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FORMULATION AND EVALUATION OF HERBAL OINTMENT CONTAINING NEEM AND TURMERIC EXTRACT

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ABSTRACT

In areas with access to modern medicine, there has been an increase in interest and use of herbal treatments. Plant-derived chemicals and herbal medicines have gained popularity for their various applications, as medicinal plants are rich in bioactive components and used for both traditional and modern medicine. This review aims to formulate and evaluate an ointment using Neem (Azadirachta indica) and Turmeric (Curcuma longa) extract. Ethanolic extracts were obtained through maceration. The ointment base was made, and the extract was added using the levigation process. The formulation was examined for various physicochemical parameters, including colour, odour, pH, spreadability, extrudability, consistency, diffusion study, solubility and washabilty. The formulation was tested for stability at several temperatures and demonstrated no changes in irritancy, spreadability, or diffusion. This could be a simple and effective way to employ the medicinal benefits of Neem and Turmeric.

KEYWORDS: Levigation, Maceration, Spreadability, Extrudability, Diffusion, Solubility, Washability.

INTRODUCTION

The usage of herbs has been studied and used for ages in a number of European and Asian nations. There has been great work done which is beyond the awareness and grasp of ordinary people. The 21st century's advanced technological lifestyle has enabled human suffering to embark on new titles. The golden truth is that using basic herbs for treatment has

no adverse effects and can be quite beneficial irrespective of age. Polyherbal formulations are the ones in which the formula contains two or more herbs. Herbal medications are also available in multiple dose forms as ointments, which are semisolid preparations used topically for a wide range of reasons such as keratolytics, astringents, antiseptics, emollients and protectants.

Neem is made up of leaves and other aerial parts that belong to the Meliaceae family Azadirachta indica. Neem oil and leaves have a variety of uses, including insecticides, antiseptics, and even antiviral and antifertility qualities. They are also being tested for their effectiveness in treatment of AIDS.

Curcuma longa plant rhizomes, both fresh and dried, are used to make turmeric .It belongs to Zingiberaceae family. It can be used as a spice, condiment, expectorant, or antiseptic. Turmeric is high in antioxidants, and studies have shown that it can help heal liver and arthritic conditions.

USES OF NEEM

1. Antimicrobial Activity

Recent studies have demonstrated the separation and identification of the active antibacterial component from neem oil petroleum ether extract. Zhong et al.'s study demonstrated the antibacterial properties of neem oil's 9-octadecanoic acid, hexadecanoic acid, and tetrahydrofuran-3, 4-diyl ester. Elavarasu et al. investigated neem oil's in vitro anti-plaque microbiological activity.

2. Antiviral Activity

Azadirachta indica polysaccharides were investigated by Galhardi et al. for their potential as in vitro poliovirus inhibitors. Water-extracted polysaccharides from A. indica leaves exhibited anti-bovine herpes virus type 1 (BoHV-1) activity, according to a study by Saha et al. Xu et al.'s study demonstrated the neem seed kernel extracts' in vitro antiviral activity against the duck plague virus.

3. Sexually Transmitted Disease

Not much study has been done on the effectiveness of neem in treating STDs. The reports that have been finished are very encouraging. Shokeen et al. conducted a recent study that evaluated the effectiveness of 16 medicinal herbs against Neisseria gonorrhoeae.

4. Neem And The Immune System

According to research by Thoh et al., azadirachtin inhibits by interacting with the tumour necrosis factor (TNF) binding domain of its receptors. TNF caused physiological reactions.

5. Anti Inflammatory Activity

Epezazadiradione's anti-inflammatory properties against macrophage migration inhibitory factor 451 were demonstrated by Alam et al.'s research. According to Thoh et al., azadirachtin suppresses biological reactions mediated by retinoic acid via interacting with retinoic acid receptors.

6. Antioxidant Activity

Manikandan et al. conducted study on the preventive and antioxidant properties of active neem leaf fractions against oxidative damage to red blood cells and pBR322 DNA caused by hydrogen peroxide.

USES OF TURMERIC

1. Anti-Inflammatory

Turmeric's anti-inflammatory and antioxidant qualities, which enables it to reduce swelling and pain in conditions like arthritis, are its most well-known health benefits. One of the most common causes of discomfort and pain is inflammation. Additionally, it may have a role in the development of specific illnesses. Using turmeric decreases the risk of suffering from adverse effects from prescription anti-inflammatory medication.

2. Boosts Immunity

The immune system is responsible for defending the body from threats that may lead to illness and infection. One of the greatest meals for protecting, improving, and strengthening immunity is turmeric, which reduces the chance of getting sick. Antiviral, antibacterial, and antimicrobial qualities are present in turmeric.

3. Pain Relief

Turmeric is used as an arthritis pain reliever and pain reducer. Numerous trials have examined this particularly people with arthritis.

4. Strong Antioxidant

Due to its antioxidant properties, turmeric helps prevent oxidative stress and damage from free radicals. This is regarded to be oxidative damage one of the causes behind the ageing process and the emergence of many diseases. Strong antioxidant curcumin can aid in eliminating free radicals. In addition, curcumin has the ability to increase the body's production of antioxidant enzymes.

MATERIALS AND METHODS

Collection of plant material

Azadirachta indica A. Juss leaves and dried turmeric rhizomes were collected from nearby locations. After washing the leaves thoroughly, they were let to air dry in the shade.

Preparation of Neem Extract

The plant's leaves were removed, properly cleaned in distilled water, and then let to dry for 10 days in the shade. After being ground, the leaves were powdered. After being infused for three hours using 350 millilitres of 90% ethanol, 100 grammes of powder and 150 millilitres of 90% ethanol were added to a percolator. The powder was left to macerate for seven days, stirring it occasionally. The ethanolic extract was eventually collected and allowed to cool, yielding a greenish-black residue.

Preparation of Turmeric Extract

The method used to extract the dried rhizomes of turmeric was the same as that used to make the powder from neem leaves. The crimson red extract was then obtained and kept in an airtight container in a cool, dark location.

FORMULATION OF HERBAL OINTMENT

Table 1: Formulation of Ointment Base.

S. No.	Name of the ingredient	Quantity to be taken
1.	Wool fat	7.5gm
2.	Cetostearyl alcohol	7.5gm
3.	Hard paraffin	7.5gm
4.	Yellow soft paraffin	127.5gm

Table 2: Formulation of Herbal ointment

S.No	Name of the ingredient	Quantity to be taken
1.	Neem extract	15gm
2.	Turmeric extract	15gm
3.	Ointment base q.s.	130gm

PROCEDURE FOR PREPARATION OF HERBAL OINTMENT

1) To formulate the ointment basis, hard paraffin was first finely grated and weighed. After that, this was placed over a water bath in an evaporating dish. The additional produces were added and carefully blended after the hard paraffin had melted and mixed uniformly. After then, the ointment base was left to cool.

2) Use the levigation process to combine the neem and turmeric extract with the ointment base after precisely weighing them. Thus the herbal ointment is produced. This was blended into a smooth paste two to three times the weight of the foundation. After that, more base was progressively added to create a homogenous ointment, which was then put into an appropriate container.

EVALUATION

Colour And Odour

Colour and odour were visually evaluated.

Consistency

Consistency and lack of greed are clearly visible.

PH

The pH of the herbal ointment was measured with a digital pH metre. The ointment solution was prepared with 100ml of distilled water and left for 2-3 hours. The pH of the solution was measured three times, and the average value was determined.

Spreadability

Spreadability was measured by compressing an extra sample between two slides with a specific weight and time. Spreadability has been determined by measuring the time required to separate the two slides. Better spreadability is the result of taking less time to separate two slides.

S=M×L/T

Where S = Spreadability

M = Weight tide to the upper slide

L = Length of glass tube

T = amount of time taken to separate the slides

Extrudability

The extrudability test determines how much force is required to extrude material from a collapsible tube under specific conditions. This study assessed the percentage of ointment extruded from a tube when a given load was applied. The extrudability of neem and turmeric ointment formulations was estimated using the formula below:

To calculate extrudability, multiply the amount of ointment extruded by 100 and divide by the total amount of ointment in the tube.

Diffusion Study

The diffusion test was carried out by creating agar nutrition media. A hole board was placed in the centre of the medium, along with the ointment. The time that required for the ointment to disseminate was noted. (After 60 minutes.)

Solubility

Soluble in boiling water and miscible in alcohol, ether, and chloroform.

Washability

The formulation was applied to the skin, and the ease of washing with water was assessed.

Non-Irritancy Test

A herbal ointment was tested on human skin to determine its effectiveness.1 The test involves applying a little amount of sample to the hand and observing the effects over 24 hours, no impact was seen, and it is non irritant to the skin.

Stability Study

The herbal ointment's physical stability was tested over four weeks at temperatures ranging from 2oC to 37oC. The herbal ointment was found to be physically stable.

RESULT AND DISCUSSION

The purpose of this study was to develop and evaluate a herbal antiseptic ointment. Herbal medicinal extracts were prepared using a simple maceration procedure and evaporated for optimal yield. The chemical components and their operation remained unaltered. The levigation process ensured continuous mixing of the herbal extract and ointment base during storage. The study found good results in terms of extrudability, spreadability, solubility, washability, drying loss, and other physicochemical properties. Within four weeks, the formulation underwent stability testing at three temperatures: 200°C, 250°C, and 370°C. There were no modifications found in the herbal ointment formulation.

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