

Descriptive Study of Lantana Camara Plant

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ABSTRACT:

The purpose of the study is to assess the anthelmintic activity of Lantana Camara leaves in methanolic and aqueous extracts from the Verbenaceae family. More than 150 species of shrubs and herbaceous perennials that are indigenous to tropical America and Africa make to the Lantana Camara genus. Another name for the Lantana Camara is the large leaf lantana. The plant is also known by other colloquial names, including Raimuniy, Ghaneri, Thirei, Ghanidalia, and Nongballei. The Latin verb *lento*, which meaning "to bend," is where the name Lantana Camara originates. One significant source of substances with potential medical applications is medicinal plants. Medicinal herbs have been used for a variety of health issues since ancient times. These plants' systemic examination yields a range of bioactive compounds that can be used to create novel therapeutic products. In India's rural and tribal communities, medicinal plants have long played a significant role in sociocultural, spiritual, and health contexts. When it comes to the use of medicinal plants in traditional medical systems, India has one of the richest, oldest, and most varied cultural traditions in the world.

Keyword: Medicinal plants, Lantana camara, Verbenaceae, Pharmacology, Therapeutic used

I. INTRODUCTION:

The word Lantana Camara obtains from Latin '*lento*' which means 'to bend' [1,2] Medicinal plants represent an important source of medically important compounds. Since ancient time, medicinal plants are used to cure several types of health problems. Systemic analysis of these plants provides a variety of bioactive molecules for the

development of newer pharmaceutical products. Recently, there is a growing interest in the pharmacological evaluation of various plants used in different traditional system of medicine. In last few decades, many of traditionally known plants have been extensively studied by advanced scientific techniques and reported for various medicinal properties such as anticancer activity, anti-inflammatory activity, antidiabetic activity, anthelmintic, antibacterial activity, antifungal activity, hepatoprotective activity, antioxidant activity and larvicidal activity. Lantana Camara Linn. is a flowering ornamental plant belonging to family Verbenaceae. L. camara is also known as Lantana, Wild Sage, Surinam Tea Plant, Spanish flag and West Indian lantana. L. camara is a well-known medicinal plant in traditional medicinal system and recent scientific studies have emphasized the possible use of L. camara in modern medicine (Alice and Asha. 2017). [3] Plants generally produce many secondary metabolites which are biosynthetically derived from primary metabolites and constitute an important source of chemicals which are used as pharmaceuticals, agrochemicals, flavors, fragrances, colors, bio pesticides, and food additives. Recent reviews revealed that the medicinal plants possessed antimicrobial, reproductive. [4] Medicinal plants have traditionally occupied an important position in the socio-cultural, spiritual and health arena of rural and tribal lives of India. India has one of the oldest, richest and most diverse cultural traditions associated with the use of medicinal plants in the form of traditional systems of medicine (Government of India, 2000). [5]



Fig.No.1: Lantana Camara Tree

I. About Lantana

- Scientific Name: Lantana Camara
- Botanical Name: Lantana Camara Linn.
- **Common Names:**
- English: Lantana Weed
- Hindi: Raimuniya
- Marathi: Ghaneri, Tantani
- Family: Verbenaceae
- Plant Form: Shrub
- Ayurveda Description
- Sanskrit Name: Chaturangi, Vanacchedi
- Properties: Rasa: Kashaya, Tikta; Guna; Guru; Virya: Sita



II. Therapeutic Uses:

Plant pacifies vitiated condition of Vata and Kapha

III. Morphological characters:

Lantana Camara L. is a large scrambling evergreen, strongsmelling shrub with stout recurved prickles; Leaves are Up to 10*6 cm, ovate or elliptic ovate, acute at apex, cuneate-rounded or cordate at base, crenate, pubescent, opposite often rugose, scabrid on both sides, Petiole up to 2.5 cm long; Flowers: In axillary peduncled, capitate spikes, 2.5cm across, peduncle 2.5- 7.5cm long hispid, thickened upwards; Bracts: Ovate or narrow, 6mm long, lanceolate, hispid; Calyx: Membranous, 3mm long; Corolla: Orange, red, tube up to 1 cm long, limb 6-8 mm across; Fruits: Fleshy drupes, 5 mm in diameter, endocarp hard, green when young, and purple or black on ripening.^[6- 8]

IV. Useful parts of the plant:

Lantana Camara is an ornamental plant, but due to the presence of various phytoconstituents, it has been used as a traditional medicine for an extended time. Generally, the parts used are leaves, flowers, roots, and the whole plant.⁽⁹⁾



Fig 1: Plant of Lantana Camara Fig 2: Leaf of Lantana Camara



Fig: 3 Flower of Lantana Camara



Fig 4: Fruit of Lantana Camara

V. PHARMACOLOGICAL ACTIVITIES OF LANTANA CAMARA L:

Wound healing activity the wound healing property of aqueous extract of the leaf of Lantana Camarawas reported in rats. The topical application of the extract on the wound (100 mg/kg/day) significantly enhanced the rate of wound contraction (98%) synthesis of collagen and decreased wound healing time, and in another study, ethanolic extract of Lantana Camarawas evaluated for its wound healing potential in adult male Wistar albino rats. The topical application of the extract over the wound significantly increased woundhealing activity. Histological analyses of healed wounds confirmed the result and the study demonstrated that Lantana Camaraextracts substantially enhanced the acceleration rate of enclosure in rats.^[10-11]

VI. ANTIMICROBIAL ACTIVITY:

Methanolic extract of the leaf and flower of Lantana Camarashowed antibacterial activity against Magnaportheoryzae and Xanthomonas axonopodispv. Glycines (Xag) and Xanthomonas oryzaepv. Oryzae (Xoo)^[12]

VII. HEMOGLOBIN PRECIPITATION ACTIVITY:

The methanolic extracts of Lantana CamaraL. have red blood cell protein precipitation qualities. Protein precipitation qualities are postulated to support the physiology of primary hemostasis through mediating vasoconstriction following vascular injury^[13]

VIII. ANTI-AGEING ACTIVITY:

The Lantana Camaraethanolic leaves extract in Drosophila melanogaster showed anti-ageing activity. At the concentration of 5, 10, and 20 mg/10 g diet to 1–3 days old, fruit flies extended their life span. Due to similarities of conserved genes between humans and fruit flies, using L. camara ethanolic leaf extract at these concentrations is safe and may be recommended as herbal medicine in humans.^[14]

IX. TAXONOMICAL CLASSIFICATION:

The botanical name of Raimuniya is Lantana camara. It belongs to plant family Verbanaceae. The taxonomical classification is mentioned below.

- Kingdom: Plantae
- Subkingdom: Tracheobionta
- Superdivision: Spermatophyte
- Division: Magnoliopsida
- Subclass: Asteridae
- Order: Lamiales
- Family: Verbenaceae
- Genus: Lantana
- Species: Lantana camara

Growth And Distribution:

Lantana Camarais the most outspread species growing abundantly at altitudes up to 2000 m in tropical, subtropical and temperate regions. The species name (camara) is probably followed from the West Indian. In its native range in tropical America, Lantana Camaramainly endows in small clumps less than or equal to 1m in diameter. In its naturalized range, Lantana Camara usually forms

dense monospecific thickets 1-4m high and approximately 1- 4m in diameter. Lantana Camarahas becoming naturalized in almost 60 countries. ^[15-17]The leaves are broadly ovate, opposite, and simple and have a strong odour when crushed.^[18] The distribution of Lantana is still expanding with many countries and Islands that are Yap, Galapagos Islands, Palau, Saipan, Tinian, Solomon Islands and Futuna Islands. At disordered areas such as roadsides, railway tracks, and canals are also favorable for the species. It does not arise to have an upper temperature or rainfall limit. Lantana Camara can't come through under dense and intact canopies of taller native forest species, and Lantana Camara is susceptible to frosts, low temperature, and saline soils.^[19-20]

X.MEDICINAL AND THERAPEUTIC USES:

Lantana Camarais an important medicinal plant and in recent history this plant is reported for various medicinal properties

XI.ANTIOXIDANT ACTIVITY:

Antioxidant activity of the leaves of L. camara was reported by reducing power activity and 1, 1- diphenyl-2- picrylhydrazyl (DPPH) radical scavenging assay. Leaves extracts exhibited high antioxidant effect, however younger leaves exhibited strong antioxidant activity than the older or matured leaves. Ethanolic extract of L. camara exhibited significant antioxidant activity in in vivo studies. The extract treatment decreased the extent of lipid peroxidation in the kidneys of urolithic rats. In vitro studied were carried out by DPPH radical scavenging assay and Nitric oxide free radical scavenging assay. Extract exhibited high antioxidant properties in both the assays.^[21-24]

XII.ANTI-FUNGAL ACTIVITY:

Antifungal activity of ethanol and hot water extract of L. camara was screened against wood destroying white and brown rot fungi. Both extracts exhibited efficient antifungal activity against white and brown rot fungi, however ethanol extract was highly potential at very low concentration (0.01%) and also L. camara was screened against Alternaria sp. which causes different plant diseases especially in vegetable plants. The antifungal activity was performed by food poison plate method at three different concentrations of extract viz, 10 mg/ml, 15 mg/ml and 20 mg/ml. At 20mg/ml dose L. camara exhibited significant antifungal activity against Alternaria spa.^[25-27]

XIII.ANTI-MOTILITY ACTIVITY:

The antimotility activity of Methanol extract of Lantana Camaraleaves in mice. Intestinal motility was assayed by charcoal meal test in mice. At a dose of 1 g/kg body weight, the extract completely inhibited the transit of charcoal in normal mice. Intraperitoneal administration of 125 and 250 mg/kg body weight the extracts significantly reduced the fecal output in castor oil induced diarrhea in mice.^[28-30]

XIV.ANTI-ULCER ACTIVITY:

The Antiulcer genic activity of the methanol extract of leaves of Lantana Camaraon aspirin, ethanol and cold resistant stress induced gastric lesions in rats. Pre- treatment of the effected rats with the extract (200 and 400 mg/kg body weight) showed significant protective effect in aspirin induced, ethanol induced and cold restraint stress induced ulcers in rats. The extract resulted in dose dependent antiulcer genic activity in all models.^[31]

XV.ANTI-BACTERIAL ACTIVITY:

The Ethanolic extracts of Lantana Camaraleaves and roots for antibacterial activity. The in vitro antibacterial activity was performed by micro dilution method. The extracts exhibited antimicrobial activity against Staphylococcus aureus, Proteus vulgaris, Pseudomonas aeruginosa, Vibrio cholerae, Escherichia coli and two multiresistant strains E. coli and S. aureus. Three different solvent extract of leaves and flowers of four different varieties of Lantana Camaraexhibited significant antibacterial activity E. coli, Bacillus subtilis and P. aeruginosa whereas poor antibacterial activity against Staphylococcus aureus^[32]. The Methanolic extracts of different parts of Lantana Camarafor antimicrobial activity against 10 bacteria and 5 fungi by disk diffusion method and broth micro dilution method. The leaves extract of Lantana Camarashowed highest activity against Gram positive Bacillus cereus and Gram negative Salmonella typhi.^[33-35]

XVI.ANTICANCER AND ANTI-PROLIFERATIVE:

Activity Different varieties of L.camara plant parts were reported for anticancer and antiproliferative activity. Leaves of L. camara were reported for anti-

proliferative activity against HEp-2 (laryngeal cancer) and NCIH292 (lung cancer) cell lines. In vitro antiproliferative test was performed by MTT assay. Methanol extract of *L. camara* leaves exhibited antiproliferative activity against NCI-H292 cells (% living cells= 25.8±0.19). Leaves of *L.camara* were reported to exhibit cytotoxicity effect on Vero cell line. In vitro cytotoxicity test was performed by MTT assay. The methanol extract (500 µg/ml) concentration inhibited the growth of cells 2.5 times less than did Triton 100 ×1%. Oleanonic acid isolated from *L. camara* was screened for anticancer activity against a murine tumour (Ehrlich ascites carcinoma), and three human cancer cell lines, namely A375 (malignant skin melanoma), Hep2 (epidermoid laryngeal carcinoma) and U937 (lymphoma). Oleanonic acid exhibited promising cytotoxicity against A375 cell. [36-38]

XVIII.MOSQUITO CONTROLLING ACTIVITY:

Mosquito larvicidal activity of methanol and ethanol extracts of leaves and flowers of *L. camara* were reported against 3rd and 4th instar larvae of *Ae. Aegypti* and *Cx. Quinquefasciatus* mosquito. Both extracts exhibited significant larvicidal activity against both species of mosquitoes; however, at low concentrations (1mg/ml) extracts were highly active against *Ae. Aegypti* than that of *Cx. quinquefasciatus*. Essential oil from the leaves of *L. camara* was reported to possess adulticidal activity against *Aedes aegypti*, *Culex YMER* ISSN: 0044-0477 *quinquefasciatus*, *Anopheles culicifacies*, *An. Fluvialitis* and *An. Stephensi* mosquitoes with LD50 values 0.06, 0.05, 0.05, 0.05 and 0.06 mg/cm(2) while LD90 values were 0.10, 0.10, 0.09, 0.09 and 0.10 mg/cm(2) against *Ae. Aegypti*, *Cx. quinquefasciatus*, *An. culicifacies*, *An. fluvialitis* and *An. Stephensi* respectively. [39-40]

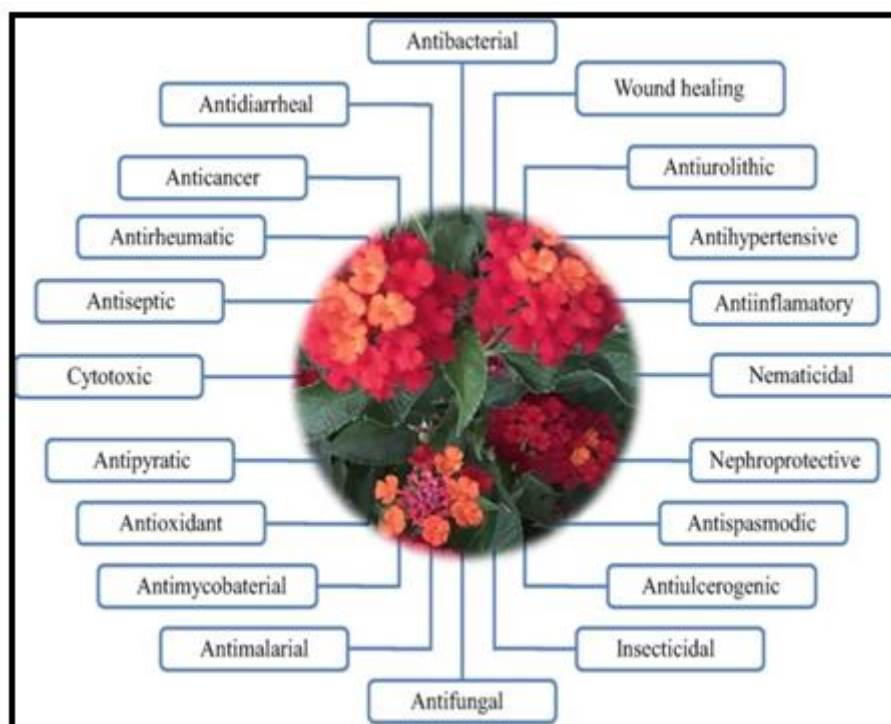


Fig: 5 Therapeutic Uses of Lantana Camaral. [41]

XVIII.Traditional USES:

- Locally the traditional healers from Dakshin Kannada district of Karnataka use Pounded Leaves and leaf juice to manage cuts, ulcers, and swellings.
- Taila is prepared by adding the decoction of both *Lantana Camaraleaves*, and *Eupatorium*

Odorum is used for external application for the wound.

- The Decoction of leaves and fruits is used as a lotion for wounds.
- Decoction of the leaves is used for the vitiated condition of Vata and Kapha

- In case of eczema and eruption, a decoction of the leaves is used internally in the dose of 10-20 ml twice a day, along with an external application of leaf paste.
- The leaf juice/decoction is used for gargling in mouth ulcers.
- Malaria-leaf juice internally in the dose of 20ml twice daily.
- For sprain and contusion, pounded fresh leaves are applied as a poultice.
- For rheumatism, oil is spread on leaves, warmed, and applied to the affected part.
- Leaves are boiled with water, and that water is drunk as an anti-asthmatic and antipyretic.
- For cold tea prepared with leaves of *Lantana Camara* and *Cymbopogon citratus*.
- The fruits are helpful in fistula, pustules, tumours, rheumatism, Vitiated conditions of Epilepsy, and gastropathy.
- Seeds are Antidote to poisoning.
- In odontalgia, a decoction of fresh roots is used for gargling
- For Dermatitis, eczema, and pruritis, a decoction of the fresh stem is used for washing.
- Alkaloids present in *Lantana Camara* lowered blood pressure and accelerated respiration.
- Lantadenes A and B in the leaf and aerial parts will cause toxicity, jaundice, photosensitization, and kidney and liver lesions.

XIX. HERBAL MEDICINES:

L. camara has also been used in traditional herbal medicines for treating a variety of ailments, including cancer, skin itches, leprosy, chicken pox, measles, asthma and ulcers^[43] Presence of toxic compounds in certain *Lantana* spp. makes it an important species to study its phytochemistry. First systematic study on the chemical constituents of *L. camara* was undertaken in 1943 by P. G. J. Louw when he reported the isolation of its main active principle *Lantana* in with molecular formula C₃₂H₄₄O₅, which was renamed as *Lantadene A* by himself in 1948 when *Lantadene B*, with molecular formula C₃₃H₄₈O₅ was isolated from all parts of *Lantana* shrub (Low, 1948).^[44] Some of these biological activities may be partially attributed to *Lantana*'s secondary metabolites, which include alkaloids, terpenoids, phenolics, iridoid glycosides, furanonaphthoquinones, flavonoids, phenyl ethanoid glycosides, and other compounds^[45]

II. CONCLUSION:

One significant source of substances with potential medical applications is medicinal plants. Medicinal herbs have been used for a variety of health issues since ancient times. These plants' systemic examination yields a range of bioactive compounds that can be used to create novel therapeutic products. The pharmacological analysis of diverse plants utilized in various traditional medical systems has attracted more attention in recent years. The demand for natural medicine has increased significantly in recent years. Thus, it should go without saying that the development of effective herbal medicines depends on research on medicinal plants. *Lantana Camara* is one of the most significant medicinal plants used in traditional medicine worldwide. The plant has a wide range of conventional and possible applications.

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