



A Review On : “Lantana Camara A Valuable Medicinal Plant”

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Abstract:-

Lantana camara, a species native to tropical America, is a plant of significant medicinal value in various traditional healing systems. Widely distributed across tropical and subtropical regions, it has gained attention due to its diverse bioactive properties. Research has shown that different parts of the plant, including the leaves, flowers, and stems, possess potent antimicrobial, anti-inflammatory, antioxidant, antidiabetic, and hepatoprotective activities. Additionally Studies suggest that Lantana camara may have anticancer potential and promote wound healing. These therapeutic properties make it a valuable resource in the development of natural remedies for a range of health conditions, including infections, inflammatory diseases, diabetes, liver disorders, and even cancer. However, while its medicinal potential is promising, concerns regarding its toxicity and the need for further clinical validation persist. As such, additional research into the plant's efficacy, safety, and appropriate dosage is essential before its widespread clinical use. This review highlights the significant medicinal applications of Lantana camara and emphasizes the importance of responsible use and further scientific exploration.

Key Words:- medicinal plant, antimicrobial activity, anti-inflammatory, antioxidant, antidiabetic, anticancer, wound healing, bioactive compounds, traditional medicine, toxicology, clinical research

Introduction :-

Linn, Lantana camara. Is an attractive flowering plant that is a member of the Verbenaceae family. L. Camara was most likely brought to India prior to the 1800s. At the moment, L. Camara is found all over India in areas with well-drained slopes and moderate to high summer rainfall. The plants can grow in dense thickets or individually in clumps, pushing out more attractive species. Many traditionally known plants have been thoroughly investigated using cutting-edge scientific methods in recent decades, and their numerous

therapeutic qualities—such as anticancer, anti-inflammatory, anti-diabetic, antibacterial, and antifungal effects—have been documented. All of its properties, including antifungal, antibacterial, anticancer, anti-inflammatory, and anti-diabetic actions.

The primary weed *Lantana camara* is found in more than 60 countries and comes in roughly 650 different varieties. The name "lantana," which comes from the Latin "lento," meaning "to bend," may have come from the genus *Viburnum*, to which it shares some leaf and floral characteristics. The species was introduced to India from Sri Lanka in 1809. At the National Botanical Gardens in Calcutta, lantana was introduced to India in 1807 as a visually appealing shrub.

The chemical components of *lantana camara* have been extensively studied, especially in India. Leaf oil is used as an antiseptic for wounds, the roots are used to heal toothaches, and the blooms are used to treat children's chest issues. Additionally, leaf extracts possess nematocidal, fungicidal, insecticidal, antibacterial, and antiproliferative qualities. Pharmacological research revealed that extracts from the leaves of *Lantana camara* possessed strong antioxidant qualities. The goal of the current effort is to document *L. camara*'s medicinal qualities and future prospects for additional scientific research aimed at creating potent therapeutic compounds.

Botanical Characteristics:

Scientific Name: *Lantana camara* L.

Family: Verbenaceae

Genus: *Lantana*

Common Names: Lantana, Spanish flag, wild sage



Fig:-Lantana Camara

Morphology:-

L. camara is a tiny tree or shrub with soft, woody stems that can reach a height of one to two meters. When crushed, the plant's rough-textured, ovate to elliptic leaves release a potent, fragrant aroma. The tiny blooms, which are usually seen in clusters, come in a variety of hues, from orange and yellow to red, purple, and pink, and can have several shades inside a single cluster. Small, berry-like fruits that ripen from green to black are produced by the shrub.

1. Size: It can reach a height of one to two meters, and under certain circumstances, three meters. Particularly in disturbed settings, the plant can spread widely and grow densely and bushily.

2.Leaves: The leaves are usually 4–12 cm long, ovate or lanceolate in form, and opposite (arranged in pairs). When crushed, they release a powerful, fragrant scent and have a rough, textured surface. Their rough look is a result of the serrated or coarsely toothed leaf margins. The upper surface of the leaves is dark green, while the underside, which has small hairs (pubescence), is lighter and frequently paler green.

3.Flowers:The inflorescence is made up of numerous tiny, tubular flowers that form a terminal cyme, or cluster of flowers. The flowers display a distinctive range of colors, with clusters occasionally containing several hues, such as yellow, orange, red, pink, and purple. The flowers are usually 1-2 cm in diameter and zygomorphic, or bilaterally symmetrical. • The four-lobed corolla of each individual flower can be tubular at the base and stretch out into a flat, rounded



Fig :- Flower & Leaves of Lantana Camara

4.Fruit: The fruit is a tiny drupe, which resembles a berry, that starts out green and turns black when it ripens. These fruits have a diameter of roughly 4 to 5 mm and contain seeds, which help the plant spread.



Fig:- Lantana Camara Fruit

5.Stems: Woody stems that are initially reddish or greenish turn more brown with age. The branches have a little rough texture due to their quadrangular (four-angled) shape and fine hair covering.

6.Root System: The plant's well-developed, fibrous root system adds to its invasive potential by enabling it to adapt to damaged habitats.

Habitat and Ecology:-

Native Range: Originally from the tropical parts of the Americas, especially South and Central America.

Invasiveness: In many regions of the world, including Australia, Africa, Asia, and the Pacific Islands, *Lantana camara* has become invasive. It may displace native plants, changing habitats and endangering biodiversity. It grows well in disturbed areas including forests, grasslands, and roadsides.

Toxicity: If consumed, certain plant parts can be harmful to pets and animals. If ingested in excess, the berries in particular might result in poisoning.

Uses:-

1. **Traditional Medicine:** *Lantana camara* has been used in traditional medicine for many cultures to heal wounds, fever, and inflammation. However, because of its toxicity, care should be taken.

2. **Ornamental Plant:** Although its invasive potential is a worry in many locations, its vibrant, brilliant blossoms make it a popular choice for landscaping and as an ornamental plant.

Management and Control:-

Since the species is invasive, attempts have been made to stop its spread via mechanical removal, the use of herbicides, and biological control (e.g., introducing diseases or natural predators). Controlling its growth is still difficult in many places, though.

The *lantana camara*'s history:-

Tropical America, more especially Central and South America, is where *Lantana camara* is indigenous. Its original habitats included sections of Mexico, Central America, and the Caribbean. Indigenous inhabitants in these areas have long cultivated the plant and used it for both medicinal and decorative purposes.

Global Spread:-

Introduction to Other Regions: *Lantana camara* was brought to Asia, Africa, and the Pacific Islands in the 19th century, mostly for decorative purposes. The plant was popular in gardens and as landscape hedges because of its vibrant, multicolored blossoms. **Invasive Status:** It started to expand out of control in the 20th century and was frequently brought to places that were not part of its natural habitat. It quickly spread to places like Australia, India, and South Africa, where it greatly changed ecosystems and outcompeted native flora.

Distribution of *Lantana camara*:-

Originally from Central and South America, *Lantana camara*, also referred to as *lantana*, is an invasive plant species that is currently found throughout most of the world. It is a well-known invasive species that has spread globally, particularly in tropical and subtropical areas. It frequently outcompetes native vegetation and disturbs ecosystems in regions like Africa, Asia, Australia, and the Pacific Islands. Climate, soil types, and human activities (such as trade, ornamental use, and land clearing) all have an impact on the distribution of *Lantana camara*. Because of its ornamental value in gardens and as a hedge plant, the species has been purposefully

introduced to many areas; nonetheless, its invasive nature has had a substantial negative influence on the environment and the economy.

Factors Influencing Distribution:-

Climate and Soil: Although *Lantana camara* may grow in a variety of environments, it prefers tropical and subtropical regions with soils that drain properly. Additionally, it can thrive in disturbed areas such the borders of forests, pasture grounds, and roadsides.

Human Activity: The species has proliferated as a result of its introduction to some areas to prevent soil erosion and its use as an ornamental plant in gardens. Additionally, it has accidentally spread through cattle, agricultural equipment, and seeds in contaminated soil.

Ecological Impacts: *Lantana camara* can outcompete native plants, decrease biodiversity, and change habitat structures in regions where it is invasive, all of which have an adverse effect on local agriculture and animals.

Distribution and Spread:-

Africa: *Lantana camara* has become a significant annoyance in both natural environments and agricultural areas across a large portion of sub-Saharan Africa.

Asia: It has spread to a number of Asian nations, where it poses a threat to indigenous agriculture and competes with natural species.

The species is common in Australia and the Pacific Islands, where it is considered a “Weed of National Significance.”

Caribbean and Pacific: It is known to disturb native vegetation and has been observed on numerous islands.

Therapeutic uses :-

1. **Anti-inflammatory Activity:** Research has demonstrated that *lantana camara* has strong anti-inflammatory qualities, which makes it a valuable treatment for inflammatory disorders and ailments including arthritis.

2. **Antimicrobial Properties:** According to a number of studies, *Lantana camara* exhibits antimicrobial activity, which includes antibacterial and antifungal activities, and can be used to treat wounds and skin infections.

3. **Antioxidant Properties:** The antioxidant benefits of *lantana camara* are attributed to its abundance of flavonoids and phenolic substances. This may have uses in preventing chronic illnesses and can aid in defending against oxidative stress.

4. **Effects against Diabetes:** According to some research, *Lantana camara* may have hypoglycemic effects, which could help control diabetes by reducing blood sugar levels.

5. **Hepatoprotective Activity:** Research has examined the possible liver-protective benefits of *lantana camara*, especially in situations including liver injury or jaundice.

6. **Discomfort Relief and Antispasmodic Properties:** *Lantana camara* has long been used to treat muscle cramps and discomfort by acting as an analgesic and antispasmodic.

7. Wound recovery: Because of its antibacterial and anti-inflammatory qualities, the herb has long been used to treat wounds and encourage quicker recovery.

Habitat:-

Originally from the Americas, *Lantana camara*, also referred to as lantana, is a tropical shrub that has spread throughout the world as an invasive species and decorative plant. It usually inhabits tropical and subtropical locations, such as roadsides, disturbed areas, and the borders of forests. Although it can withstand a variety of soil types and conditions, including as dry, rocky, and sandy soils, it enjoys full sunlight and grows best in well-drained soils. Introduced to a number of places, including Africa, Asia, and Australia, *Lantana camara* has frequently outcompeted local plants and become invasive.

Life Cycle of lantana camara:-

1. Seed Germination: The life cycle of *Lantana camara* starts with seeds that are spread by water, wind, or animals. Under ideal circumstances, which include warm temperatures and moisture, seeds usually germinate in two to four weeks. Although it loves well-drained, disturbed locations, the plant can sprout in a range of soil types.

2. Seedling Stage: A seedling develops once it germinates. At this point, *Lantana camara* starts to form its distinctive broad leaves and creates its root system. It can thrive in a range of environments, including rocky and dry soils, and is especially hardy. If the environment is right, the seedling can grow quickly in the first several months.

3. Vegetative development: The plant goes through a phase of vegetative development as it ages. It develops tough, opposing, thick leaves on several stems and branches. The plant accumulates energy during this time and can grow rapidly, frequently developing into a bushy, sprawling shrub. Although it may grow bigger under ideal circumstances, it can attain a height of 1-2 meters in the wild.

1. Flowering: After three to six months of growth, *lantana camara* usually starts to bloom in the warm months of spring and summer. One of the plant's most notable characteristics are its unique, vibrant inflorescences, which are collections of tiny flowers. The flowers are very appealing to pollinators, including butterflies, bees, and birds, and are frequently yellow, orange, pink, or red. All year long, flowers can continue to bloom in tropical regions.

2. Fruiting: *Lantana camara* yields tiny, round berries after flowering. These berries begin green and turn red, black, or purple as they ripen. The seeds included in these berries serve as the following generation's mechanism of dissemination. Particularly in areas with a warm temperature, the fruiting season can last all year long, allowing for constant reproduction.

3. Mature Plant and Senescence: After establishing a robust root system and reliably bearing flowers and fruits, *Lantana camara* reaches maturity. Although it frequently regenerates by seed and resprouting, it can survive for several years in ideal conditions. It can swiftly take over landscapes and outcompete native flora in places where it becomes invasive.

4. Dispersal and New Growth: When a plant reaches maturity, it produces seeds that are spread by wind, water, or animals to new locations. *Lantana camara* can spread quickly in disturbed areas because it can also reproduce asexually by sprouting from damaged stems or roots.

Types of Lantana Species:-

1.Common Lantana (*Lantana camara*):

The blooming plant species *Lantana camara*, also referred to as common lantana, is indigenous to the American tropics, especially Central and South America. It is known for its vivid, multicolored flower clusters and adaptability to a range of conditions. It is a member of the verbena family (Verbenaceae). In addition to being widely grown for aesthetic reasons, *Lantana camara* is now known to be an invasive plant in many places, such as portions of Africa, Asia, and Australia, where it outcompetes native vegetation and disturbs ecosystems.



Fig:-Common Lantana (*Lantana camara*)

2.Trailing Lantana (*Lantana montevidensis*):

The blooming plant species *Lantana montevidensis*, also referred to as trailing lantana, is indigenous to the American tropics, especially Central and South America. It is known for its vivid, multicolored flower clusters and adaptability to a range of conditions. It is a member of the verbena family (Verbenaceae). In many places, including areas of Africa, Asia, and Australia, *Lantana montevidensis* is infamous for being an invasive species that outcompetes local flora and disturbs ecosystems. It is also commonly grown for ornamental purposes.

3.Buttonsage (*Lantana involucrata*):-

The flowering plant *Lantana involucrata*, often called buttonsage or yellow sage, is indigenous to tropical and subtropical areas of the Americas and belongs to the verbena family (Verbenaceae). Because of its pretty, compact growth habit and clusters of tiny, yellow or white flowers, buttonsage is occasionally employed in landscaping and is thought to be less invasive than its more aggressive siblings, *Lantana camara* and *Lantana*

montevidensis. Roadsides, disturbed areas, and open forests are the usual habitats of *Lantana involucrata*. In certain cultures, it may have therapeutic benefits, and by assisting pollinators, it contributes to regional ecosystems.



Fig :-Buttonsage (*Lantana involucrat*)

Isolation of Bioactive Compounds From *Lantana Camara*:-

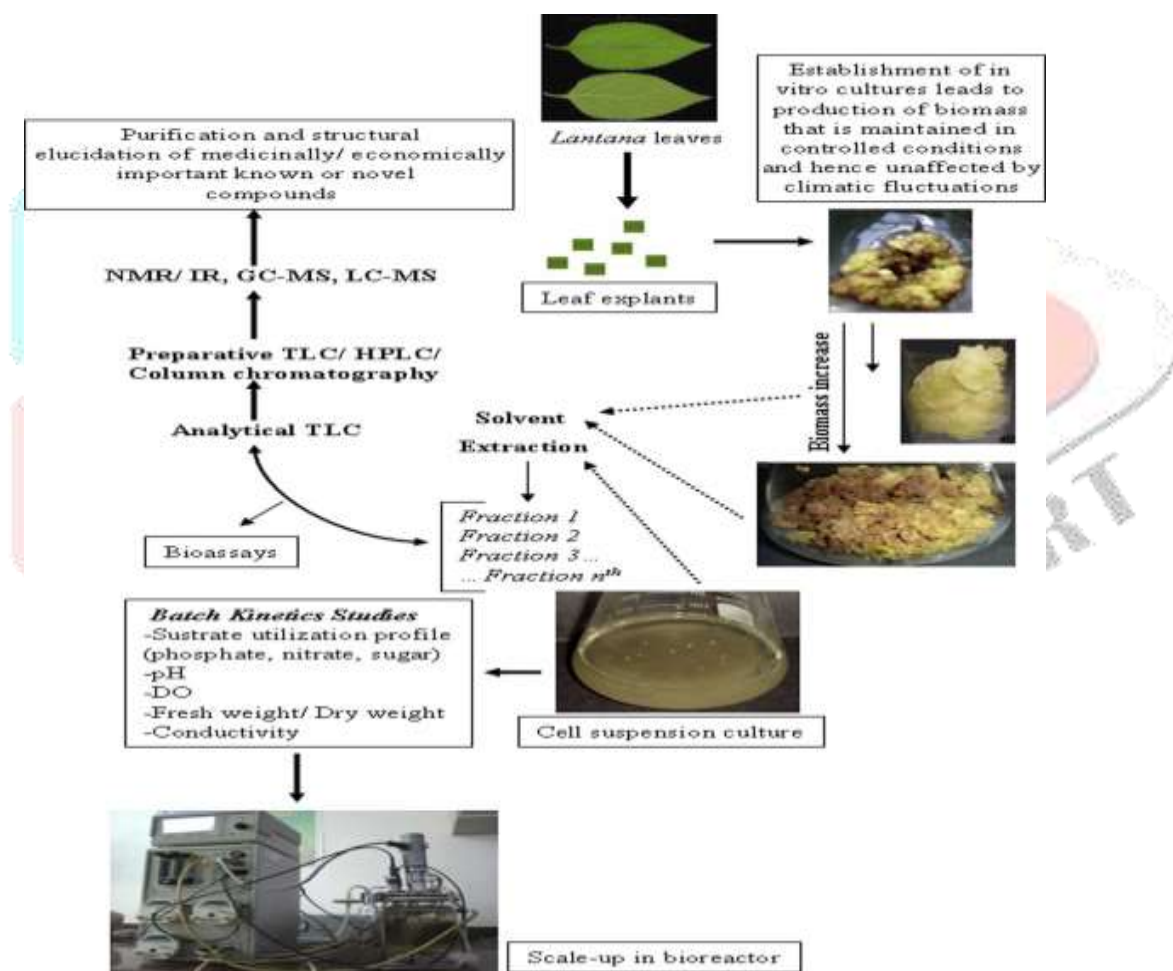


Fig. Process of Isolation of Bioactive Compounds From *Lantana Camara*

1. Collection and Preparation of Plant Material:-

Lantana camara leaves, stems, flowers, or roots are gathered, either fresh or dried. The compound of interest determines which section of the plant to use (e.g., leaves for flavonoids or roots for alkaloids). If the plant material is fresh, it is thoroughly cleaned to get rid of impurities like dust and grime before being dried. A dehydrator or air drying are two methods of drying.

2.Solvent Extraction: -

Usually, the dried plant material is crushed into a powder and then extracted using a solvent. Water, ethanol, methanol, chloroform, and hexane are examples of common solvents.

Maceration: After being immersed in a solvent for a few hours to days, plant powder is filtered. Refluxing is the process of boiling plant material in a solvent, then collecting the condensed solution.

Soxhlet Extraction:-A continuous extraction technique called Soxhlet Extraction enables the solvent to repeatedly flow over the plant material.

Supercritical Fluid Extraction (SFE): This technique extracts volatile chemicals from plants by using CO₂ in its supercritical condition. It can be quite effective at extracting specific kinds of molecules, but its expensive makes it less popular.

3. Purification and Isolation :-

Isolation and Purification Purification of the bioactive components is necessary after extraction. This can be accomplished by,

Chromatographic Methods: For separating distinct components, these include high-performance liquid chromatography (HPLC), column chromatography (CC), and thin-layer chromatography (TLC).

Column Chromatography: A column filled with the proper adsorbent material (silica gel, for example) is loaded with the crude extract. Compounds can be separated according to their polarity through elution with different solvents.

4.Identification and Characterization of Isolated Compounds:-

After isolation, the compounds are identified and characterized using:

Spectroscopic Techniques: For example, mass spectrometry (MS), nuclear magnetic resonance (NMR), infrared (IR), and UV-Vis.

Melting Point Determination: For solid compounds, determining the melting point can help in identifying purity and confirming the compound.

Conclusion:-

Lantana camara, a widely distributed plant native to tropical America, is recognized for its considerable medicinal value. Despite being considered invasive in many regions, its bioactive compounds have demonstrated a range of therapeutic properties. These include antimicrobial, anti-inflammatory, antioxidant, antidiabetic, and hepatoprotective effects, among others. The plant has shown potential in traditional medicine for treating various ailments, including infections, wounds, diabetes, and liver damage. Its anticancer properties also make it a promising subject for further research.

However, while its medicinal uses are promising, caution is needed due to the potential toxicity of some of its compounds when used improperly. Comprehensive scientific studies, particularly clinical trials, are needed to validate these traditional uses and to determine safe dosages and applications in modern medicine.

Reference:-

- 1.Wagh AR, Ingale YN, Narkhedkar PS, Bhujbal OS, Survase YD. Lantana camara: A valuable medicinal plant. Arihant College of Pharmacy. 2024;414005.
- 2.Impson, F. A. C., Kloot, P. M., & Zimmermann, H. G. (2011). Lantana camara L. in South Africa: A historical review of its spread, management, and control. African Journal of Range & Forage Science, 28(2), 129-136.
- 3.Mabberley, D. J. (2008). Moberly's Plant-book: A Portable Dictionary of Plants, Their Classification, and Uses (3rd ed.). Cambridge University Press.
- 4.Das, S. K., Ghosh, S., & Bandyopadhyay, S. K. (2006). Lantana camara Linn. A review of its medicinal potential. Pharmacognosy Reviews, 1(1), 143-150.
- 5.Henderson, L. (1995). Invasive alien plants in South Africa: A review of the status of Lantana camara and other species. Journal of Environmental Management, 43(1), 75-90.
- 6.Mabberley, D. J. (2008). Mabberley's Plant-book: A Portable Dictionary of Plants, Their Classification, and Uses (3rd ed.). Cambridge University Press.
- 7.Impson, F. A. C., Kloot, P. M., & Zimmermann, H. G. (2011). Lantana camara L. in South Africa: A historical review of its spread, management, and control. African Journal of Range & Forage Science, 28(2), 129-136.
- 8.Sharma, S., & Joshi, R. (2011). "Invasive plant species and their management: Lantana camara." Indian Journal of Forestry, 34(4), 409-415.
- 9.Turner, R. G., & Rejmanek, M. (2003). "Lantana camara L. (Verbenaceae): A review of its ecological impacts." Ecological Applications, 13(4), 1070-1076.
- 10.Bauer, J., & Griffiths, M. (2016). "The spread of Lantana camara in Australia and its ecological consequences." Austral Ecology, 41(5), 545-552.
- 11.Gordon, D. R., & Thomas, D. R. (2002). "The spread of Lantana camara and its effects on biodiversity in tropical regions." Biological Conservation, 106(2), 257-270.
- 12.Bhat, V. et al. (2010). Anti-inflammatory activity of Lantana camara leaf extract. Journal of Ethnopharmacology, 128(1), 102–106 DOI: 10.1016/j.jep.2009.12.037
- 13.Chukwujekwu, J. et al. (2006). Antimicrobial properties of Lantana camara. Phytotherapy Research, 20(9), 797–800. DOI: 10.1002/ptr.1990
- 14.Suman, K. et al. (2015). Antioxidant potential of Lantana camara leaves. Journal of Applied Pharmaceutical Science, 5(4), 125–130. DOI: 10.7324/JAPS.2015.50421
- 15.Ahmad, M. et al. (2010). Hypoglycemic effect of Lantana camara leaves in alloxan-induced diabetic rats. Indian Journal of Experimental Biology, 48(4), 423–427. PMID: 20570298
- 16.Nair, A. et al. (2009). Hepatoprotective activity of Lantana camara leaves in CCl4-induced liver damage in rats. Asian Journal of Traditional Medicines, 4(1), 17–23. DOI: 10.4103/0973-7693.59196

17. Aguiyi, J. et al. (2002). Analgesic and antispasmodic effects of *Lantana camara* extract. *Phytotherapy Research*, 16(8), 737–740. DOI: 10.1002/ptr.1152
18. Alam, M. et al. (2010). Evaluation of wound healing activity of *Lantana camara*. *Journal of Wound Care*, 19(6), 248–252. DOI: 10.12968/jowc.2010.19.6.48399
19. Muniappan, R., Reddy, G. V. P., & Raman, A. (2012). *Lantana: Botany, Ecology, and Management*. Springer Science & Business Media.
20. Zimmermann, H. G., & McFadyen, R. E. (1999). “*Lantana camara* L. (Verbenaceae) – A Review.” *Tropical Pest Management* 45(2), 75-80.
21. McFadyen, R. E. (1999). “Biology and control of *Lantana camara* L.” In *Proceedings of the 9th International Symposium on Biological Control of Weeds* (pp. 105–112).
22. Zimmermann, H. G., & McFadyen, R. E. (1999). “*Lantana camara* L. (Verbenaceae) – A Review.” *Tropical Pest Management* 45(2), 75-80.
23. Sharma, S. K., Shukla, S., & Singh, R. P. (2018). Invasive species: *Lantana camara* and its ecological impact. *Invasive Plant Science and Management*, 11(3), 254-263. <https://doi.org/10.1017/inp.2018.13>
24. Sharma, S. K., Shukla, S., & Singh, R. P. (2018). Invasive species: *Lantana camara* and its ecological impact. *Invasive Plant Science and Management*, 11(3), 254-263. <https://doi.org/10.1017/inp.2018.13>
25. Gupta, S., Kundu, S., & Sharma, A. (2020). Ethnobotanical uses and ecological roles of *Lantana* species in tropical environments. *Journal of Tropical Ecology*, 36(5), 499-510.
26. Hussain, M. A., et al. “Isolation and characterization of lantadene A and lantadene B from *Lantana camara*.” *Journal of Ethnopharmacology*, vol. 142, no. 3, 2012, pp. 736-742. Doi:10.1016/j.jep.2012.06.033
27. Siddiqui, S. A., et al. “Phytochemical studies on *Lantana camara*.” *Pharmacognosy Reviews*, vol. 4, no. 8, 2010, pp. 87-94. Doi:10.4103/0973-7847.65387