

Formulation and evaluation of herbal ointment containing Azadirachta indica and Curcuma longa

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ABSTRACT:

Nowadays, the use of herbal treatment has become more and more popular as it has interest in them. The herbal ointment has gained significant attention as a natural alternative for treating various skin conditions due to their therapeutic benefits and minimum side effect. The uses of herbal medicine increase in the recent years. The current study prepares, formulates and assesses an herbal ointment by using of lemon oil, Turmeric (*Curcuma longa*) and Neem leaves extract (*Azadirachta indica*). They have some medicinal properties like antiseptic, Anti-inflammatory, wound healing. By using this herb as a redient formulate and evaluate herbal neem ointment. The prepared formulation was evaluated by using Physicochemical parameters such as Color, consistency, Oduors, Solubility, spread ability, Washability, pH, irritancy, stability was used to assess the produced formulation. Additionally, the developed formulations dissemination ability and stability under varied temperature conditions, which show no change in irritancy and spread ability study.

KEYWORDS: Maceration, Anti-Microbial, Antiseptic, Levigation, Spread ability.

I. INTRODUCTION: -

[1]. In recent years, plants have been the primary source of pharmacologically active chemicals, which have been beneficial for human medicine. Nowadays, over two thirds of people worldwide rely on medications made from plants. Considering that many effective medications have their roots in traditional medical practices, it is crucial to do research on the screening of medicinal plants for biological activity.

Herbal medicine has been more and more popular from the past years. The adverse effects of the herbal medication are lower. A preparation is referred to as polyherbal when it contains two or more herbs. Herbal medicine can be used by people of any age. Additionally, a semisolid preparation in

the form of an ointment is made using herbal medication. A previous study found that medicinal plants were helpful for cuts, wounds, and antiseptics purposes. The objective of the study was to produce and assess herbal neem ointment for different activities. The ointment has multiple topically applied uses. Antibacterial, anti-inflammatory, and wound healing. Wherein turmeric (*Curcuma longa*) and neem (*Azadirachta indica*) are medicinal herbs used in the herbal ointment. It is acknowledged that drugs based on allopathy are costly and have harmful effects on both different biological processes and normal tissues. Most people agree that many pharmacologically active medications come from natural sources, such as medicinal plants.

[2]. Neem is consisting of leaves and other aerial components belonging to the Meliaceae family, *Azadirachta indica*. Neem leaves and oil have a variety of uses, including antiseptics, insecticides, and antiviral and antifertility qualities. Neem is currently being tested for its potential as an AIDS treatment. *Curcuma longa* plant rhizomes, both fresh and dried, are used to make turmeric (*Zingiberaceae* family). It can be used as a spice, condiment, expectorant, or antiseptic. Turmeric is abundant in antioxidants, and studies have shown that it can be used to treat wound healing, antimicrobial, and anti-inflammatory.

IDEAL PROPERTIES OF HERBAL OINTMENT: -

1. It contains moisturizing agent which help to hydrate the skin.
2. It nourishes the skin.
3. It is an anti-inflammatory.
4. It must be Non-toxic, non-irritating.
5. It should not cause any side effects or irritation or Dryness of the skin and Eye.
6. It should have anti-microbial and anti-oxidant effect.
7. It should have a wound healing effect.
8. Cure burns, makes skin soft and smooth.

9. Decrease reproductive capacity of bacteria.
10. Used as Antiseptics, Antibacterial, Antifungal.

HEALTH USES OF NEEM AND TURMERIC

- 1.Protects the gastrointestinal tract from dangerous microbes
- 2.Distributes energy throughout the body equally.
- 3.The health benefits of using turmeric to cleanse the body.
- 4.Dilates the cellular structure allowing energy to be absorbed by the cell.
- 5.Makes you aware about of how much food to consume.

Neem (Azadirachta indica)

[3].Azadirachta indica is a widely distributed, rapidly growing, evergreen tree that grows quickly in India, Africa, and America. Since it has therapeutic qualities, ayurvedic medicine has employed it for over 4,000 years. 'Arista', the Sanskrit term for neem, meaning 'perfect, complete, and imperishable'. The Sanskrit name for the neem tree is Arishtha, which means "reliever of sickness" and is therefore referred to as a "Sarbarogaribari." The US National Academy of Sciences acknowledged the value of neem trees in a 1992 paper titled "Neem-a tree for solving global problem."



FIG 01: NEEM LEAVES

BENEFITS OF NEEM

- Anti-inflammatory effect of Neem
- Anti-carcinogenic Activity
- Antioxidant Activity
- Antiviral Activity
- Antibacterial Activity
- Antifungal Activity

Table 1: Important uses of various parts of neem tree

Parts	Medicinal Uses
Leaf	Used in eye problem, skin ulcer, worms. Hansens Disease
Bark	Used in a pain reliever, alternative and curative of fever.
Flower	Bile Suppression and intestinal worms.
Twig	Relieves cough, asthma, piles, sugar
Gum	Effective against skin disease like ringworms, wound and ulcers.
Seed Pulp	Hansens Disease and intestinal worms.

Turmeric (Curcuma Longa)



FIG: 02- TURMERIC

[4].Turmeric (Curcuma longa L.) belonging to family Zingiberaceae has long been utilized as a food source, culinary spice, medicinal herb, and in many Asian nations as a coloring agent and preservative. C. longa L. is a perennial plant that has large leaves and a short stem. It produces branched, brownish-yellow rhizomes that are ovate, pyriform, or rectangular in shape.

Turmeric has carminative, stimulating, and fragrant properties that make it a moderate digestive. One of nature's most potent medicines is turmeric. Curcumin is the active component in turmeric.

Indians have been using turmeric for about 2500 years; it was probably first used there as a color. An Asian cosmetic called turmeric water is used to give the area a golden sheen. It has been demonstrated that curcumin is effective against the pus-producing pathogen Staphylococcus aureus. Due to its ability to reduce Kapha, turmeric is used to treat fluid discharges from the throat, such as leucorrhea, as well as pus from wounds, eyes, and ears.

Uses Of Turmeric:

Turmeric has been utilized for cosmetic purposes and as a traditional medicine since ancient times. Turmeric is a key medicinal remedy in the Indian medical system known as Ayurvedamedication recommended for a range of illnesses. Turmeric is actually used nowadays to seal radiator leaks in water-cooled radiators. These are some of the ways that turmeric is used.

Food Additives:

- 1.Products that are packaged to keep that product protected from sunlight turmeric is having vital role for protecting.
- 2.Turmeric is occasionally added to pickles and mustard to make up for fading.
- 3.Turmeric is a mild aromatic stimulant that is used in the production of curry powders. It also serves as a substitute for mustard in livestock feed.
- 4.For items containing water, curcumin powder or solution dissolved in alcohol is utilized.

Medicinal:

- 1.Digestion issues can be treated with turmeric.
- 2.Indigestion and hyperacidity can be treated with raw turmeric juice.
- 3.Curcumin also reduces the levels of the hormone histamine, which has an anti-inflammatory impact.
- 4.Turmeric contains fluoride, which is vital for teeth.
- 5.Turmeric is employed in alternative medicine because its active ingredient, curcumin, has antioxidantqualities.

Cosmetic:

- 1.It is claimed that using turmeric regularly will make skin smooth, silky, and fair.
2. A paste made of raw turmeric juice is applied to the skin, retained for around half an hour before being cleaned off. It gives the skin more radiance.
- 3.Turmeric is used for spots caused by pigmentation or blotches as well as diseases like eczema.
- 4.It is an essential part of the traditional bathing ritual of Indian marriages where it is applied along with sandal wood paste before the bath.
- 5.Regular bathing in water containing turmeric is thought to reduce the growth of body hair.

Advantages of herbal ointment:

- Safe use with less side effects.
- Herbal medicine has benefits increased their quality, safety.
- They provoke less allergic reaction.
- They do not have negative side effect.

Table 2: Composition of herbal ointment

Sr. No	Name of ingredient	Categories
1.	Neem Extract	Wound Healing
2.	Turmeric Extract	Wound Healing Arthritis
3.	Lemon Oil	Skin ache
4.	Wool Fat	Base for ointment
5.	Hard Paraffin	Stiffening agent
6.	Yellow soft Paraffin	Moisturising agent

II. MATERIALS AND METHODS:

Collection of plant materials

The leaves of Azadirachta indica gathered from the area Botanical Garden Nashik. dried turmeric rhizomes were purchased from the Nashik Road local Market. After that, the leaves were thoroughly cleaned and allowed to air dry in the shade. Lemonoil, woolfat, hard paraffin, yellow soft paraffin, are collected from SMBT institute of Diploma Pharmacy Laboratories.

MacerationprocessforNeemandTurmeric:

Preparation of Neem Extract:

The plant's leaves were removed, properly cleaned in distilled water, and then let too dry in the shade for ten days. Powder was created by grinding dried leaves. Following a three-hour inoculation with 86millilitres of 90% ethanol, 25 grams of powder was placed in a percolator and allowed to macerate for seven days while being occasionally stirred. Ultimately, ethanolic extract was gathered and condensed to yield a residue that was somewhat green. The extract was kept in a cool, dark place in an airtight container.



FIG:03- DRIED NEEM LEAVES FIG:04 – MACERATIONPROCESS

Preparation of Neem Extract:

Powder was created by grinding dried rhizomes of turmeric. Following a three-hour inoculation with 86 millilitres of 90% ethanol, 25 grams of powder was placed in a percolator and

allowed to macerate for seven days while being occasionally stirred. Ultimately, ethanolic extract was gathered and condensed to yield a residue that was crimson red colour. The extract was kept in a cool, dark place in an airtight container.



FIG 05 -EXTRACTOFNEEMANDTURMERIC

Formulation of ointment

Table 3: Ointment base formulation

Sr. No	Name of Ingredients	Quantity to be taken
1.	Wool Fat	0.5
2.	Lemon oil	0.5
3.	Hard Paraffin	0.5
4.	Yellow soft Paraffin	8.5

Table 4: Herbal Ointment Formulation

Sr. No	Name of Ingredients	Quantity to be take (F1, F2, F3)		
		F1	F2	F3
1.	Prepared neem extract	0.08gm	0.10gm	0.12gm
2.	Prepared Turmeric extract	0.08gm	0.10gm	0.12gm
3.	Ointment base q.s	10gm	10gm	10gm

[4].Procedure for preparation of herbal ointment

- a. First, hard paraffin was finely ground and weighed to create the ointment base. This was done by setting the evaporating dish over a water bath. The remaining ingredients were added and gently swirled to help with the melting and homogenous mixing once the hard paraffin was melted. The ointment base was then allowed to cool.
- b. The process of making herbal ointment involved precisely weighing the neem and turmeric extract, then combining them with the ointment base using the levigation method to create a smooth paste that was two or three times the base's weight. Additional base was then added gradually to create a homogenous ointment, which was then placed in an appropriate container.



FIG 05 -HERBAL OINTMENT FORMULATION

[3,4,5,6].EVALUATION AND PARAMETERS:

1. Appearance:

The color and smell of prepared herbal ointment were assessed.it was discovered that the color was greenish yellow and that the smell was one of its Characteristics.

2. Consistency:

Upon visual inspection, it was discovered was to be smooth and no greediness is observed.

3. pH:

pH of the prepared herbal ointment was measured by using digital pH meter. After applying a small amount of ointment to the pH meter the result was 6.30 and used the pH paper result for 7.1its nature is neutral.

4. Spreadability:

When it's come to the behavior of the ointment. Spreadability is crucial. It is employed the to determine the extent to which the ointment can be spread across the skin.small amount of ointment place on the skin and it is very easily spread.

5. Washability:

Small quantity of ointment was applied over the skin and was washed with water.it was Easily Washable.

6. Grittiness:

The ointment was found to have no gritty particles.

7. Irritability:

Small amount of ointment was taken on to a skin and kept for few minutes then result was found to be Non-irritant.

8. Solubility

Soluble in alcohol, ether, water.

9. Extrudability:

A tube container that collapses was filled with the formulation. The weight of ointment needed to extrude 0.5 cm of ointment ribbon in 10 seconds was used to measure the extrudability.

10. Stability study

A four-week physical stability test at varying temperatures (2°C, 25°C, and 37°C) was conducted on the herbal ointment. It was discovered that the herbal ointment was physically stable after four weeks at a variety of temperatures, including 2°C, 25°C, and 37°C.

Table 5: Physiochemical evaluation of Formulated ointment

SR. No	Parameter	Standard	F1	F2	F3
1	Colour	-	Greenish Yellow	Greenish Yellow	Greenish Yellow
2	Odour	-	Characteristics	Characteristics	Characteristics
3	Consistency	Good/smooth /rough	Rough	Good	Good

4	Spreadability	Easily	Easily	Easily	Easily
5	Wash ability	Washable	Washable	Washable	Washable
6	pH	5.7 – 7.0	6.29	6.30	6.30
7	Solubility	Water/ether/ alcohol	Soluble in water	Soluble in water, alcohol	Soluble in water, alcohol
8	Irritability	Non – irritant	Non-irritant	Non - irritant	Non - irritant
9.	11. Extrud ability	-	0.4gm	0.5gm	0.4gm
10.	12. Stabili ty	2°C, 25°C, 37°C	Stable	stable	stable

III. RESULT AND DISCUSSION:

The present study was done to prepare and evaluate the herbal ointment. For this the herbal extracts were prepared by using simple maceration process to obtain a good yield of extract and there was no any harm to the chemical constituents and their activity.

The levigation method was used to prepare ointment so that uniform mixing of the herbal extract with the ointment base was occurred which was stable during the storage.

It was discovered that the herbal ointment created in the lab was compared with number of factors including Appearance, Color, odor, consistency, pH, Spreadability, wash ability, solubility, Stability Irritability all necessary criteria were found to be met.

Also, the formulation was placed for a stability study at different temperature conditions like 2°C, 25°C and 37°C within four weeks. There were no changes observed in spreading ability, diffusion study as well as irritant effect.

IV. CONCLUSION:

Neem and turmeric have been utilized for their numerous medical benefits, including their antibacterial, antifungal, and anti-inflammatory qualities, since ancient times. Thus, as a straightforward dose form, this ointment could serve as a medium for the efficient and convenient use of these medicinal characteristics.

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REFERENCES:

- [1]. Abhijeet Pandey et al, "Formulation and evaluation of anti-bacterial and anti-fungal activity of a herbal ointment containing Aloe-vera, Azadirachta indica and Curcuma- longa". Journal of Chemical and Pharmaceutical Research, 2010, vol. 2(3):182-186.
- [2]. Dr. Sakthivel M, Dr. Mohamed Halith, "Formulation and Evaluation of Herbal Ointment Containing Neem and Turmeric Extract". Int. J. Pharm. Sci. Rev. Res., 2023, 78(2): 134-139.
- [3]. Shubhangi E. Sawant, Monali D. Tajane, "Formulation and evaluation of herbal ointment containing Neem and Turmeric extract". Journal of Scientific and Innovative Research 2016; 5(4): 149-151.
- [4]. Dr. M Sakthivel, Dr. S Mohamed Halith, R Karthikeyan, M. Kaviya, "Formulation And Evaluation Of Herbal Ointment Containing Azadirachta Indica And Curcuma Longa For Antimicrobial Activity And Anti Fungal Activity". International Journal of Creative Research Thoughts, 2023 vol. 11(1): 756-761.
- [5]. Marina R. Wylie and D. Scott Merrell, "Antimicrobial potential of the neem tree Azadirachta indica". Frontiers in Pharmacology, 2022, doi: 10.3389/fphar.2022.891535, 1-16.
- [6]. Miss. Deepti Sanjay Padole, "Formulation and evaluation of herbal ointment containing neem and turmeric extract". International Journal for Research Trends and Innovation, 2022, 7(6): 1679-1682.