

Review on Treatment, Control and Various uses of Evergreen Lantana Camara Linn

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Abstract- The knowledge of traditional medicine and medicinal plants and their study of scientific chemical principal may lead to the discovery of newer and cheaper drugs. Lantana Camara is useful to cure several diseases such as cuts, swellings, ulcer, cataract, bilious, fever, itches, eczema, rheumatism and used for various medicinal preparation for numerous biological activities like antimalarial, antibacterial, anti-inflammatory antifertility antioxidant etc. Lantana Camara has been expanding and now days established in many regions of the world and also in India. It useful to control scattered and spasmodic attempts. This species has been the target of biological control programmers for over a century with successful control only being reported in few instances.

Index terms- Medicinal plant, Lantana Camara, medicinal preparations, control attempts, cure several diseases, biological activities

INTRODUCTION

Lantana Camara is a highly variable ornamental shrub, neotropics. It has been introduced to most of the tropics and subtropics as a hedge plant and has since been reported as a extremely weedy and invasive in many countries. Lantana Camara linn, typical in America and Africa and are popularly known as “Camara”, “Cambaris” or “Chumbinho”. Medicinal plant represents an important source of medicinally important compounds. Since ancient time medicinal plants are Used to cure several types of health problems. The different plant of lantana Camara plant extract were useful in various disease

like diaphoretic, tonic, antispasmodic, treatment of itemotional stress etc. The purpose this study was to evaluate the biological activity and uses of parts of plant of lantana Camara.

TAXANOMY

Kingdom: plantae
IPhylum: Spermatophyta
Subphylum: Angiospermae
Division: Magnoliophyta
Class: Magnoliopsida
Order: Lamiales
Family: Verbenaceae
Genus: Lantana
Species: lantana Camara Linn

PLANT DESCRIPTION

Synonyms: Common name:
Marathi- Ghaneri (घाणेरी), Tantani (तणतणी)
Hindi- Raimuniya (रईमुनिया)
Sanskrit- Vanacchedi
English- Arch man
Botanical name: *Lantana Camara* Var. *aculeata*
Biological source: It is obtained from whole plant of Lantana Camara Linn.

MORPHOLOGY

Colour: Flowers are red, pink, orange, yellow, white in colour and it changes after maturation

Fruits are green to dark purple in colour.

Odour: Flowers are tutti frutti smell with peppery undertone.

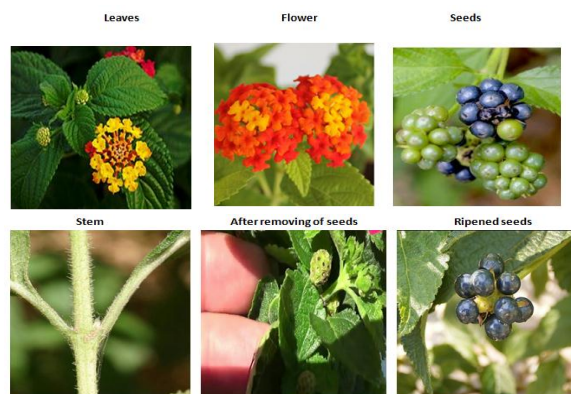
Leaves are strong aromatic when crushed.

Taste: Leaves are aromatic with a minty taste.

Size: Small perinneal shrub and grow around 2m tall and dense thick.

Shape: Flowers are small tubular shape with four petals, leaves are broadly ovate

Part used: Whole plant (leaves, flower, seeds, stem, root.)

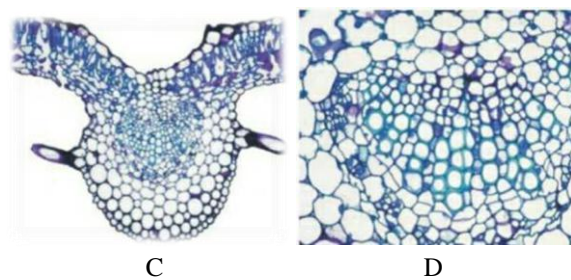
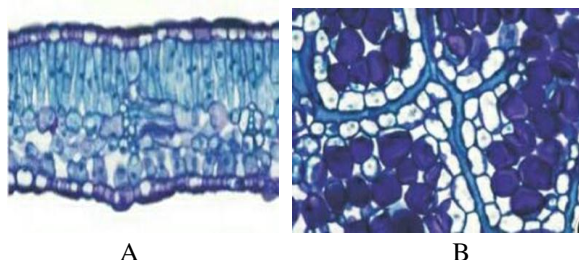


MICROSCOPY

Microscopy studies were carried out by preparing thin section of leaf. The thin section were collected in watch glass and bleached with bleaching agent along with little boiling. The thin section further washed with water and section of Lantana Camara leaf blades stained with Blue Toluidine.

The figure A, B, C, and D of Lantana Camara are

- Transversal section of the leaf blade showing mesophyll dorsiventral.
- Paradermal section of the leaf showing the secretory idioblasta.
- General aspect of the medium vein of leaf.
- Detail of the vascular bundle showing xylum and phloem.



GEOGRAPHICAL SOURCE

Lantana Camara found along roadsides, in degraded lands, in riparian zones or watercourses and it is often cultivated indoors or in a conservatory, but can also thrive in a garden with sufficient shelter.

Lantana camara is native to central and south America widely naturalized in tropics and subtropics. And it is naturalised includes, Africa, Australia, India, South eastern Asia and many oceanic island with warm climates.

DISCRIPTION

Lantana camara is a small perennial evergreen shrub that can grow upto 2 meters tall and 2.5 meters wide. Leaves are simple, opposite, ovate acute, dentate and both side rough because leaves and stems are curved with rough hairs. Flowers are tubular shaped have four petals arranged in clusters in terminal areas stem and flower are come in different colour and it depends on location, inflorescence, age and maturity. Roots are very strong and it gives out new fresh shoots even after repeated cuttings. Fruits are fleshy and glossy in appearance and black, purplish- black or bluish- black when mature. Flowering and fruiting throughout the year with a peak during the first two months of the rainy season.

Leaves: Perennial

- Seed propagated
- Shrub
- Vine/ Climber
- Woody

METHOD OF PREPARATION

- The aerial parts of the plant (leaves, flowers, stem, root) were shade dried for five days. The plant material were finely ground and dried powder (25 gm) of each part were extracted sequentially using

soxhlet extractor with 250 ml of hexane, petroleum ether, chloroform and methanol separately in order to extract non polar and polar compounds. The crude extracts were then filter paper and concentrated in vacuum at 40°C using a rotary evaporator. The concentrated extracts were subsequently dried aseptically at room temperature.

2. Simple method

Collect the fresh leaves of Lantana Camara



Wash it with distilled water.



Grind it in grinder and filter it.



Now the juice is ready to use.

3. Take 8-10 leaves + 1 glass water



Boil until volume becomes half



Filter the boiling material



And the filtrate is used and gives relief (1 cup / day).

4. 2 – 3 fresh leaves of Lantana camara are crushed on hand and smell it. This method is useful for cough and cold.

5. 50 gm roots of lantana camara + 50 gm hirda



Grind it into small powder



1 tea spoon prepared powder + 1 glass hot water



Mix it well by stirring



And this solution is useful to relieve on piles. It takes morning and night up to 1 glass

CHEMICAL CONSTITUENTS

Major biochemical constituents of Lantana Camara were identified as triterpenes like lantadenes – A, B, C, D, alkaloids, flavonoids, saponin, tannins, germacrene- A, B, D, valencene (main compound) and gurjunene. It also contains lantanin, lantanoside, linaroside, camarinic acid, essential oil.

- Properties and Biological activities of Lantana camara:
- Lantana Camara is an important medicinal plant of source of drug in traditional system of medicine field. It has several therapeutic activities mainly as herbal medicine. Lantana Camara plant has been used to treat a wide variety of disorders. It was found to be used in folk remedies for cancers and tumours.

Lantana leaves are taken and placed on skin or put a handful of fresh leaves in mesh bag and dip in your water bath. And the leaves are made into a poultice to treat sores, chicken pox, measles, cuts, rheumatism, asthma, cold, high blood pressure, ulcer, and acts as a vermifuge. Decoctions were applied externally for leprosy and scabies.

A tea prepared from the Lantana Camara leaves and flowers was taken against fever, influenza and stomach- ache. From the leaves, an alkaloid function which lowered blood pressure, accelerated deep respiration.

Crushed leaves of the lantana is effective in snakebite case. It is directly applied on the bitten area. Lantana Camara leaves are known to be antiphlogistic, anti-dermatoses and have a cooling effect.

The powdered root in milk was given to children for stomach- ache. Root of Lantana Camara are known to be antifebrile, refrigerant and it is rich in oleanolic acid. The decoction of dried roots are used for gonorrhoea, cough, mumps, malaria and influenza.

Flowers are known to be hemostatic and the decoction of dried flowers is used for haemoptysis and pulmonary tuberculosis.

1. Wound healing activity:

Lantana Camara shows wound healing properties. The leaf extract of lantana has been shown to be antiseptic, anti-leprosy activity. The wound healing activity of L. Camara has two different solvent extracts were prepared from the leaves of plant ethyl acetate and ethanol were used for the extraction of active ingredients. The ethanol extract of lantana Camara increased the rate of wound contraction.

Topical application of the extracts on the wound (enhance wound contraction), synthesis of collagen and decreased wound healing time.

Some leaves are taken in a mortar and pestal prepared a paste and aapply on cuts skin or it acts as a wound healing activities.

2. Larvicidal activity/ Mosquito controlling activity:

Lantana Camara gives the natural product of plant origin with insecticidal properties for control of insect vector. Various product synthesized, which results in resistance development by the mosquito. Large number of compound and medicinal plant essential oils exhibiting larvicidal activity. The ethanolic and methanolic extract of Lantana Camara leaves and flowers showed a good mosquito larvicidal activities against mosquito species. Due to it's property it is known as "mosquito repellent plant".

From the leaves of Lantana juice are prepared by using above given method. The prepared juice are throw in sewerage, gutters, water and the juice is useful for killing the larvae of maleria like dangerous diseases.

3. Antimicrobial activity:

The antimicrobial activity of the petroleum ether, methanolic, and water extract of Lantana Camara was investigated against Bacillus Subtilis, Escherchia Coli and Candida Albicans. Methanolic extract of leaves and roots shows the potent antibacterial and antifungal activity by microdilution method. The extract of root, stem, leaf, flower and seeds of Lantana Camara are the source of antibiotics based on natural products. Lantana Camara have a broad antimicrobial spectrum and be a novel source of antimicrobial drugs.

4. Antifungal activity:

Antifungal activity of Lantana Camara was screened against Alternaria sp. Which causes different plant diseases especially in vegetable plants.

Antifungal activity of ethanol and hot water extract of Lantana Camara was screened against wood destroying white and brown rot fungi. Solvent extract of Lantana Camara possess antifungal activity against pathogenic Coiletotrichum Falcatum and can be exploited as natural fungi.

5. Antiparasitic activity:

Lantaailic acid, camaric acid and olenolic acid isolted from the methanolic extract of the aerial parts of Lantana Camara possessing a nematicidal activity. The extract of stem portion of Lantana Camara possessed a antifilrial activity.

6. Anticancer activity:

The anticancer effect of Lantana Camara root and leaf extracts were studied against jurkat l. leukemia cell line by MTT assay. The extract possessed statistically similar antineoplastic property. The yellow flowers were dried and extracted by different solvents with increasing polarity.

7. Cardiovascular activity:

The cardiovascular activity of the ethanolic extract of Lantana Camara leaves was evaluated in different experimental models. The ethanolic extract of Lantana Camara leaves produced negative inotropics and negative chronotropic effect. Ethanolic extract of Lantana Camara leaves reduces work load of heart, maintain inotinic levels by negative chronotropic effect relaxes the smooth muscles.

8. Antithrombine activity:

Methanolic extracts prepared from the leaves of Lantana Camara have been found to inhibit human thrombin.

9. Antiulcerogenic activity:

Lantana Camara a widely growing shrub has been used in the traditional medicine for treating many ailments, including gastrointestinal disorders, ulcers and internal sores.

Antiulcerogenic activity of the methanol extract of leaves of Lantana Camara was reported on aspirin, ethanol and cold resistant stress induced gastric lesions in rats. The extract resulted in dose dependant antiulcerogenic activity in all models. The methanolic extract of Lantana Camara leaves shown healing of gastric ulcers and also prevent of development of duodenal ulcers.

10. Antifilarial activity:

Antifilarial activity of crude extract of Lantana Camara stem was reported. The extract and its chloroform fraction resulted in the death of adult Brugia Malayi and sterlised mostof the surviving female worms in the rodent model.

11. Antiinflammatory activity:

Aqueous extract of Lantana Camara shows antiinflammatories activities in albino rats.

12. Antifertility activity (Embryo toxicity):

Effect of hydroalcoholic extract of Lantana Camara leaves was studied on fertility, the extract interfered in the frequency of fetal skeleton anomalies from dams treated with the extract and induced embryotoxicity. As indicated by post implantation loss, without any signs of maternal toxicity.

13. Antirolithiatic activity:

Extract treatment significantly reduced the deposition of calcium, oxalate and also reduced urinary excretion of calcium oxalate and creatinin.

14. Antioxidant activity:

Antioxidant activity of the leaves of Lantana Camara was reported by reducing power activity. Leaves extracts exhibited high antioxidant effect, however younger leaves exhibited strong antioxidant activity than the older or matured leaves.

Strong antioxidant activities used as a potential source of natural antioxidant against free radical associated diseases.

In agricultural areas or secondary forest it can become the dominant understorey shrub, crowding out other native species and reducing biodiversity. The formation of dense thickets of Lantana Camara can significantly slow down the regeneration of forests by preventing the growth of new trees.

1. Herbicide control:

There are many herbicides registered for Lantana control and have many application techniques. Spraying the entire plant usually kills plant that are less than 2m high.

2. Mechanical and physical control:

It is suitable for small infestations. Lantana can be removed mechanically and physically in several ways including stickraking, bulldozing, ploughing and grubbing. These techniques are mainly suited to medium – sized infestation.

3. Fire :

Fire is often used prior to mechanical or herbicide control to improve their effectiveness or as a follow – up to such methods. It can also provide some control when used on it's own under the right conditions.

4. Biological control:

The biological control agents vary in their effectiveness against the many different types of Lantana for example, Lantana can drop it's leaves when stressed, depriving some agents of their food.

- Camara is one of the most important use to give protection for the garden from any attackers. Because it is dense and thickest, and animals does not eat Lantana so it is useful as like a compound wall.
- Dried Lantana leaves that have been burned in a glass jar is also known to be natural mosquito repellent. The crushed leaves is used as a furniture polish.
- Lantana Camara use as an inhalant for respiratory problems.

Pound Lantana leaves



Boil in water for 5 minute by using a tight fitting lid.



Uncover and inhale the steam directly from the pot or pour into the container with a narrow mouth.



Inhale the steam

OTHER USE

Bio Fuel:

Lantana Camara twigs and stems serve as useful for cooking and heating in many regions of India. It's use for fuel, ethanol production is recommended in various research findings.

Kraft Pulping:

Lantana Camara as a potential source of raw material for paper making. Thus it is important to develop a management framework keeping in purview benefits and limitations of various contril technique for sustainable management of Lantana Camara.

- Lantana fruits are delicacy for many birds, it is thus useful as a honey plant and used for butterfly gardening.
- The roots of Lantana contain a substance that may possibly be used for rubber manufacturer.
- Decoction of bark is used as treatment for fever.

General overview uses of Lantana Camara:

- Lantana Camara leaves can be used for relief from headache, toothache and pains due to insect bites.
- The leaves of Lantana are applied on the snakebite areas to get instant relief. This is mostly practiced by the tribal people worldwide.
- Lantana leaves tea gives relief from fever, flu, colds, cough and indigestion.
- Fresh leaves of Lantana give relief from joint pain, wounds, sprains and similar muscle and bones related problems.
- The decoction of the dried roots of the Lantana Camara is used to cure malaria, cough, influenza, mumps and gonorrhoea.
- Decoction of dried flowers is used for curing pulmonary tuberculosis and hemoptysis.
- Lantana leaves are used commonly for generating a cooling effect to the body and the skin.

TOXICOLOGY

Camara is one among the most toxic plant. Lantana Camara has been reported to make animals ill after ingestion. Its foliage contains the toxic pentacyclic triterpenoids called lantadenes. This lantadene cause hepatotoxicity and photosensitivity in grazing animals such as sheep, goats and horses. Heavy outbreaks of Lantana poisoning can occur mostly during drought. However, the toxicity occurs only on the consumption of high amount of plant material. The prominent clinical signs of poisoning include photosensitization and jaundice and loss of appetite in poisoned animals occurs in 24 hours. However other studies have found evidence which suggests that ingestion of Lantana Camara fruit poses no risk to humans and are in fact edible when ripe.

CONCLUSION

Lantana Camara is a evergreen weed found throughout India. It is native to central and South America widely naturalized in tropics and subtropics. Medicinal properties of Lantana Camara represents it is as a valuable plant and establishing it is a candidate for the future drug development. Its industrial use in medicine, cosmetics and insect repellants has a vast potential.

This plant of each and every part having noble pharmacological activities and it is an amazing herbal plant that can be used to treat various diseases.

REFERENCE

- [1] Barreto FS et al. Antibacterial activity of Lantana camara Linn and Lantana montevidensis Brig extracts from Cariri-Ceará, Brazil. Journal of Young Pharmacists. 2 (1); 2010: 42-44.
- [2] Badakhshan MP et al. A comparative study: antimicrobial activity of methanol extracts of Lantana camara various parts. Pharmacognosy Research. 1 (6); 2009: 348-351.
- [3] Sharma, O.P. (1981). "A Review of the Toxicity of Lantana camara (Linn) in Animals". Clinical Toxicology.
- [4] MOHAN RAM, H.Y. (1984). "Flower Colour Changes in Lantana camara". Journal of Experimental Botany.
- [5] Sanders, R.W. (2012). "Taxonomy of Lantana sect Lantana (Verbenaceae)". Journal of the Botanical Research Institute of Texas.
- [6] Berry, Z C; Wevill, K; Curran, T J (2011). "The invasive weed Lantana camara increases fire risk in dry rainforest by altering fuel beds". Weed Research.
- [7] Ahmed. R (2007). "Allelopathic effects of Lantana camara on germination and growth behavior of some agricultural crops in Bangladesh". Journal of Forestry Research.
- [8] Sathish, R.; et al. (March 2011). "Antiulcerogenic activity of Lantana camara leaves on gastric and duodenal ulcers in experimental rats". J Ethnopharmacol.
- [9] Chavan and Nikam (1982). "Investigation of Lantana camara Linn (Verbenaceae) leaves for larvicidal activity".
- [10] Carstairs, S. D. et al. (December 2010). "Ingestion of Lantana camara is not associated with significant effects in children". Pediatrics.
- [11] Khare CP. Indian Medicinal Plants – An Illustrated Dictionary Berlin, Springer, 2007.
- [12] Kirtikar KR, Basu BD. Indian medicinal plants. New Delhi, India 2006.
- [13] Ganjewala D, Sam S and Khan KH. Biochemical compositions and antibacterial activities of Lantana camara plants with yellow,

- lavender, red and white flowers. Eurasian Journal of BioSciences. 3; 2009: 69-77.
- [14] Bhakta D, Ganjewala D. Effect of leaf positions on total phenolics, flavonoids and proanthocyanidins content and antioxidant activities in *Lantana camara* (L). Journal of Scientific Research. 1 (2); 2009: 363-369.
- [15] Kalita S et al. Phytochemical composition and in vitro hemolytic activity of *Lantana camara* L. (Verbenaceae) leaves. Pharmacology online. 1; 2011: 59-67.
- [16] Kensa VM. Studies on phytochemical screening and antibacterial activities of *Lantana camara* Linn. Plant Sciences Feed. 1 (5); 2011: 74-79.
- [17] Venkatachalam T et al. Physicochemical and preliminary phytochemical studies on the *Lantana Camara* (L.) fruits. International Journal of Pharmacy and Pharmaceutical Sciences. 3 (1); 2011: 52-54.
- [18] Chopra RN, Nayar SL and Chopra IC. Glossary of Indian medicinal plants. CSIR New Delhi, India. 1956.
- [19] Thamotharan G et al. Antiulcerogenic effects of *Lantana camara* linn. Leaves On in vivo test models in rats. Asian Journal of Pharmaceutical and Clinical Research. 3 (3); 2010: 57-60.
- [20] Achhireddy NR, Singh M. 1984. Allelopathic effects of *Lantana* (*Lantana camara*) on milkweed vine (*Morrenia odorata*). Weed Science, 32: 757-761.
- [21] Achhireddy NR, Singh M, Achhireddy LL, Nigg HN, Nagy S. 1985. Isolation and partial characterization of phytotoxic compounds from *Lantana* (*Lantana camara* L.). Journal of Chemical Ecology, 11: 979-988.
- [22] S, Wahab A, Siddiqui BS. 2000. Pentacyclic triterpenoids from the aerial parts of *Lantana camara*. Chemical and Pharmaceutical Bulletin, 51: 134-137.
- [23] N, Gupta PK, Naithani S. 2011. Ceric-induced grafting of Acrylonitrile onto Alpha Cellulose isolated from *Lantana camara*. Cellulose Chemistry and Technology, 45 (5-6): 321-327.
- [24] Dua VK, Pandey AC, Dash AP. 2010. Adulticidal activity of essential oil of *Lantana camara* leaves against mosquitoes. Indian Journal of Medicine and Research, 131: 434-439.
- [25] Ganjewala D, Sam S, Khan KH. 2009. Biochemical compositions and antibacterial activities of *Lantana camara* plants with yellow, lavender, red and white flowers. EurAsian Journal of BioSciences, 3: 69-77.
- [26] Gentle CB, Duggin JA. 1997. Allelopathy as a competitive strategy in persistent thickets of *Lantana camara* L. in three Australian forest communities. Plant Ecology, 132: 85-95.
- [27] Ghisalberti EL. 2000. *Lantana camara* Linn. (Review). Fitoterapia, 71: 467-485.
- [28] Gooden B, French K, Turner P. 2009. Invasion and management of a woody plant, *Lantana camara* L., alters vegetation diversity within wet sclerophyll forest in south-eastern Australia. Forest Ecology and Management, 257: 960-967.
- [29] Hill RL, Seawright AA. 1983. The status of *Lantana* in New Zealand. In: M.J. Hartley (ed), Proceedings of the 36th New Zealand Weed and Pest Control Conference. Hastings, New Zealand, pp. 38-40.