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Review on: Formulation and Evaluation of Herbal Ointment Containing Neem and Turmeric Extract

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Abstract

The majority of herbal ointments are composed of plant extract odours found in the plants themselves. Nowadays, ointments are mostly utilised as therapies for a variety of skin conditions, including cellulitis, psoriasis, eczema, and herpes. The formulation and assessment of Neem and Turmeric Extract Ointment are the focus of this investigation. Ethanolic extract is made via the maceration process. The ointment was prepared using the levigation method, and its characteristics (physical and chemical)—color, the pH value, accessibility, extrudability, distribution analysis, washability, uniformity, and saturation were assessed by adding the extract as the formulation was finished. Additionally, spreadability and irritability are tested at different temperatures. These extracts have the ability to treat a variety of dermatological conditions when added to ointment compositions. This study compiles the current knowledge on the formulation techniques, phytochemical composition, and assessment criteria of herbal ointments containing turmeric and neem extract. It is employed as a antibacterial, antioxidant, anti-inflammatory, antiseptic, and anti-cancer properties, taking advantage of the benefits from plants.

Keywords - Extrudability, Levigation, Maceration, Spreadability, Neem, Turmeric.

INTRODUCTION

The use of herbs is being explored by certain European and oriental countries. They are effective remedies and they also have almost no side effects. Herbal ointments are another sort of herbal dose forms that are available. These semisolid formulations are applied topically for various purposes, such as keratolytics, astringents, antiseptics, and antiprurities. Polyherbal compositions are those that contain a number of herbs together. Too several studies had been done using components from the leafy parts of neem (Azadirachta indica family, Meliaceae) and the roots of the spice turmeric (Curcuma longa family, a family called Z), combined with a variety of different medications. The creation of a herbal ointment to cure acne and its assessment were the main goals of the current study. These herbs were chosen based on their historical use in the management of various skin conditions.[1]

Neem leaves have a strong antibacterial impact on both Gram-positive and Gram-negative bacteria, such as Vibrio cholera and M. tuberculosis. One of the medications utilised is turmeric. Overall, the study found that compared to neem ointment, turmeric ointment has a better antifungal activity. The species Azadirachta indica belongs to the Meliaceae family, and its leaves and other aerial parts are used to make ointments. In addition to being used in various ointments, neem oil

and leaves have several other uses, including treating infertility and acting as pesticides and antiseptics and is being evaluated for efficacy in AIDS treatment.[2]

The fresh and dried rhizomes of the Curcuma longa species of turmeric belong to the Zingiberaceae family. Turmeric is a product of Curcuma longa, a rhizomatous herbaceous perennial plant belonging to the ginger plant. Uses for turmeric include expectorants, condiments, and antiseptics. Studies on antioxidants have demonstrated the potential benefits of depression, illness, and disease.[3]

Uses

Herbal ointment used on the skin to soothe or heal wounds.

Also used in rashes, burns, scrapes or other skin problems.

Used as an antiseptic.

It is used to treating the skin diseases including anti-inflammatory, antiseptic, and Anti-infective.[4]

Advantages

Herbal ointment provides benefits such as reduces the chances of skin problems

Fighting wrinkles.

It is a less greasy as compared to the other ointment.

Easily and safe to use.

It can be no any side effect provides.

Affordable and non-expensive.

It is a non-toxic.

Both turmeric and neem contain potent anti-inflammatory compounds.[5]

Disadvantages

Manufacturing process are time consuming and complicated.

They are difficult to hide taste and odour.

Some people show allergic reactions to neem, including rashes and swelling.

Potential Skin Irritation: Neem can cause irritation, particularly in people with sensitive skin or if used in high concentrations, leading to itching, redness, or a burning sensation.

Skin Staining: Turmeric is known for its strong yellow pigment, which can stain skin and clothes.[6]

Neem (Azadirachta indica)

Figure.1*: *Neem

SYNONYM: Melia azadirachta.

FAMILY: Meliaceae.

Neem (Azadirachta indica), Its diverse medicinal properties have drawn the attention of modern medicine as well.[7]

Here are some key therapeutic benefits of neem

Antibacterial and Antifungal Properties

Neem is widely known for its powerful antibacterial and antifungal effects. It is used to treat skin infections, wounds, and acne.

Anti-inflammatory and Analgesic

Neem's anti-inflammatory properties make it effective in reducing inflammation and pain, particularly in conditions like arthritis.

Immune System Booster

Neem enhances the body's immune response, helping it fight off infections and promoting general well-being.[8]

Antimalarial and Antiviral

Neem is traditionally used to combat fevers, including malaria, and has demonstrated antiviral properties in research.

Oral Health

Neem is often used in dental care, such as in toothpaste or mouthwash, because of its ability to prevent plaque, gum infections, and cavities.

Skin and Hair Care

Neem oil is a popular ingredient in many skincare and hair care products, known for its ability to treat dandruff, eczema, and promote clear skin. Treats dandruff and promotes a healthy scalp. Prevents hair fall and strengthens hair roots.[9]

Sr. No.	Parts of Neem	Uses
1.	Leaves	Used as pesticides, fertilizer and animal feed Used in Medicinally tea in Indonesia
2.	Flowers	The flower is used in aromatherapy for a calming
3.	Bark	Neem bark is containing spermicidal properties
4.	Roots	The are used as pesticide and to controls fleas and ticks on pets.
5.	Cake	Neem pesticide used in across the agriculture like pesticide, fertilizer and antifungal.
6.	Seed (oil)	Neem oil also used in variety of cosmetic such as shampoo, cream and soaps

Table 1*: *Various Parts of Neem and their Uses

Turmeric (Curcuma longa)

Figure 2*: *Turmeric

SYNONYM: Curcumin.
FAMILY: Zibgiberaceae.
Energetic: Drying and warming.
Taste: Pungent and bitter.
Parts used: Rhizomes.[10]

Medicinal properties of Turmeric

Anxiety and Depression

Curcumin has been studied for its potential antidepressant and anti-anxiety effects. It appears to influence neurotransmitter balance in the brain, such as serotonin and dopamine.

Hyperlipidemia

Curcumin may help lower high cholesterol levels and improve lipid profiles. helping prevent cardiovascular diseases.[11]

Oxidative and Inflammatory Diseases

Due to its strong antioxidant properties, which can cause oxidative stress, leading to cell and tissue damage. It also reduces inflammation by inhibiting the activity of enzymes and molecules that promote inflammation (such as COX-2).

Arthritis

Curcumin has been extensively studied for its anti-arthritic properties, particularly in reducing joint pain.

Anti-inflammatory properties may contribute to reducing stress and anxiety.

Diabetes

Turmeric contains qualities that prevent diabetes.[12]

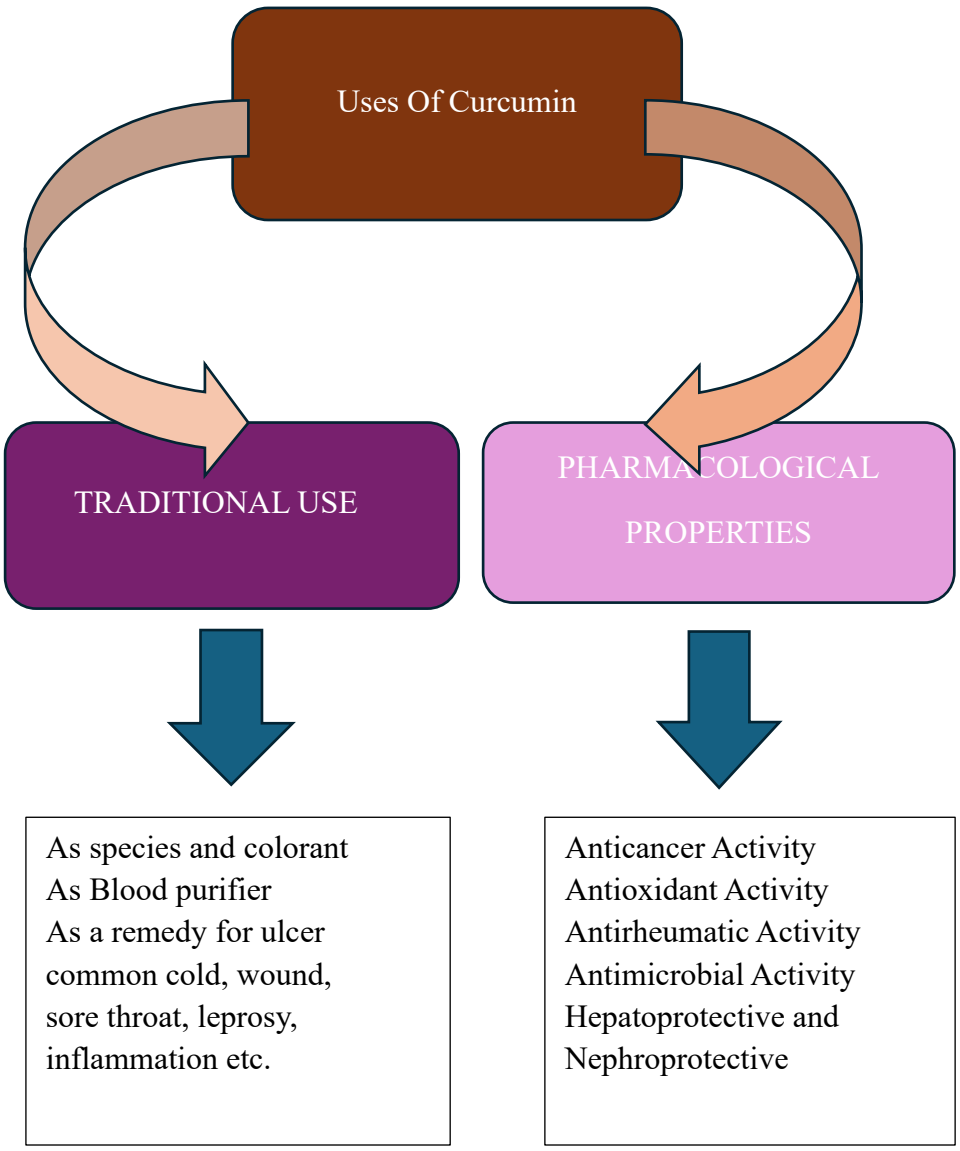

***Figure 5*:** *Uses of Curcumin*

Materials used in the preparation of herbal ointments are

Collection of plant material

The dried turmeric rhizomes were bought from the local market, and the neem leaves were gathered there as well. In December 2011, the taxonomist Dr. P. Jayaraman, Director of the Plant Anatomy Studying Centre (PARC), Chennai, identified and authenticated the Curcuma longa rhizomes, & neem leaves that had been collected from the vicinity of S.V. University, Tirupati, located in the Chittoor district of Andhra Pradesh.[13]

The authentication certificates' Rg. numbers were PARC/2012/1130, 1124,1127, and 1120, respectively. Cut parts of the verified plant material were placed in a polythene bag. To maintain the specimen's freshness, 2% formalin was added to this bag. These specimens were placed at the Sree Vidyanikethan College of Pharmacy's Department of Pharmacognosy herbarium in Tirupathi.[14]

Preparation of Neem Extract

After the foliage. were plucked from the plant, they were carefully washed with purified water. After that, for ten days, they were shade-dried. Dried foliage is then pulverised into a powdered substance.

350 ml of ninety percent was mixed with 100 gm of granular extract and allowed to settle for 3 hours.
Next, it is put in a percolator and 150 millilitres of 90% ethanol are added.
The fermentation is allowed to occur for seven days, with periodic stirring.
After that, ethanoic residue is gathered. It is then condensed to produce a residue which is greenish-black.
The substance being extracted was kept in a dark, cool space.[15]

Preparation of Turmeric Extract

Granulated rhizome of turmeric is gathered after their drying and processed.
The process for extracting the resultant a substance was identical as that for neem substance.
The substance that was removed had a rich maroon colour.
It is stored in a cold, dark place in a sealed bag. [16]

Figure 6*: *Dried Ethanoic Neem and Turmeric Extract

Formulation of Neem and Turmeric ointment

Sr. No.	Name of the Ingredient	Quantity taken
1	Cetostearyl alcohol	4 gm
2	Hard paraffin	4 gm
3	Yellow soft paraffin	4 gm
4	Lanoline	4 gm

Table 2*: *Ointment base formulation

Sr. No.	Name of the Ingredient	Quantity taken
1.	Preapared Neem extract	0.48 gm
2.	Prepared Turmeric extract	0.48 gm
3.	Ointment Base	16 gm

Table 3* : *Herbal ointment formulation

Herbal ointment procedure

To create the ointment base, hard paraffin is precisely weighed and then put in an evaporating dish water bath.
Following the hard paraffin's melting, the additional components were added and gently mixed.
After mixing the ingredients thoroughly, let the ointment base cool.

To prepare a smooth paste, the precisely weighed extracts of neem and turmeric are added to the ointment base via levigation.
The weight of this paste must be two or three times that of the base.
Add more base bit by bit until the ointment is homogeneous.
Ultimately, it gets moved into an appropriate container.[17]

Evaluation test for herbal Ointment

Color and odour

The physical characteristics, like colour and smell, were assessed visually.

Consistency

The mixture was smooth, but it seemed a bit too thick or sticky."

pH

The pH of herbal preparations is measured with a digital pH meter. After making
the ointment solution with 100 millilitres of distilled water, it was left for two hours.
The solution's pH was measured three times, and the average value was established.[18]

Spreadability

To measure spreadability, a sample is placed between two slides, then pressed to an even thickness by applying a set weight for a certain amount of time.
The time it takes for the two slides to separate is called the spreadability. Spreadability is better when the slides separate in less time.
The used for calculating spreading ability was,
S = M x L / T
Where:
S stands for spreading ability.
M is the highest slide's weight.
L is the surface of the slide's width.
T = The amount the period the slides took for separation.[19]

Extrudability

A collapsible tube was used to fill the formulation. Extrudability was measured by the weight of the ointment needed to squeeze out a 0.5 cm ribbon in 10 seconds.

Loss on Drying

To determine the loss on drying, the formulation was placed in a petri dish on a water bath and dried at 105°C.

The ability to dissolve

The ointment is miscible with chloroform and dissolves in boiling water.

Washability

The layer of skin received treatment by using the composition, and its water-washability was determined.

Non-irritancy testing

The herbal ointment was applied to human skin to check for any irritation.

Stability Study

For a period of four weeks, the botanical ointment was physically unaffected at 2°C, twenty-five degrees Celsius and 37 degrees Fahrenheit.[20]

Sr. No.	Physicochemical parameters	Observation
1	Colour	Yellow
2	Odour	Characteristic
3	pH	6.0
4	Spreadability (second)	6 second
5	Consistency	Smooth
6	Loss on drying	25 %
7	Solubility	Soluble in boiling water, Miscible with Chloroform
8	Diffusion study (after 60 mins)	0.6 cm
9	Washability	Good
10	Non irritancy	Non irritant
11	Stability study at different temp.	Stable
12	Extrudability	0.4 gm

Table 4*: *Physicochemical Evaluation of Formulated Ointment

CONCLUSION

This formulation's ultimate conclusion was that it aids in the treatment of skin issues. Neem and turmeric are natural preparations that have been used for centuries for a variety of medical uses, including antifungal, anti-inflammatory, and antibacterial effects. Neem and turmeric ointment may serve as a vehicle for the easy and efficient administration of these therapeutic qualities in the form of straight forward dose forms. These herbs offer a wide range of therapeutic benefits and naturally act as preservatives, eliminating the need for extra flavouring or preservatives.

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