHANOL EXTRACT OF STEMS OF EUPHORBIA NERIIFOLIA MATERIALS AND METHODS

Plant Material

The stem of *Euphorbia neriifolia* was collected from the provincial locale of Midnapore, West Bengal, India. The plant was confirmed by the Botanical Overview of India (BSI), Shibpur (W.B), and India. Discuss dried entire stem (500 g) were powdered in a mechanical processor and the powdered materials was extricated by methanol utilizing Soxhlet extraction device. The dissolvable was totally evacuated beneath diminished weight in a rotating vacuum evaporator. The concentrated extricate (abdiccate 35.42%) was put away in vacuum desiccators for assist utilize.

Preliminary phytochemical studies

The extricates were subjected to different phytochemical tests to decide the dynamic constituents display within the diverse rough extricate taking after altered strategy of Kar *et al.*, 2012.

Bacterial and fungal stain

The antimicrobial movement of the methanol extricate was screened against two gram positive microscopic organisms such as: *Staphylococcus aureus* and *Streptococcus aeruginosa* and four gram negative microbes such as: *Escherichia Coli aeruginosa*, *Salmonella typhi*, *Proteus vulgaris* and two parasites

such as: *Aspergillus niger*, *Candida albicans*. All strains were protected in solidified dried state and at 4 °C in cut incline agar 12. The microorganism's societies were kept up on supplement agar (NA) medium for 18 h at 37±1 °C.

Media Preparation and antibacterial Activity

The antimicrobial measure of stem was performed by agar plate dissemination strategy of methanol extract. A circle full of the strain was immunized in 30 ml of supplement broth in a funnel shaped jar and brooded on a rotational shaker for 24 h to enact the strain. Muller Hinton Agar (MHA) (3.8 g/100ml) was weighed and broken down in 100 ml of refined water in a sterile funnel shaped jar. The medium was sterilized by autoclaving and was permitted to cool at room temperature. The liquid Muller Hinton Agar was immunized with 200 µl of the inoculum and poured into the Petri plate. For Agar circle dissemination strategy, the plate (0.6 cm) was soaked with 50 µl of the compound, permitted to dry and was presented on to the upper layer of the medium with microscopic organisms. Anti-microbial paper (streptomycin, ampicillin) plates were utilized as positive control. These test circles were set on MHA plate swabbed with the culture of microorganisms. The plates were brooded at 37 °C or overnight. For each bacterial strain, controls were kept up where unadulterated solvents were utilized rather than the extract. The result was gotten by measuring the zone distance across. The tests were carried out in triplicate. The comes about (cruel esteem $n = 3$) were recorded by measuring the zone of development hindrance around the discs. The antifungal tests against yeasts were performed as the antibacterial measures depicted over with the substitution of SDA as a test medium and the least fungicidal concentrations (MFCs) were recorded. Amphotericin B (Bristol-Myers, Germany) was utilized as a positive control. Plates were brooded at 35°C for 24 h (*C. albicans*) and 48 h.

Minimum Inhibitory Concentration (MIC)

MIC is characterized as the most reduced concentration where no obvious turbidity is watched within the test tube (Bacteriostatic concentration). Agreeing to Haniffa, 2012 strategy with slight adjustment; Briefly the broth weakening method was utilized where the plant extract was arranged to the most noteworthy concentration in sterile refined water and serially weakened (two-fold) to a working concentration utilizing supplement broth and afterward immunized with 0.2 ml suspension of bacterial strains. After 18 hours of brooding at 37° C, the test tubes were watched for turbidity. The slightest where no turbidity was watched was decided and famous as the least inhibitory concentration (MIC) esteem.

RESULTS AND DISCUSSIONS

Preparatory phytochemical screening of the methanol extract of *Euphorbia Neriifolia* stem uncovered the nearness of different bioactive components of which alkaloid, saponin, tannins and cardiac glycosides were

the foremost unmistakable and the result of phytochemical test has been summarized in table-1. All these phytochemicals have great antioxidant exercises and has been detailed to show different natural impacts counting anti-inflammatory, antitumor exercises. The extricates have appeared significant antifungal movement with regard to parasitic stains specifically *Aspergillus niger*, *Candida albicans* and comes about are comparable to that of standard antifungal operator Amphotericin B (10µg/disc). Among microscopic organisms *Escherichia coli* and among parasites *Pseudomonas aeruginosa* are most helpless to the extricates. The antibacterial movement and restraint movement of *E. neriifolia* extricates might be credited to the chemical compounds. The phytochemical examinations illustrated the nearness of alkaloid, saponin and tannin in methanol extract of *E. neriifolia*.

CONCLUSION

From over comes about it can be concluded that the methanol extract of plant *Euphorbia neriifolia* have critical antimicrobial action in term antimicrobial and antifungal effects. This antimicrobial property against microbes and organisms unquestionably is due to nearness of a few antimicrobial substances in stems. Presently our consider will be coordinated to investigate the lead compound dependable for previously mentioned movement from this plant.^[35]

FINAL CONCLUSION

From the careful consider and examination of the accessible writing of *Euphorbia neriifolia* clearly appeared that the plant serves as a vital source of numerous restoratively proficient chemicals. *Euphorbia neriifolia* is an herb broadly utilized within the Indian system of medication, may be a little deciduous tree of the family Euphorbiaceae. As conventional medication the plant is valuable in stomach inconveniences, bronchitis, tumors, leucoderma, heaps, aggravation, extension of spleen, iron deficiency, ulcers, fever and in persistent respiratory inconveniences. *E. neriifolia* transcendently contains sugar, tannins, flavonoids, alkaloids and triterpenoidal saponin. The plant detailed to have gentle CNS depressant, wound recuperating and immunomodulatory movement of leaf hydro alcoholic extract. Saponin isolated from *E. neriifolia* leaf possesses great hemolytic and in-vitro antioxidant action. As *E. Neriifolia* has been effectively utilized in numerous wellbeing issues since a long time it gives a wide zone of intrigued for the research purposes in development of newer drug molecules. *E. Neriifolia* is drug of choice for multiple diseases so their need to develop various dosage forms using this plant.

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