



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

FORMULATION AND EVALUATION OF OINTMENT USING NEEM AND LANTANA CAMARA FOR ANTIFUNGAL ACTIVITY

Asna Badiuzzaman^{1*}, Amirulla Qadri^{2*}, MD Rehan Shaikh³

^{1*}Assistant Professor, Allana College of Pharmacy, Pune, Maharashtra, India.

^{2*}Student, Allana college of pharmacy, Pune, Maharashtra, India.

³Student, Allana college of pharmacy, Pune, Maharashtra, India.

Correspondent author- Amirulla Qadri

Abstract: - Even in areas where modern medicine is available, the interest in herbal medicines and their utilization has been increasing rapidly in recent years. Plant-derived substances and herbal medicines have recently attracted great interest in their versatile application, as medicinal plants are the richest source of bioactive compounds used in traditional and modern medicine. The present research aimed to formulate and evaluate the herbal ointment containing Neem (*Azadirachta indica*) and Lantana Camara leaf extract. The ethanolic extracts were prepared by using the Soxhlet method. Extracts of the plant were incorporated into an ointment base and evaluation of its physicochemical parameters like colour, odour, PH, physical Examination, consistency, spreadability, washability etc. The physicochemical evaluation of the developed formulation showed uniform colour dispersion without lumps. Stability testing at different temperatures indicated no change in spreadability, along with easy washability and good spreadability. The antimicrobial activity for Neem and Lantana Camara using the disc diffusion method was carried out. The antibacterial study of the developed formulation showed dose/concentration proposed inhibitory activity against *Staphylococcus aureus*, *Staphylococcus epidermis* and *E. (Escherichia) coli*. The results concluded that the extract of Neem (*Azadirachta indica*) and Lantana Camara is an appropriate formulation for the topical therapy.

Keyword: - Herbal ointment, Soxhletion method, Neem (*Azadirachta indica*) and Lantana Camara, antimicrobial activity, topical therapy.

INTRODUCTION: -

Neem (*Azadirachta indica*) and Lantana camara are two plants that have been shown to have antimicrobial and fungicidal properties. Herbal remedies are a safe and effective alternative to traditional medications, as they often have fewer side effects and are suitable for people of all ages. When two or more herbs are combined to create a treatment, it is known as a polyherbal formulation. Many studies have been conducted on the use of polyherbal formulations, with the combination of many other herbal drugs. Ointments are a type of topical semisolid preparation that contain a lipid or hydrophobic substance, designed to be applied to the skin for external use. Their consistency is thicker than others, but they may spread a little farther across your skin. They have a greasy or sticky feel and stay on your skin longer, helping with maximum product absorption. Individuals with severely dry skin may see improvements in their skin health by using emollient preparations in an ointment base. Ointments are commonly used as emollients, acting as protective barriers to shield the skin from harmful substances and as

carriers for hydrophobic drugs. The drawbacks pertain to the increased size compared to solid dosage forms and reduced stability when contrasted with solid formulations. *Azadirachta indica*, commonly referred to as Neem, is a tree endemic to the Indian subcontinent and regions of Southeast Asia. Classified within the Meliaceae family, Neem extract is regarded as a paramount remedy contributing to overall well-being. It offers unparalleled benefits that include managing blood sugar levels, improving hair, skin, teeth, liver, and kidneys. *Lantana camara*, also known as lantana or shrub verbena, has been used in traditional medicine for its various health benefits. It has antimicrobial and fungicidal properties that can kill or slow down the growth of bacteria and fungi. In addition to its medicinal uses, *Lantana camara* is also used in horticulture for its attractive flowers and foliage. Herbal remedies such as Neem and *Lantana camara* have proven to be effective in treating various health conditions without causing harmful side effects. When used in combination with other herbs, they can create powerful polyherbal formulations that provide numerous benefits to the body. Ointments are an effective way to apply these remedies topically and can be especially beneficial for individuals with dry skin. Incorporating these natural remedies into your daily routine can lead to improved health and well-being.

AIM AND OBJECTIVE: -

Aim: -

Formulation and Evaluation of Antifungal Ointment by using Neem and *Lantana camara*.

Objective: -

1. To protect from fungal infection
2. To provide skin with hydration or to produce an emollient effect
3. To convey a medication to the skin for a specific effect, either topically or systemically.

MATERIALS AND METHOD: -

Collection of Plant material: -

Leaves of Neem (*Azadirachta indica*) and *Lantana camara* were collected from the local area of Pune, Maharashtra, India.

Preparation of Neem and *Lantana Camara* extract: -

The leaves of the plant were collected and washed thoroughly with distilled water and shade-dried for 4 to 5 days. The dried leaves were ground into powder form. The Soxhlet extraction method is used for the extraction of both plant leaves. Neem and *Lantana camara* take 15gm powder separately into the thimble, using ethanol as a solvent, 250ml of ethanol is placed inside the RBF, The RBF is heated on the hot plate or Heating mantle, causing the solvent to evaporate. This process continued for 6hrs. Finally, the ethanolic extract was collected and air dried for 2 to 3 days then get a green sticky extract. The extract was stored in an airtight container in a cool and dark place.



Figure 1: - (Soxhletion process)



Figure 2: - (Extract of Neem and Lantana Camara)



Figure 3: - (Extract collected in glass container)

PREPARATION OF OINTMENT: -

Table 1: - formulation table of ointment: -

| Sr.No | INGREDIENTS | QUANTITY IN (gm) | USE |
|-------|-----------------------------|------------------|-----------------------------------|
| 1. | Hard paraffin | 3.5 | Lubricant |
| 2. | Liquid paraffin | 11.5 | Emollient |
| 3. | Cetestryl Alcohol | 3 | Opacyfying agent |
| 4. | Propylene Glycol | 9 | Preservative and emulsifier |
| 5. | Lantana camera leaf extract | 0.5 | antifungal |
| 6. | Neem leaf extract | 1 | antifungal |
| 7. | Salicylic acid | 1.5 | Shed dead cell from layer of skin |

Preparation of ointment: -

Fusion method: - The ingredients are melted in descending order of their melting point; there is hard paraffin, liquid paraffin and cetostearyl alcohol, which are melted and mixed in a first beaker and Propylene Glycol, Lantana camera leaf extract, Neem leaf extract, salicylic acid they melt in a second beaker. A higher melting point substance should be melted first the substance with the next melting point and so on it is done on a water bath. Following the preparation of the initial vessels, the subsequent step involves introducing the secondary beaker containing the substance into the primary vessel. Vigorous agitation is required until the temperature of the mixture decreases, facilitating the creation of a homogenized product.

EVALUATION: -**Colour and Odour: -**

Physical parameters like colour and odour were examined by visual examination.

Consistency: -

Smooth and no greediness is observed.

PH: -

The PH of prepared herbal ointment was measured by using a digital PH meter. The solution of ointment was prepared by using 100ml of distilled water and set aside for 2hrs. PH was determined in triplicate for the solution and average value was calculated.

Viscosity determinations: -

The viscosity of formulated ointments was measured by Brookfield Viscometer at room temperature.

Spreadability: -

The spreadability was determined by placing excess of sample in between two slides which was compressed to uniform thickness by placing a definite weight for a definite time. The time required to separate the two slides was measured as spreadability. Less time taken for the separation of two slides results in better spreadability. Spreadability was calculated by following formula

$$S=M \times L / T$$

Where,

S= Spreadability

M= Weight tide to the upper slide

L= Length of glass slide

T= Time taken to separate the slide

Washability: -

The formulation was applied on the skin and then ease extend of washing with water was checked.

Non-irritancy Test: -

An herbal ointment ready was applied to the skin of human and observe its effects.

Stability study: -

Stability test of the herbal ointment was carried out for four weeks at various temperature conditions like 2°C, 25°C and 37°C. The herbal ointment was found to be physically stable at different temperatures i.e. 2°C, 25°C, 37°C within four weeks.

In vitro antimicrobial studies: -

The antifungal activity was determined using the disk diffusion method, and the zone reader was used to measure the diameters of inhibition zones.

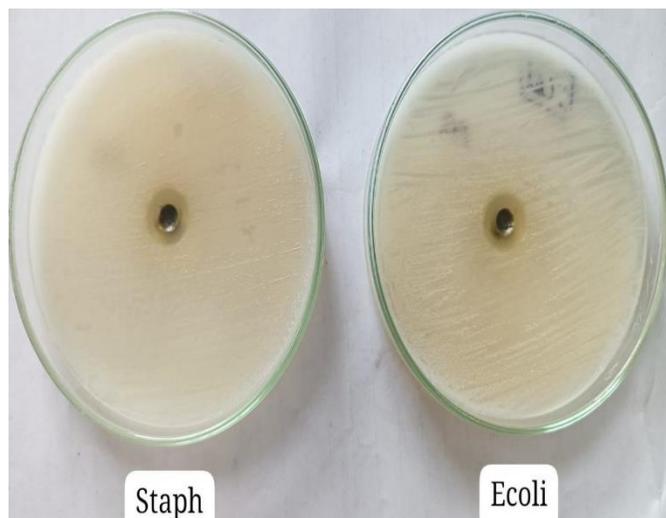


Figure 4: - (Zone of inhibition)

RESULT: -

The ointment was prepared and evaluated. Neem and Lantana camara extracts were obtained using the Soxhlet apparatus method, and the ointment was prepared using the fusion method.

Physicochemical evaluation of formulated ointment: -

Table 2: - Physicochemical evaluation of formulated ointment:

| Physicochemical parameters | Observation |
|--------------------------------|--|
| Colour | Green |
| Odour | Characteristic |
| Consistency | Smooth |
| PH | 6.3 |
| Spreadability | good |
| Solubility | Soluble in boiling water, miscible with alcohol, ether, chloroform |
| Washability | Good |
| Non irritancy | Non irritant |
| Stability study | Stable |
| Phase separation | No |
| In vitro antimicrobial studies | 30mm |

CONCLUSION: -

Neem and Lantana Camara have been known for their medicinal properties such as antibacterial, antifungal, anti-inflammatory, and wound healing effects. By using the fusion method, an ointment has been developed using extracts of Neem and Lantana Camara. This ointment can be used to provide antifungal and antibacterial benefits to the skin.

REFERENCES: -

1. Rajasree PH, Vishwanad V, Cherian M, Eldhose J, Singh R. Formulation and evaluation of antiseptic polyherbal ointment. *International Journal of Pharmacy and Life Sciences* 2012;3(10):2021-31.
2. Pandey A, Jagtap JV, Patil AA, Joshi RN, Kuchekar BS. Formulation and evaluation of the anti-bacterial and anti-fungal activity of herbal ointment containing Aloe vera, Azadirachta indica and Curcuma Iona. *Journal of Chemical and Pharmaceutical Research* 2010;2(3):182-86.
3. Yamini K. Onesimus T. Preparation and evaluation of Herbal Antiacne Gel, *International Journal of Pharma and Biosciences* 2013; 4(2): 956-960.
4. Kokate C.K., Gokhale S.B., Purohit A.P. A textbook of Pharmacognosy, Nirali Prakashan 34th edi. Sept 2013, 9.117.
5. Turmeric: Pharmacognosy and medicinal uses by Pharma Tips Pharmatips.doyouknow.in
6. Yadav A, Mohite S, Rajput M, Suryawanshi V, Birajdar R, Patil M, "Antioxidant activity of Psidium guajava leaf extracts". *Res. J. Pharma. Dosage Forms and Tech.* 2020; 12(3): 159-161.
7. Yadav A, Mohite S. "Cancer- A Silent Killer: An Overview". *Asian J. Pharm. Res.* 2020; 10(3): 213-216.
8. Chitruk A, Yadav A Rode P, Mohite S, Magdum C. "Synthesis and toxicological evaluation using brine shrimp lethality assay of Novel 1,2,4-triazole derivatives with anticancer activity". *Int. J. Curr. Adv. Res.* 2020; 09(08)(A): 22877-22881.
9. Shubhangi E. Sawant, et.al, Formulation and evaluation of herbal ointment containing Neem and Turmeric extract *Journal of Scientific and Innovative Research* 2016; Volume 5(4): 149-15.
10. Mohammad A. Alzohairy, "Therapeutics role of Azadirachta indica (Neem) and their active constituents in diseases prevention and treatment", *Evidence-based complementary and alternative medicine*, Volume 2016;1-11: <http://dx.doi.org/10.1155/2016/7382506>.

