SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 11 | November 2024 - Peer Reviewed Journal

COMPREHENSIVE REVIEW ON: LANTANA CAMARA PHYTOCHEMISTRY, ETHNO PHARMACOLOGY

Doifode S. G.*[1], Chavan P. K.[2], Phoke S. V[2], Jaybhaye S. S[3], Shinde G. V.[1]
[1]*Department of Quality Assurance, Institute of Pharmacy, Badnapur, Jalna- 431203 (MS), India.*
[2]*Department of Pharmaceutics, Institute of Pharmacy, Badnapur, Jalna- 431203 (MS), India.*

ABSTRACT
Lantana Camara belong to verbenaceaefamily. Lantana Camara also known as lantana. The genus lantana consists of 150 PA tropical species used as traditional medicines all around the world. Lantana Camara is well known to cure several disease & used in various folk medicinal preparations. India has rich traditional of plant based knowledge in health care. Lantana camara is formulated for use in cuts and wounds in a limited number of formulations (e.g., ointments and creams). Amoung the large number of herbal drugs existing in India, very few studied systematically so far. Plant is used to treat asthma, abdominal disorder, cancer, swelling& ulcer. The present review aims to document the medicinal properties of L. camara its future prospects for the further scientific investigation for the development of effective therapeutic compounds. The stem, root and leaves contain many of the bioactive compounds responsible for various therapeutic applications such as cancers, chicken -pox, ,asthma, ulcers, swellings, eczema, tumours, high blood pressure, bilious fevers, catarrhal infections, rheumatism, malaria, antiseptic, antispasmodic, carminative and diaphoretic.

KEYWORD: - *Lantana Camara, Medicinal Plant, Herbal Drug.*

I. INTRODUCTION[1,2,3]

Medicinal plants represent an important source of medically important compounds. Since ancient time, medicinal plants are used to cure several types of health problems[2].Lantana camara is known by different name in various different languages in India viz, Raimuniya (Hindi), Chaturangi and Vanacehdi (Sanskrit), Arippu and Unnichedi (Tamil), Airproof, Poochedi, Konginipoo and Nattachedi (Malayalam), Thirei, Samballei and Nongballei (Manipuri), Tantani and Ghaneri (Marathi), Pulikampa (Telegu), Kakke and Natahu (Kanada).L. camara is distributed throughout India where there is a moderate to high summer rainfall and well-drained sloping sites. Lantana camara Linn. is a flowering ornamental plant belonging to family Verbenaceae[3].lantana Camaralinn is considered as a notorious weed & popular ornamental plants. Lantana Camara used in traditional medicine system for treatment of cuts, swelling, ulcers, cataract, fever, itches& rheumatism. [4] The plant-based, traditional medicine system continues to play an essential role in health care, with about 80% of the world's inhabitants relying on traditional medicines for their primary health care. Several researchers have reported antimicrobial activity of leaves and their essential oil. It is one of the world's worst weed and a popular ornamental plant. The genus is a difficult one to classify taxonomically since species are not stable and hybridisation is widespread, shape of inflorescence changes with age, and flower colours vary with age and maturity.

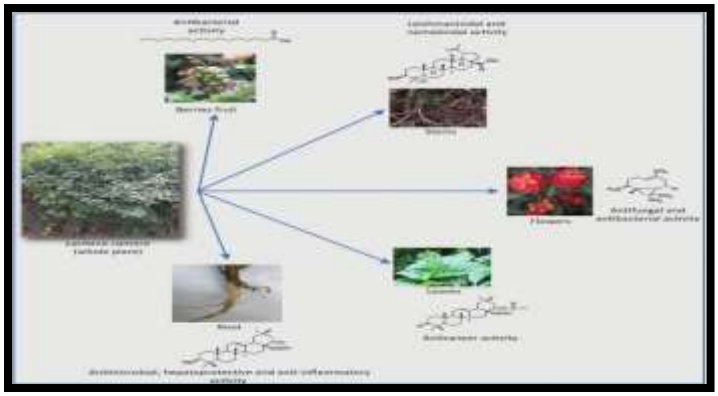


Figure No.1: Effects of parts of plant (lantana camara).

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 11 | November 2024 - Peer Reviewed Journal

II. PLANT DESCRIPTION[4,5,6]

L. camara is a robust, low, upright or subscandent shrub with a tetrangular stem, thick, recurved leaves, and a potent black current odor. The plant can extend to a width of 2.5 meters and reach heights of 1 to 3 meters. Oval or rectangular, acute or subacute, crenate serrate, rugose above, and scabrid on both sides are the characteristics of the leaves. The green leaves measure 3–8 cm in length and 3–6 cm in width.Rough hairs cover the stem and leaves. Umbels are tiny flowers that are held in bunches. The flower's color typically changes as it ages, sometimes shifting from orange to white to red in different shades. Almost all year long, the axillary head of flowers has a yellow neck. The calyx is little. Stem: Tetrangular stem, stout recurved pickles and covered with bristly hairs. Leaves: Opposite, simple, scented leaves with long petioles and rough, oval-shaped surfaces. Seeds: Initially seeds are green colored, turn into purple and finally black when they get matured. Flowers: Small, flower held in clusters (called umbels). Color usually orange, sometime white, pink. Fruits:- Round, fleshy, two-seeded bean, poisonous.

- Barriers fruits: - Antibacterial activity.
- Stems: - Nematicidal activity.
- Flower: - Antifungal & Antibacterial activity.
- Leaves: - Anticancer Activity.
- Roots: - Antimicrobial, hepato protective & anti-inflammatory activity.



Figure No.2: Morphology of Lantana camara Linn.
A) Flower, B) fruits, C) leaves) plant, E) stem, F) Roots.

Taxonomy [7]

- ✓ **Kingdom:** Planate
- ✓ **Division:** Magnoliophyta
- ✓ **Class:** Magnoliopsida
- ✓ **Order:** Lamiales
- ✓ **Family:** Verbenaceae;
- ✓ **Genus:** Lantana
- ✓ **Species:** Lantana camara Linn.

General Characteristic

Table No.1:- General characteristics of lantana Camara.

Characteristics	Description
Native	Tropical region in central & South America
Synonym	Camera Vulgarise
Distribution	Naturalised in countries at 35°N & 35°S latitudes
Conservation Status	Alien
Plant Category	Annuals & biennials, ground covers
Plant Characteristics	Poisonous
Foliages Characteristics	Fragrant, evergreen
Foliages Color	Pink Yellow
Propagation Method	From Herbaceous stem cuttings

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 11 | November 2024 - Peer Reviewed Journal

III. CHEMICAL CONSTITUENTS[8,9]

Phytochemicals analysis of the leaves of L camara showed that the plant contained alkaloids, glycosides, steroids, saponins, flaonoids,coumarins, tannins, carbohydrates, hydlroxy anthraquinones, anthraquinones glycosides, proteins, plytosteroids, fixed oils, fats(9). A chemical examination of the floral extract and leaves revealed ten comparable lipid and carbohydrate compositions. The extracts from the leaves had more lipids, whereas the flowers had more carbohydrates than the leaves. The polyphenol content of L. camara was 917.60 mg/100 g in the leaves and328.56mg/100 g in the stem, while flavonoids content was 3.29 mg/100 g in the leaves and 8.03 mg/100 g in the stem L. camara leaves yielded 0.8% of essential oil. A-guaiene, a-humulene,a-copaene,acubebene,a-selinene,ß-elemene,ßselinene,delta-cadinene, germacrene D, B, aromadendrene, caryophylleneoxide, nerolidol, and spathulenol represented the major components of the essential oil of L camara[9].However, 26 compounds were characterized form essential oil of L.camara from Tamil Nadu regions, these included: Bicycloelemene, a-cubebene, a-copaene, ß-elemene, bicyclo, germacrene, a-guaiene,a-humulene, aromadendrene, naphthalene, germacrene D, ß-selinene, epi-bicyclosesquiphellandren, a-selinene, 1-hydroxy-1, 7-dimethyl-4-iso, ß-cadinene, caryophyllene oxide, veridifloral naphthalenamine,4-bromo, (-)-spathulenol, isospathulenol, tetracyclo, delta-cadinene,1-napthalenol.

Traditional Use of lantanacamara [10]

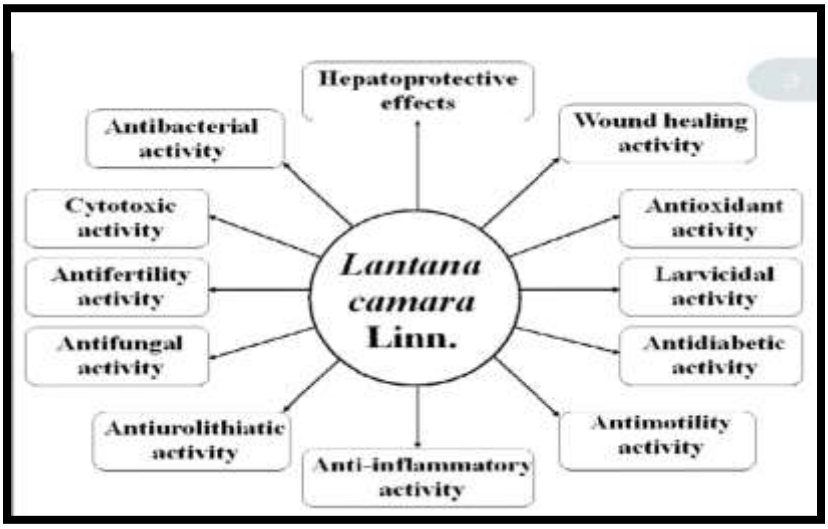
Table No2: Traditional use of lantana Camara.

Parts	Traditional uses
Leaves	Cuts, rheumatism, ulcer, catarrhal infection, tetanus, malaria, cancer, chicken pox, asthma, swelling, eczema, high blood pressure, bilious fever, ataxy of abdominal viscera, sores, measles, cold and fever
Whole plant	Bronchitis
Berries/Fruits	Fistula, pocks, tumors and rheumatism
Flowers	Chest complaint in children
Powdered root	Given with milk to treat stomachache and as a vermifuge, toothache
Bark	Astringent and used as a lotion in cutaneous eruptions, leprosy ulcers
Lantana oil	Skin infection, itches, and as an antiseptic for wounds
Plant extract	Drought-tolerant plant so good candidate for xeriscaping. Employed in the folk drug for the treatment of cancers, chickenpox, measles, asthma, ulcers, swellings, eczema, tumors, high blood pressure, bilious fevers, catarrhal infections, tetanus, rheumatism and malaria

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 11 | November 2024 - Peer Reviewed Journal

IV. MEDICINAL PROPERTIES OF LANTANA CAMARA LINN[11]

Figure No 3: Medicinal properties of lantana Camara



1. Antibacterial Activity

The leaves and flowers of some L. camara plant types have been shown to have antibacterial properties. While Staphylococcus aureus showed weak antibacterial activity, three distinct solvent extracts of the leaves and flowers of four distinct varieties of L. camara showed strong antibacterial activity against E. coli, Bacillus subtilis, and P. aeruginosa. There have been reports of antibacterial activity inethanolic extracts of L. camara leaves and roots. The microdilution method was used to measure the antibacterial activity in vitro. Staphylococcus aureus, Proteus vulgaris, Pseudomonas aeruginosa, Víbriocholareae, Escherichia coli, and two multiresistant strains of E. coli and S. aureus were all susceptible to the extracts' antibacterial activity.

2. Antifungal Action

The antifungal properties of L. camera's ethanol and hot water extract were tested against fungi that cause brown and white rot in wood. Both extracts demonstrated effective antifungal activity against the fungi that cause white and brown rot, but at very low concentrations (0.01%), ethanol extract showed great promise. Additionally, L. camara was tested against Alternaria sp., which causes a variety of plant diseases, particularly in vegetable plants. Using the food poison plate method, the antifungal activity was assessed at three distinct extract concentrations: 10 mg/ml, 15 mg/ml, and 20 mg/ml. L. camara demonstrated strong antifungal activity against Alternaria sp. at a dosage of 20 mg/ml.

3. Antimicrobial Effects

The antimicrobial activity of the petroleum ether, methanolic, and water extracts of L. camara was investigated against Bacillus subtilis, Escherichia coli, and Candida albicans. At concentration of 250 mg and more, petroleum ether and methanolic extracts of the leaves showed potent antibacterial and antifungal activity.

4. Antioxidant Effects

Antioxidant activity of L. camara of aerial parts methanolic extract, its tractions and purified compounds (lantadeneoleanolic acid, and lantanilic acid) were determined using 1, 1-diphenyl-2 picrylhydrazyl (DPPH). The methanolic extract showed 67% inhibition of DPPH free radical with ECs value of: 875 Hg/ml, the three fractions were also active and exhibited 70%, 72%, and 65% inhibition, respectively, with ECsovalue of 375 ug/ml (10).

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 11 | November 2024 - Peer Reviewed Journal

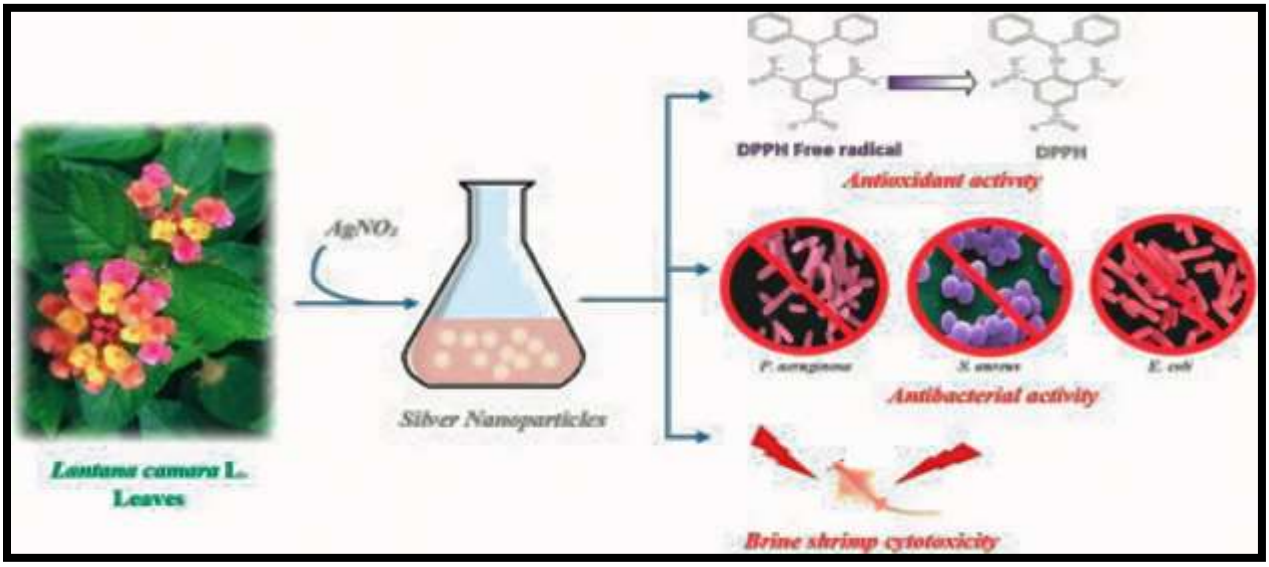


Figure No.4: Antioxidant activity of lantana camera.

5. Wound Healing Activity

Wound healing property of aqueous extract of leaf of L. camara was reported in rats. 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.

6. Effect on Red Blood Cells

An aqueous extract of Lantana camara was tested for its effects on RBC shape and osmotic fragility. The results showed a significant ($p < 0.05$) increase in hemolysis and changes to RBC morphology when the extract was present. These Lantana camara effects could be linked to certain pharmacological characteristics of the chemical components in the aqueous extract.

7. Antiulcerogenic Activity

Antiulcerogenic activity of the methanol extract of leaves of L. camara was reported on asprin, ethanol and cold resistant stress induced gastric lesions in rats. Pre-treatment of the effected rats with the extract (200 and 400 mg/kg bodyweight) showed significant protective effect in aspirin induced, ethanolinduced and cold restraint stress induced ulcers in rats. The extract resulted in dose dependent antiulcerogenic activity in all models.

8. Antifilarial Activity

Antifilarial activity of crude extract of L. camara stem was reported. The extract and its chloroform fraction resulted in the death of adult Brugiamalayi and sterilised most of the surviving female worms in the rodent model Mastomyscoucha.

9. Anti fertility Activity (Embryo Toxicity):

Effects of hydro alcoholic extract of L. camara leaves were studied on fertility, general reproductive performance and teratology in female albino Wistar rats. The extract interfered in the frequency of fetal skeleton anomalies from dam's treated with the extract and induced embryo toxicity as indicated by postimplantation loss, without any signs of maternal toxicity.

V. CONCLUSION

The demand for herbal medications has significantly increased in recent years. It is well known that plants have a wide variety of chemical components with numerous pharmacological characteristics. Medicinal plants have yielded numerous potent and effective medications for the treatment of terrible illnesses. Therefore, it is evident that research on medicinal plants is crucial for human welfare in terms of producing herbal medications. One of these fundamental medicinal plants that have been utilized in traditional medicine all around the world is Lantana camara. Numerous Phytochemical studies have revealed that the plant is abundant in both essential oils and significant chemical components. Numerous chemical components, including steroids, coumarin, monoterpenoids, flavonoids, and diterpenes, have been identified in L. camara. The greatest number of pharmacological studies conducted. Leaf extracts of lantana exhibit antimicrobial, fungicidal, insecticidal and nematicidal properties. Which possess antimicrobial, immunosuppressive and anti tumour activity.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 11 | November 2024 - Peer Reviewed Journal

VI. REFERENCE

1. *Amir Nawaz, Mohammad adnan Ayub, farwanadeem and Jamal Nasser AL- surbahi medicinal plant having high therapeutic potential.*
2. *Sanjeeb kalita, gaurav Kumar, loganathan karthik, kokativenkatabhaskararao, molecular and microbiology research laboratory, Vellore, Tamil Nadu.*
3. *Lantana camara linn chemical constituent and medicinal property, NAR agricultural farms, Appannapeta, Garedepally-508201 Andhra Pradesh, India.*
4. *B.shivakumar ,Vivekgowda, V.A,beerappadilha C.Y& Nitin K.P department of Pharmacognosy bharathi College of pharmacy, Rajiv Gandhi university of Health Science, bharathi Nagara, madhur -571422 mandya Karnataka.*
5. *Roshn igurangand raj Kumar thapa, pharmacy program, Gandaki University, pokhara, Kashi 33700 Nepal.*
6. *Muhammad Ali, Mohammad Jameel show kat R. Mir and shahnaz Sultana faculty of phytochemistry research laboratory, faculty of pharmacy, jamiahamdardp. Ohamdar Nagar, New Delhi -110062 India.*
7. *Ahmad M, Khan MA, Rashid U, Zafar M, Arshad M, Sultana S. Quality assurance of herbal drug valerian by chemotaxonomic markers. Afr J Biotechnology. 2009; 8:1148-154.*
8. *Ashwini S, Girish K. Phytochemicals screening and antibacterial activity of methanolic leaf extract of Coleus aromaticus Benth. Int J Res Pharm Sci 2014; 5(4):270-4.*
9. *Swamy MK, Sinniah UR, Akhtar MS. In vitro pharmacological activities and GC-MS analysis of different solvent extracts of Lantana camara leaves collected from tropical region of Malaysia. Evid Based Complement Alternat Med 2015; 2015:506413.*
10. *Srinivasahan V, Durairaj B. Antioxidant and free radical scavenging effect of Morinda citrifolia fruit extract. Int J Pharm Pharm Sci 2014; 6(4):55-9.*
11. *Girish K. Antimicrobial activities of Coleus aromaticus Benth. J Pharm Res 2016;10(10):635-46*
12. *Santos PR, Oliveira AC, Tomassini TC. Controle microbiogico de productous fitoterapicos. Rev Farm Bioquim 1995; 31:35-8.*
13. *Santos PR, Oliveira AC, Tomassini TC. Controle microbiogico de productous fitoterapicos. Rev Farm Bioquim 1995; 31:35-8.*
14. *Ghisalberti EL. Lantana camara L. (Verbenaceae). Fitoterapia 2000; 71:467-86.*