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Formulation and Evaluation of Polyherbal Ointment

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Abstract: Herbal medicines are mixture of chemicals which are organic that may be obtained from any raw materials or a part of processed plant. Globally chromolaena odorata is a perennial herb, which is important. this herb produce phytochemical such as physiological actions in the human body. wound healing is disruption of anatomic continuity of tissue. wound can be produced by thermal, physical, chemical, or immunological insult to the tissue. Wound healing may take fewer times. The process of wound healing is of biochemical events leading to rearrangement of disrupted tissue and their function. Natural wound healing may continue since ages. The chromolaena odorata has a wound healing, antimicrobial and anti-inflammatory activities. Chamomile is highly known for its wound healing for its concentration of flavonoids and terpenoids. Its active compounds reduce inflammation and fight against microbes. This work focuses on formulation and evaluation of herbal ointment having Chromolaena odorata and chamomile for wound healing. The ointment base was formulated using bees wax, virgin coconut oil, methyl paraben and white soft paraffin, the formation has of various phytochemical parameters including PH, spread ability, viscosity, along with stability testing, anti-microbial activity, in vitro drug release, and wound healing potential.

Keyword: chromolaena odorata, chamomile, wound healing, ointment

INTRODUCTION

Herbal medicines are occurring naturally and the substance which are plant derived. These medicines are used to treat illness within regional or local particles. These mixtures are from chemicals, which are derived from organic particles that may come from any processed part of plant or raw materials. Traditional medicines like ayurvedic medicine that are well known herbal medicinal system that focus on health rather than disease. Breaking or opening of the skin is known as wound which are a physical injury. There are types of wounds which ranges from mild to potentially fatal. The ointment which has extract of chromolaena odorata and chamomile which is used to stop bleeding and used to treat wound, reduce inflammation. Several parts of chromolaena odorata is used to treat burns, skin infection, and wound. It also has an anti-hepatotoxic, anti-inflammatory, antioxidant, anti-microbial properties. The plant chamomile is used to stimulate collagen production that helps to close the wound. It inhibits the growth of bacteria and fungi. Its phytochemical components are alkaloids, flavanone, flavonoids, essential oil, saponins, tannins, phenolics, terpenoids. The ointment base was formulated using of beeswax, soft white paraffin, and virgin coconut oil. This ointment has a methyl paraben as a preservative this formulation aims to treat wound healing.

OBJECTIVES

- Prepare the extract from the herbal plants.

- Evaluate and formulate the herbal wound healing ointment contains extracts of chromolaena odorata and chamomile.
- Formulate an ointment with base contains beeswax, virgin coconut oil, soft white paraffin, and methyl paraben as preservatives.
- Evaluate the physiochemical test for extract including flavonoids, alkaloids, tannins, saponins, phenolics.
- Evaluate the ointment with test including ph., physical parameters, solubility, spread ability, viscosity, extrudability.

MATERIALS

The following herbal ingredient and excipients were used for the Formulation of herbal diabetic wound healing ointment.

- Chromolaena odorata
- Chamomile
- Beeswax
- Methyl paraben
- White soft paraffin
- virgin coconut oil

CHROMOLAENA ODORATA



It is also known as jack in the bush. It belongs to the family Asteraceae. It is a subtropical and tropical species of flowering shrub. Chromolaena odorants native is from America, Texas in the United States. It has been introduced to tropical Asia, Australia, and parts of West Africa.

CHAMOMILE



It is scientifically known as (*Matricaria chamomilla*). Its native is Europe and North Africa. Its use in ointment is to speedup wound contraction, stimulate collagen production, potent anti-inflammatory action, and natural anti-microbial defence.

BEESWAX

Honeybees produce a natural wax; it is secreted from abdominal glands to build honeycomb. It is used as a natural stabilizer in wound healing ointment. It does not dissolve in water. It help to create a protective layer of the wound.

METHYL PARBEN

It is an organic preservative added in an ointment to increase the shelf life. It is used to inhibit the growth of bacteria, yeast. It increases the stability of the product.

WHITE SOFT PARAFFIN

It is a highly refined and bleached mixture of semisolid hydrocarbon obtained from petroleum. It is used as a base in the ointment.

VIRGIN COCONUT OIL

Virgin coconut oil is pure, unrefined oil. It is extracted from a fresh coconut milk or meat without high heated or chemical bleaching. It is highly effective, bio-active hydrocarbon alternative ointment base. It interacts with skin to accelerate healing and deliver active therapeutic ingredients.

METHODS OF FORMULATION

1. COLLECTION AND AUTHENTICATION

The herbal plants *Chromolaena odorata* is freshly collected as leaves. A qualified botanist authenticates the plant.

2. PREPARATION OF PLANT MATERIAL

The leaf of *Chromolaena odorata* and flower of chamomile were washed cleanly with distilled water. The washed leaf and flower were shade dried for 5 to 7 days. The dried leaves and flower are collected and grounded into a coarse Powder. The powder is stored in an airtight container.

3. EXTRACTION

The collected powders are extracted using ethanol by Soxhlet extraction. The extract is filtered through filter paper. The solvent is evaporated to get a pure extract.

4. PREPARATION OF OINTMENT BASE

A simple ointment base is prepared by melting:

- Beeswax,

- Virgin coconut oil,
- White soft paraffin

These ingredients are melted together using the fusion method with continuous stirring.

5. ADDITION OF PRESERVATIVES AND ESSENTIAL OIL

Methyl paraben is added in the mixture.

After the addition of preservatives, the virgin coconut oil is added and mixed.

6. INCORPORATION OF THE HERBAL EXTRACT

The concentrated extract is added gradually to the cooled base of ointment.

The mixture is stirred continuously until we get the smooth homogeneous ointment.

7. PACKAGING

The prepared ointment is transferred to a sterile, airtight ointment container.

It is labelled and stored in a dry, cool place.

METHODS OF EVALUATION

Evaluation methods were used to ensure that the drug is safe, work as intended and meets strict laws. They help to check the identity, purity, and strength of a medicine. These tests also catch bad batches and predict how long a drug stays fresh on the shelf.

PHYSICAL EVALUATION

Evaluation is the visual and Physical practical testing of a wound healing ointment's physical features, such as colour, odour, and texture. It ensures the ointment is safe and easy to use.

1. APPEARANCE

This test is used to test the ointment.

Colour, smoothness and uniformity.

2. ODOUR

It is used to ensure that the ointment has a natural, pleasant, and mild herbal odour.

3. TEXTURE

This test is used to analyse that the ointment has a soft, smooth, and non-gritty when the ointment is rubbed between the fingers.

4. HOMOGENEITY

This test is used to verify that the ointment is uniform in composition and free from lumps and grittiness.

5. SPREADABILITY

This test helps to know that the ointment spread uniformly on the skin.

6. PH LEVEL

The pH of herbal ointment was measured using digital pH meter. It plays a significant role in maintaining skin compatibility and preventing skin irritation.

7. VISCOSITY

This test helps to measure the thickness and consistency of the ointment.

8. WASHABILITY

This test helps to check that the ointment is easily washed after applying on the skin.

9. MICROBIAL LIMIT TEST

This test helps to test that the ointment is safe for topical use that the ointment should not cause any skin infection and the ointment has a suitable shelf life.

CONCLUSION

Based on the studies that the reviewed herbal wound healing ointment that indicates *Chromolaena odorata* and *Matricaria chamomilla* possess wound healing properties due to their anti-microbial, anti-inflammatory, and antioxidant activity. These medicinal plants have potential for safe and effective herbal wound healing formulation. Further research should focus on standardized formulation development, quality control, large scale clinical trials to strength scientific evidence and facilitate clinical and commercial applications.

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