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PHARMACOLOGICAL REVIEW OF LANTANA CAMARA .L REVIEW ARTICLE

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Abstract

Herbal medicine is the oldest form of healthcare known to mankind. Herbs had been used by all cultures throughout history. India has a rich tradition of plant based knowledge in health care. Among the large number of herbal drugs existing in India, very few have been studied systematically so far. *Lantana camara* is a rugged evergreen shrub from the tropics. The plant extract are used in folk medicine for the treatment of chicken pox, measles, asthma, ulcers, swellings, eczema and high blood pressure. Decoction of plant used for tetanus, rheumatism, malaria and Decoction of fresh leaves used for gargle for toothaches. Pounded leaves used for cuts, ulcers and swelling. The present study was attempted to investigate the wide pharmacological activities of *lantana camara* .L.

Key words: Herbal medicine, *Lantana camara*. Pharmacoloical activities.

Introduction

The genus *Lantana camara* (Verbenaceae) as described by Linnaeus in 1753 contained seven species, six from South America and one from Ethiopia. *Lantana camara* from the Latin *lento* means to bend. Probably derives from the ancient Latin name of the genus *Viburnum*. Which it resembles a little in foliage and inflorescence¹ *Lantana camara*.L commonly known as weed or red sage, unniceeti (Tamil), pulikampa (Telugu) and caturang (Hindi) is a significant weed commonly found throughout in India². It is ever green strong smelling shrub, with stout recurved prickles, leaves opposite, ovate or ovate –oblong, acute or sub acute, crenate - serrate, scab rid on both side³. It is grew up to a height of 1-2m, occurs luxuriously in elevation up to 2000m in tropical⁴, sub tropical and temperate regions. It was introduced in India as an ornamental plant but entirely naturalized and found throughout India³, it was listed one of the important medicinal plants of the world⁶.

The fruits are useful in fistula, pustules, tumors and rheumatism.⁶⁻⁹ The essential oil of *Lantana camara* showed a wide spectrum of antibacterial, antimicrobial and antifungal activity.¹⁰⁻¹² *Lantana camara*.L contains triterpenes; related compounds were lantandene C, reduced lantandene A, lantandene D, lantanolic and lantic acid¹³. Since very long time *lantana camara*.L reported to be used in traditional medicine system for itches, cuts, ulcers, swelling, bilious^{8,9} fever, tetanus, and carminative^{3,14} cold, head ache, uterine hemorrhage, chicken box, eye injuries, whooping cough, asthma⁵, bronchitis and arterial hypertension.^{15,16} A tea prepared from the leaves and flowers was taken against fever, influenza and stomach – ache. In central and south America, the leaves were in to poultice to treat sores, chicken pox and measles and high blood pressure were treated with preparation from the plant¹⁶.

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Characteristics, Pharmacological Effects and Constituents

Root: sweet and bitter tasting, refrigerant, antifibrile.

Leaves: minty tasting, cooling natured, antiphlogisitic, anti dermatoses.

Flowers: sweet tasting, mildly cooling, hemostastic.

Plant considered antiseptic, antispasmodic, vulnerary, diaphoretic and carminative.

Antibacterial Activity

The extract of flower, leaf, stem and root of *lantana camara.L* showed antibacterial activity against *Escherichia coli*, *pseudomonas aeruginosa*, *staphylococcus aureus*, and *staphylococcus saprohiticus*. The antibacterial activity was determined by disc diffusion method¹⁷, tube dilution technique¹⁸, agar well diffusion method, micro distillation method¹⁹. Essential oil of *lantana camara* had considerable effect of antibacterial activity. It was observed that stains of *E.coli* and *staphylococcus aureus* were more susceptible to essential¹⁸. *Lantana Camara* flower extract posses strong antibacterial activity All few types' yellow, lavender, red and white *lantana camara.L* flowers displayed almost similar antibacterial activities. Petroleum ether root extract shown less antibacterial activity on *pseudomonas aeruginosa* and *staphylococcus saprohiticus*. The chloroform extract produced a moderate inhibition zone against *staphylococcus aureus* (5m). Chloroform stem extract showed inhibitory effect against *staphylococcus saprohiticus*¹⁹.

In other study, the essential oil of *Lantana camara* exhibited prominent antibacterial activity against all the bacterial strains tested. Gram positive *Bacillus cereus*, *Bacillus subtilis* and *Staphylococcus aureus* were the most sensitive strains to L. camara essential oil. Nevertheless, Gram negative *Klebsiella pneumonia* and *Pseudomonas aeruginosa* were not susceptible to the essential oil at lower concentration. A matter-of-fact, Gram-positive bacterium was more sensitive to the essential oils than gram-negative bacteria²⁰.

Biochemical Composition and Antibacterial Activity

Study of the leaves and flowers of four *lantana camara* plants with yellow, red, lavender and white flowers showed three of the four to have similar carbohydrates and lipid compositions. The carbohydrate levels were higher in the flowers than the leaves, and the lipids higher in the leaves expect for the lavender and white flowered kinds. The carbo in lavender L camara was very low. Leaf protein electrophoresis also showed similarities and differences. Antibacterial activities varied according to the type of tissue used¹⁸.

Cytotoxicity

In vitro cytotoxicity activity of *lantana camara Linn* Study showed leaf extract of *lantana camara* is cytotoxic in nature and may possess antitumor activity that may be due to the presence of toxic lantanoids and alkaloids. Some taxa of *lantana camara* are toxic to ruminants and poisoning has been reported from Australia, india, new Zealand, south Africa and Americas^{21, 22, 36}.

Anti cancer Activity

Anti cancer effect of *lantana camara* root and leaf extracts against jurkat leukemia cell was investigated by MTT assay. *Lantana camara* leaf extract and root extract had roughly equaled anti proliferative activity on human leukemia jurkat cells. Morphological examinations indicated apoptosis induction of the mechanisam of activity on jurkat cells. The *lantana camara* root and leaf extracts might be subjects for further fractionation and identification to find new anti cancer agents²³.

Anti fungal Activity

Lantana camara leaves evaluated for anti microbial and anti fungal activity and L.camara oil was also evaluated for larvicidal activity against different mosquito larvae³⁷. The essential oil of *lantana camara*, tested against seven bacteria and eight fungi, showed wide spectrum of antifungal activities²⁴.

Anti helmentic Activity

Helminth infection is among the most common infection in men. Successive leaf extracts of *lantana camara* showed significant anthelmintic activity on selected worms. Anthelmintic activity was assessed using earth worms by the reported methods. Ethanolic extract found to be more active compared to remaining extracts⁴. Methanol extracts from the leaves, stems and roots of *lantana camara* were investigated for their anthelmintic activity against *pheritima posthuma*. The methnolic extract of stems of *lantana camara* were found to be most active²⁵.

Anti hyperglycemic Activity

A recent literature survey showed that *lantana camara.L* has clear the diabetes. Methanolic extracts of *lantana camara. L* administered orally in Alloxan induced

diabetic rates, the results showed significant reduction in the blood glucose concentration in dose dependent manner and also promising anti hyperglycemic activity against Alloxan induced diabetic rates³.

Anti motility Activity

Evaluation of anti motility activity was done in intestine of mice treated with *lantana camara.L* leaf powder, neostigmine used as a pro motility agent. Intestinal motility was assessed by charcoal meal test. The anti diarrheal effect of *lantana leaf* extract was studied against castor oil induced diarrhea model in mice. When the plant extract were administered intra peritoneally. There was significant reduction in fecal output compared with castor oil treated mice²⁶.

Anti micro-bacterial Activity

Chloroform and methanol extracts of *lantana camara.L* claimed for antimicrobial activity. The leaf extract of *lantana camara.L* was screened against three strains of mycobacterium tuberculosis using agar – well diffusion method. The MIC and MBC were determined using agar dilution method. Rifampicin kept as a standard drug for this study. Methanolic extract of *lantana camara.L* showed highest antimicrobial activity but it was much less activity than Rifampicin. The chloroform extract of *lantana camara.L* showed activity against all three strains of mycobacterium tuberculosis but it was less active than Methanolic extract²⁷.

Anti oxidant Activity

The anti oxidant activity of Methanolic extract of *lantana camara.L* has been reported. The study showed anti oxidant potential of leaves of *lantana camara* extract measured in terms of reducing and scavenging activity. The Methanolic extract prepared from leaves I and III position exhibited significantly higher anti oxidant activity than leaves present from IV to V position²⁸.

Anti ulcerogenic Activity

Methanolic extract of *lantana camara.L* has been reported anti ulcerogenic activity. Oral administrations of methanol extract of *lantana camara.L* exhibited dose dependent inhibition percentage respectively compared to ulcer control. Pre treatment with methanol extract of *lantana camara.L* leaves produced significant

anti ulcer effect which can compared by aspirin induced ulcer³. The methanolic extract of *lantana camara* administered orally in pyloric ligated rates, ethanol induced gastric ulcer and cysteamine induced duodenal ulcer. The *lantana camara* shown healing of gastric ulcer and also prevent the development of duodenal ulcer in rates²⁹.

Wound healing Activity

Wounds are inescapable events of life, which arise due to physical injury, chemical injury or microbial infections³⁰ *lantana camara* used as an herbal medicine for the treatment of antiseptic for wounds and superficially for leprosy and scabies²⁹.

The Ethanolic extract of *lantana camara* leaf was evaluated for their wound healing Potential in rates. Animals were experimentally wound in posterior neck area and treated with thin layer of blank placebo and placebo containing 5 and 10% *lantana camara* extract. Result of this topical application was assessed. Placebo containing leaf extracts significantly healed earlier than those treated with blank placebo histological analysis confirmed the results³².

In other study, investigation of burn wound healing activity of leaf extract of *lantana camara* on rates. Animals were anesthetized with ketamine. The burn wounds were created by pouring hot molten wax in to a metal cylinder placed on the back of the rates. The test group of the animals treated with ethanol extracts of *lantana camara* applied topically and control group left untreated. Wound healing assessed by rate of wound contraction and period of epithelialization. The extract showed antimicrobial activity against *staphylococcus aureus*, *klebsiella pneumoniae* and *E.coli*. Extracted treated wounds were healed, which is not distinct from control and promoting the wound healing activity on burn wounds³¹.

Other Pharmacological activities

The Ethanolic extract of *lantana camara* ointment prepared for topical treatment on chronic crusty or acute lesions of Dermatophilosis³³. Mosquito larvicidal activity and Phytochemical screening of methanol and ethanol extract of leaves and flowers of *lantana camara* larvicidal activity on III & IV instars larvae of

mosquito species *aedes aegypti* and *culexquinque-fasciatus* had been investigated in a dose dependent manner for 24 h³⁴. Essential from leaves of *lantana camara* possesses adulticidal activity against different mosquito species that was utilized for development of oil based insecticide as supplementary to synthetic insecticides³⁵.

Conclusion

Lantana camara is a rugged evergreen shrub from the tropics. Despite its popularity as an ornamental plant, commonly found throughout in India. *Lantana camara* is mainly used as an herbal medicine and in some areas as firewood and mulch. In some countries it is planted as a hedge to contain or keep out livestock. Leaf extracts of *lantana* exhibit antimicrobial, fungicidal, insecticidal and nematocidal properties. Which possess antimicrobial, immunosuppressive and anti tumor activity. *Lantana* oil is sometimes used for the treatment of skin itches, as an antiseptic for wounds and externally for leprosy and scabies. It has been used as natural insecticides before the discovery of synthetic organic insecticides³⁴. The presence of alkaloids in *L. camara* has been indicated³⁶. In future, there is a tremendous scope in research for this plant.

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