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FORMULATION AND EVALUATION OF HERBAL CREAM FOR SKIN RASHES

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Abstract

Herbal cream, are natural remedies made from plant-based ingredients used for various skincare purposes. Skin infection causes by various type rashes, resulting from a variety of causes bacteria and fungi are a common health concern, particularly in tropical and subtropical regions such as allergies, irritation or infection, often require effective treatment to alleviate symptoms like redness, itching, and inflammation conventional pharmaceutical treatments may lead to side effects, promoting the need for natural alternative. The rising resistance to synthetic antibiotics and the side effects associated with chemical-based topical agents have prompted the exploration of herbal alternatives. This study focuses on the formulation and evaluation of the cream contains Combination a herbal Cream ingredient's such as incorporating calendula, liquor ice, rose oil, oatmeal, glycerin, alum, and vanishing cream containing ingredients known for their potent antimicrobial, anti-inflammatory, anti-itching soothing properties. It is used in Allergic eczema, psoriasis, Diaper Rashes which shows Antibacterial and Antifungal activity. The ingredients which are used to ensure efficacy while maintaining safety for sensitive skin. For the Cream are extracted or some were taken freshly, cleaned, washed thoroughly and then ground them to make a fine paste. Most of the cosmetic product available in the market are synthetic and have many side effects if it is used for a long time instead of this we can use skin rashes Cream which contain herbal ingredients. It can be evaluated by physical parameters such as texture, consistency, and, Spread ability, wash ability, viscosity, skin irritancy test, while clinical trials with human subjects assessed its effectiveness in reducing symptoms like skin rashes with added benefit of reduced side effects future studies are recommended to explore long-term safety, efficacy and optimal dosage for broader clinical application for ensuring the effectiveness treatment.

Keyword: **Calendula, Formulation, anti-rashes, skin rashes, dermatological evaluation.**

INTRODUCTION

According to WHO (World Health Organization), 70% population of the world depend on Traditional Health Care System (THCS) for treatment of various diseases. Traditional knowledge is deeply associated with biological resources, and an important aspect of primitive cultural groups, it grows close interdependence with the environment, which also covers vast and varied scopes of knowledge. From time immemorial, folk people live mainly in less accessible and isolated areas, and used to manage their livelihood directly from forests and land. The indigenous botanical knowledge of ethnic communities relating to the uses and management wild plant resources is extensive. The knowledge of medicinal plants has been accumulated during the course of centuries based on various medicinal systems such as Ayurveda, Unani and Siddha. In recent years there has been an increased interest on medicinal plants and Traditional Herbal Medicines (THM), are practiced in several parts of the world. In India ethno medicinal investigations also received considerable attention and attracted large number of workers on different aspects. More than half of the world's population still depends exclusively on medicinal plants, and plants offer the active ingredients of most traditional medical products Human skin is the largest organ in the body. It forms the first guard line. Its three main layers are epidermis, dermis and hypodermis (subcutaneous tissue). Each layer offers a distinctive role in the homeostasis of the skin. They vary in thickness throughout the body and from person-to-person.

Ethnobotanical knowledge related to medicinal plants may add new discoveries to the world of medicines. Plant based medicines are considered cost-effective and safe as compared to synthetic drugs. Furthermore, people gain economic benefits by collecting medicinal plants from the forests and selling them in market. This has elevated the growth of herbal medicine industries. Most of the information is still restricted to some traditional healers or passed on to next generation by word of mouth or even Previously, ethnobotanical studies, related to dermatological problems have also been conducted in different countries on the use of plants to treat various skin diseases Cutaneous inflammation is aggravated by pathogens, noxious

mechanical and chemical agents, and immune/ autoimmune responses. It is a complicated process during which the body repairs tissue damage and protects itself against harmful stimuli. Inflammation is distinguished by symptoms such as redness, swelling, itching, heat and pain under the effect of an inflammatory factor, some intracellular biochemical are released from cells. Monocytes and macrophages produce cytokines. Their basic function in inflammatory processes is to activate cells engaged in the inflammation (neutrophils, macrophages, and mast cells), allow communication between them provoke the prostaglandin synthesis and affect the synthesis of the Creative proteins. Among cytokines one can differentiate pro-inflammatory (interleukins IL-1, IL-6, IL-8, IL-17, IL- 18, α and β interferon, and TNF) from anti-inflammatory ones (for example, IL-4, IL-10, IL-13). Prevalence of the first type leads to the systemic inflammatory reaction while prevalence of anti- inflammatory cytokines results in the anti-inflammatory response One of the inflammation-based diseases is atopic dermatitis (atopic eczema), which is a chronic disease affecting people genetically tended to overreact to external factors. It is commonly found in association with allergic rhinitis, asthma, or other manifestations of atopy. Atopic dermatitis is a widespread dermatologic disease in children. The most commonly observed manifestations of atopic dermatitis are extreme skin dryness and itching, redness, scaly patches, and thickened lichenified plaques with excoriation. Staphylococcus aureus is being noticed to inhabit skin. Secondary, with honey color crust, is general in infants. Atopic dermatitis origin is complicated. It is claimed that during the onset and in the course of the disease, the most significant are genetic factors and the effect of the external environment. An immunological mechanism which participates in the pathogenesis of the atopic dermatitis and other skin diseases of the inflammatory origin is linked to activation of T lymphocytes and it is a result of complicated interactions of different cells: keratinocytes, endothelium cells, eosinophils, Langerhans cells and T lymphocytes, and many cytokines and mediators. In atopic skin diseases, skin cells generate interleukins initiating inflammatory reactions.

Avena sativa:

Oatmeal is a natural product which has an excellent safety record and a long history in the treatment of dermatologic disorders. Oatmeal possesses antioxidant and anti-inflammatory properties. Colloidal oatmeal produced by finely grinding the oat and boiling it to extract the colloidal material and became available in 1945. It is noteworthy that many clinical properties of colloidal oatmeal result from its chemical polymorphism. Atopic dermatitis (AD), one of the most common conditions among children in the United States (US), has been shown to be equivalent in quality of life (QoL). Avenanthramides in oats (Avena sativa L.) and structure-antioxidant activity relationships Oat have been cultivated since the Bronze Age, and have been used in traditional medicine for centuries. As a topical treatment, oatmeal has emollient and anti-inflammatory properties, and is commonly used for skin rashes, erythema, burns, itch, and eczema.

Figure no.1

On Application Anti-itch activity

Oatmeal has been used for centuries to decrease itching in a variety of xerotica dermatoses. It has been illustrated that Avenanthramides reduce oxazolone induced contact hypersensitivity, resignification induced neurogenic inflammation, and compound 48/80-induced, histamine-mediated itch. Another in vitro study has shown that Avenanthramides caused a considerable reduction in histamine release from mast cells stimulated

by substance P. 5% colloidal oatmeal significantly decreased itching and patients requested significantly less antihistamine. Colloidal grain suspensions of oatmeal are considered as adjuncts in atopic dermatitis therapy, especially in the United States. On the other hand, many young children have been treated by colloidal grains in Italy. Studies have demonstrated that topical formulation of natural colloidal oatmeal, particularly Avenanthramides, alleviates symptoms by restoring the cutaneous barrier. Additionally, it may play a crucial role in decreasing the use of corticosteroids and calcineurin inhibitors in atopic dermatitis.

Calendula:

Calendula officinalis belonging to the family Asteraceae is a well-known medicinal plant. It is commonly known as English marigold, pot marigold. Chemically, Calendula officinalis possesses various biological active constituents such as carotenoids, flavonoids, saponins, sterols, phenolic acids, lipids, etc. Various parts of plant such as leaves, flowers have been reported to possess therapeutic activity. Indian traditional medicinal system is fundamentally based on Ayurveda and there is an emerging interest of the world to study and to evaluate the rich heritage of traditional medicinal system and exploit the Potential of natural bioactive components. From thousands of years ago the mankind has acquaintance about the benefits of different bioactive components with therapeutic potential. According to Ayurveda Different plant extracts had significantly contributed for remedial effects on mankind.

Figure no.2

- **Maceration method:**

Maceration or dipping method involves soaking plant materials (coarse or powdered) in a stoppered container with a desired solvent and allowed to stand in the room temperature for a period of time. This process intends to break the cell wall of plant cells to release the desired phytochemicals in the extraction solvent being used. The choice of solvent used will determine the type of compound extracted from the samples, basically playing the most critical role. In case of calendula flowers, the solvent used was ethanol and water (70:30 v/v) for 10 gm of calendula flowers. The flowers extract was dipped in this extraction solvent for about 3 to 4 days. So that the calendulas officinalis gets dissolved in the solvent

Figure no.3

Liquorice:

In controvertibly there are worldwide changes in healthcare industry in the third millennium. Ayurvedic system of healthcare has gained importance and is becoming popular. It is a comprehensive system of healthcare that originated in India. Because of the effectiveness and less adverse reactions compared to the synthetic chemicals, Ayurvedic system has attained popularity globally. The classical text of Ayurveda mentions number of plants for the management of several diseases. Undoubtedly several researchers had given their contributions for finding hidden therapeutic potentials of number of Ayurvedic drugs, but still number of plants need a comprehensive study on them. Therefore the present study is focused on one such very effective and potent medicinal herb- Glycyrrhiza glabra. Besides the anti-proliferative effects shown with liquorice, new useful applications have recently been described in the treatment of atopic dermatan.

Figure no.4

Topical Application: Glycyrrhizin acid exerts an effect similar to that of topical hydrocortisone in the treatment of eczema, contact and allergic dermatitis, and psoriasis. In several studies, glycyrrhizin acid was shown to be superior to topical cortisone, especially in chronic cases. For example, in one study of patients with eczema, 93% of the patients applying glycyrrhizin acid demonstrated improvement compared with 83% using cortisone. In another study, a topical gel containing 2% glycyrrhizin acid was shown to be effective for treatment of atopic dermatitis and was more effective than preparations containing 1% glycyrrhizin acid in reducing the scores for erythema, oedema, and itching over 2 weeks. Glycyrrhizin acid can also be used to potentiate the effects of topically applied hydrocortisone by inhibiting 11-β-hydroxysteroid dehydrogenase, which catalyses the conversion of hydrocortisone to an inactive form.

Material

Sr. No.	Ingredients	Quantity	Role
1	Calendula officinalis extract.	1.5 gm	anti-inflammatory, antioxidant, antimicrobial properties
2	Oatmeal	1 gm	Soothing, Anti-itching.
3	Liquorice extract.	1 gm	Calming skin rashes, and irritation regulation.
4	Alum	0.5 gm	Anti-microbial, Skin refreshing
5	Cetyl alcohol	1 gm	moisturizer and emollient
6	Glycerin	2 ml	Humectant
7	Borax	6 gm	Emulsifying agent.
8	Stearic acid	2 gm	Soap forming
9	TWEEN 60	1 ml	Surfactant
10	Water	q.s	Vehicle

Table no.1

I.Calendula officinalis

Calendula officinalis is a medicinal herb commonly used in herbal creams for skin care. It contains flavonoids and triterpenoids which provide anti-inflammatory, antimicrobial, and wound-healing properties. It helps reduce redness, irritation, itching and skin rashes while promoting faster healing of damaged skin.

II.Liquorice

Liquorice (Glycyrrhiza glabra) contains glycyrrhizin and flavonoids that show anti-inflammatory and soothing effects. Ii helps in reducing skin irritation, itching pigmentation, and allergic reactions. It also acts as a natural antioxidant and supports skin healing

III.Oatmeal

Oatmeal is widely used in skincare products because of its soothing and moisturizing properties. It contains beta-glucans and avenanthramides which help relieve itching dryness, and inflammation. Oatmeal forms a protective barrier on the skin and is effective n calming rashes and sensitive skin conditions.

Method

Selection of herbal ingredients like Calendula, liquorice, oatmeal, alum

↓

Collection and authentication of herbal raw material

↓

Extraction of herbal material

Figure no.5

Calendula extraction

Figure no.6

Figure no 7

Liquorice Extraction

Figure no.8

Calendula Extraction

- **Preparation Cream Base (O/W) type Of Emulsion**

Step 1) Preparation oily phase including (stearic acid, cetyl alcohol, paraffin heat to 70 c)
Step 2) Preparation aqueous phase including (water, Glycerine, rose water) heat to 70 c
Step 3) oily phase and aqueous phase mixture with continuous stirring

Figure no.9

Step 4) Cooling and addition of herbal Extract like Calendula, liquorice, Oatmeal

Figure no.10

Physical Evaluation

Evaluation	**Result**
Color	Yellowish White
Odor	Characteristic
State	Semisolid
Consistency	Smooth

pH

Calibration: Calibrate the pH meter using buffer solutions (usually pH 4.0 and 7.0) Sample Prep: Weigh 1g of the cream and disperse it thoroughly in 100ml of distilled water.Measurement: Place the electrode in the solution and record the reading.

Result:-5-6.

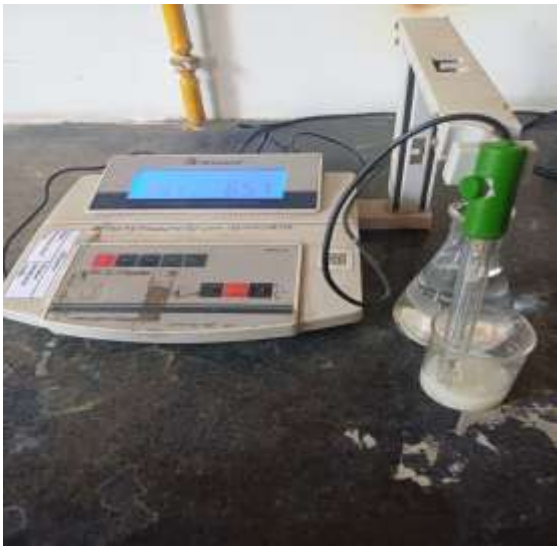

Figure no.11

Spredability

Parallel-Plate Method:-This is the most common technique for evaluating the spredability of topical formulations.

Preparation: Take two glass slides

Application: Place a fixed amount of the anti-itching cream (e.g., 0.5 or 1g) on one glass slide

Compression: Place the second slide over the cream and press it down with a standard weight (typically 100g- 500g) for a set time (e.g., 5 minutes) to create a uniform, thin layer.

Result: - 5g.cm /sec

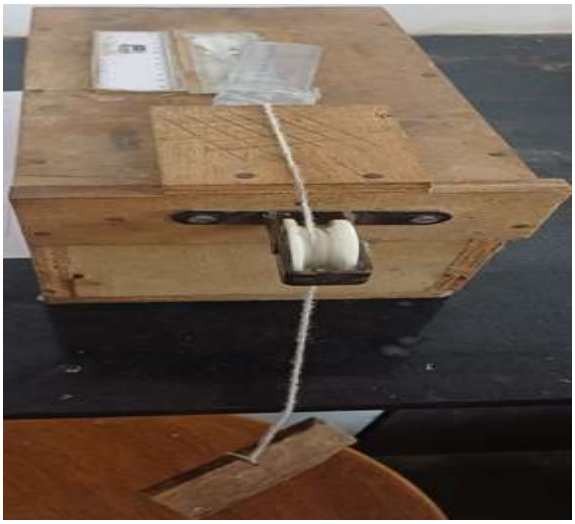

Figure no.12

Washability

Application: Apply a measured, small amount of the formulated herbal cream onto the dorsal surface of the hand (or a defined area of the skin).

Rinsing: Allow tap water to flow over the area of application.

Observation: Measure the time it takes for the cream to be completely removed from the skin.

Evaluation: Record the ease of removal and check for any remaining residue, greasiness, or oily feel

Result:-Easily washable, No greasiness observed.

Figure no.13

Non-irritation test/Patch test

Testing a non-irritation patch test for an anti-itching herbal cream involves applying a small amount to a sensitive area of a clean, dry patch of skin, ensuring it covers a quarter-sized area, leaving it on for 24 hours, and checking for redness or itching

Result:-Non-irritant.

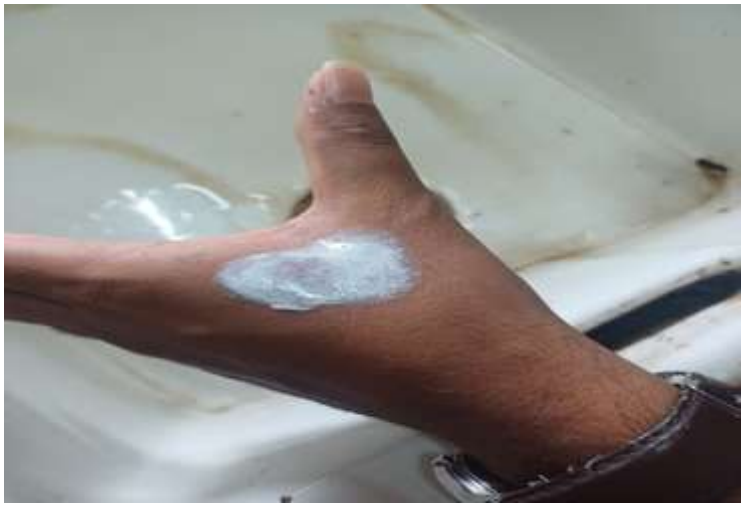

Figure no.14

Phase Separation

Testing for phase separation in an anti-itching herbal cream is crucial to ensure that the oil and water phases do not separate over time. This involves subjecting the cream to physical stress and observing it for changes in consistency and homogeneity.

Result:-No phase separation.

Animal Testing

Anti-itching activity of the prepared herbal cream was evaluated using albino rats. Itching and irritation were induced on both ears using dilute hydrochloric acid (HCl). The prepared herbal cream was applied on the left ear, while the standard anti-itching cream was applied on the right ear. Animals were observed for redness, inflammation, scratching behaviour, and irritation score at predetermined time intervals. The anti-itching activity of the prepared formulation was compared with the standard formulation**.**

Parameter	Description
Animal Used	Albino Rats
Number of Animals	2
Inducing Agent	Hydrochloric Acid (HCl)
Site of Application	Ear Skin
Test Formulation	Prepared Herbal Anti-Itching Cream
Standard Formulation	Standard Anti-Itching Cream
Application Site	Left Ear – Herbal Cream; Right Ear – Standard Cream
Frequency of Application	Three times daily
Duration of Study	2 Days
Evaluation Parameter	Reduction in redness and irritation

Table no.2

Rat No.	Left Ear (Prepared Herbal Cream)	Right Ear (Standard Cream)	Initial Redness After HCl Induction	Observation After 2 Days	Frequency of Application
1	Herbal Cream Applied	Standard Cream Applied	Moderate Redness Observed	Redness Reduced	Thrice Daily
2	Herbal Cream Applied	Standard Cream Applied	Moderate Redness Observed	Redness Reduced	Thrice Daily

Table no.3

Parameter	Prepared Herbal Cream (Left Ear)	Standard Cream (Right Ear)
Redness Before Treatment	Present	Present
Redness After Treatment	Reduced	Reduced
Irritation	Decreased	Decreased
Anti-Itching Activity	Effective	Effective

Table no.4

Before Inducing Rashes

Figure no.15

After Inducing Rashes

Figure no.16

Application of cream

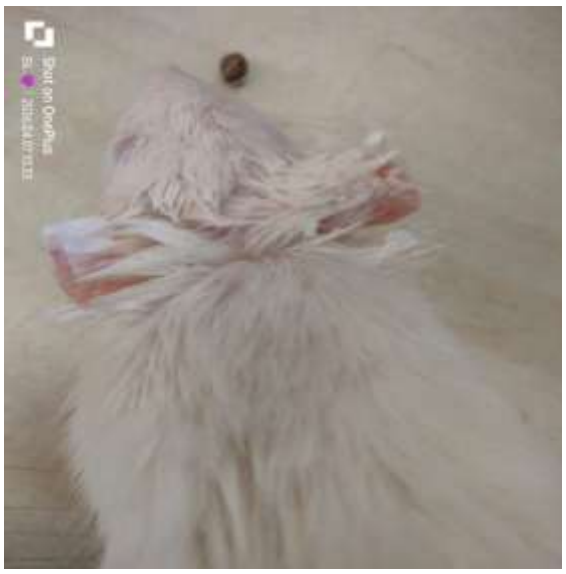

Figure no.17

After Treatment

Figure no.18

Evaluation test for flavonoids

Test	Observation	Result
Shinoda Test	Deep Red colour	Flavonoids present
Sulphuric Acid Test	Orange to Red colour	Flavonoids present
Lead Acetate test	Yellow PPT	Flavonoids present
Alkali Test	decolouration	Flavonoids present

Table no.5

Figure no.19

Evaluation test for Triterpenoids

Test	Observation	Result
Liebermann-Burchard Test	Red-Orange Colour	Triterpenoids present
Sannie Test	Brown Colour	Triterpenoids present

Table no.6

Figure no.5.9.1

CONCLUSION

The present study highlights the potential of a herbal skin cream formulated using natural ingredients such as calendula, liquorice, rose oil, oatmeal, glycerine, and alum, combined with a vanishing cream base. These ingredients are well-known for their antimicrobial, anti-inflammatory, anti-itching, and soothing properties. The formulated cream demonstrates effectiveness in managing common skin conditions such as allergic eczema, psoriasis, and diaper rashes, offering antibacterial and antifungal activity while being gentle on sensitive skin.

Preparation of the cream involved careful selection, cleaning, and processing of the herbal ingredients to ensure purity and potency. Evaluation of the cream through physical parameters, including texture, consistency, spread ability, washability, viscosity, and skin irritancy, confirmed its suitability for topical application. Clinical assessment further indicated a reduction in symptoms of skin rashes with minimal side effects, suggesting a safer alternative to conventional chemical based topical agents.

Given the increasing resistance to synthetic antibiotics and concerns over long-term side effects of chemical creams, herbal formulations offer a promising and safer approach for managing skin infections and irritations. Future studies are recommended to explore the long-term safety, efficacy, and optimal dosage of this herbal cream for broader clinical applications, ensuring its sustained effectiveness and reliability as a natural skincare remedy.

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