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Formulation And Evaluation Of Herbal Anti-Inflammatory Cream Containing Turmeric And Hyacinth Seeds.

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ABSTRACT

The present study focuses on the formulation and evaluation of a herbal anti-inflammatory cream containing turmeric extract, hyacinth seeds extract, ginger extract, aloe vera gel, coconut oil, and other natural ingredients. The cream was prepared by using suitable emulsifying agents and stabilizers to obtain a smooth and stable formulation. Turmeric, hyacinth seeds, and ginger were selected for their anti-inflammatory and soothing properties, while aloe vera and glycerin provided hydration and cooling effects and the pH is 6.5. The formulated cream was evaluated for various parameters such as appearance, pH, spreadability, homogeneity, and stability. The results showed that the cream possessed good consistency, easy spreadability, acceptable pH, and satisfactory stability. Therefore, the developed herbal cream can be considered a safe and effective topical formulation for reducing inflammation and soothing the skin.

Key words- Herbal Cream, Turmeric, Hyacinth Seed, Anti-inflammatory Activity, Topical Formulation.

INTRODUCTION

Inflammation is a biological defense mechanism, but chronic inflammation can result in various diseases. conventional therapies, though effective, often cause undesirable side effects. This necessitates the exploration of herbal remedies that are safer and equally effective. Most medicines used in health care come from plants, and in developing countries nearly 80% of primary health care Is provided by traditional plant based medicines, but only a tiny fraction of medicinal plants have been tested. Worldwide, attention is being paid to the medicinal plants to solve healthcare .Curcumin, the principal curcuminoids of turmeric (Curcuma Longa),exhibitspotent anti-inflammatory and antioxidant properties . Aloe Vera (Aloe barbedonesis) is valued for its soothing, moisturizing, and wound-healing activities. Combining these two agents in a cream aims To Produce a synergistic anti-inflammatory effect with enhanced skin compatibility.[7] This study was undertaken to formulate a stable, effective herbal anti-inflammatory cream and evaluate its physicochemical and therapeutic attributes. The lablab purpureus used as antioxidant, antimicrobial, Cytotoxic, , anti-fungal, anti-inflammatory. Coconut oil is used to moisturize and treat skin Infections. Garlic (Allium sativa) is one of the most widely used ones.[9]

Benefits of the Prepared Cream-

1.Reduces redness and swelling

2.Provides soothing effect

3.Helps in skin healing

4Protects from microbial contamination

5.Easy to apply and absorb

MATERIALS:

This project focuses on the formulation of a herbal anti-inflammatory cream using:

1] Turmeric

Scientific name: Curcuma longa.

Family: Zingiberaceae.

Fig. No. 1 Turmeric

Curcuma longa (Turmeric) is a perennial medicinal herb widely cultivated in India and other tropical countries. The plant possesses underground rhizomes which are bright yellow in color and commonly used as spice and medicine. Turmeric contains important phytochemicals such as curcuminoids, flavonoids, tannins, essential Oils, phenolic compounds, proteins, and carbohydrates. Curcumin is the major active constituent responsible For most of its pharmacological activities.[2] Traditionally, turmeric has been used for the treatment of wounds, skin infections, inflammation, cough, cold, And digestive disorders. The paste prepared from turmeric rhizomes is externally applied to relieve pain, swelling, and various skin problems. Turmeric is also used as a natural antiseptic and healing agent in Ayurvedic medicine. Research studies have reported that C. longa exhibits anti-inflammatory, antioxidant, antimicrobial, Antifungal, analgesic, wound healing, and anticancer activities. Due to its strong medicinal value, turmeric is widely used in herbal formulations, creams, ointments, and cosmetic preparations. Recently, turmeric has Gained significant attention in pharmaceutical and cosmetic industries because of its therapeutic potential and Safety profile. [10]

Hyacinthus orientalis(Hyacinth Seeds)[5]

Scientific name – Hyacinthus orientalis L.

Family – Asparagaceae

Fig. No. 2. Hyacinth orientalis.

Hyacinthus orientalis (Hyacinth) is a flowering herbaceous plant commonly cultivated for its ornamental and medicinal importance. The plant grows from bulbs and produces fragrant flowers of various colors. Hyacinth Seeds and other plant parts contain important phytochemicals such as flavonoids, alkaloids, glycosides, Phenolic compounds, tannins, and essential oils. These bioactive constituents contribute to its therapeutic properties. Hyacinth has been used in herbal remedies for the treatment of inflammation, skin irritation, and minor Infections. Extracts prepared from the seeds are believed to possess soothing and healing properties. In some Traditional practices, the plant is also used for relieving swelling and promoting skin health. Research studies have reported that H. orientalis exhibits anti-inflammatory, antioxidant, antimicrobial, and Analgesic activities. Due to these medicinal properties, hyacinth seed extracts are being explored in herbal Formulations, cosmetic creams, and skincare preparations. The presence of natural antioxidants in the seeds May help protect the skin from oxidative damage and improve healing activity.[6]

Ginger

Scientific name – Zingiber officinale Roscoe

Family – Zingiberaceae

Fig. No. 3. Ginger

Ginger is a widely used medicinal herb cultivated in tropical and subtropical regions for its therapeutic and Culinary importance. It is a perennial plant with underground rhizomes that possess a characteristic aroma and Pungent taste. Ginger contains important phytochemicals such as gingerol, shogaol, zingerone, flavonoids, Tannins, phenolic compounds, and essential oils, which are responsible for its medicinal properties. Traditionally, ginger has been used for the treatment of inflammation, pain, cough, cold, digestive disorders, And microbial infections. [1] Ginger possesses anti-inflammatory, antioxidant, antimicrobial, analgesic, and antifungal activities. The active Constituents present in ginger help reduce inflammation and oxidative stress while promoting healing. Ginger Extracts are also reported to improve blood circulation and provide soothing effects on irritated tissues. In herbal anti-inflammatory cream formulations, ginger helps reduce redness, swelling, pain, and skin irritation. Its antimicrobial activity also helps prevent microbial growth on the skin. Therefore, ginger is considered an Effective natural ingredient in pharmaceutical and cosmetic herbal preparations.

AIM AND OBJECTIVES

Aim -To formulate and evaluate a topical herbal cream possessing anti-inflammatory properties using natural Plant extracts for skin application.

Objectives –

▪To prepare herbal anti-inflammatory cream using natural ingredients.

▪To develop a safe and effective herbal cream.

▪To develop skin-friendly herbal formulation.

▪To evaluate anti-inflammatory property

REQUIREMENTS

Apparatus – Mixers Water bath, Heating mantle, pH Meter, Hot Plate, Beaker, Glass rod, Spatula, Weighing Balance, Mortar and pestle, Container.

Chemicals – Turmeric, hyacinth seeds, aloe vera gel, coconut oil, ginger, Emulsifying wax Beeswax, Acetyl Alcohol Glycerin methyl paraben, distilled water, orange oil.[7]

FORMULATION TABLE

Table. No. 1 formulation table

Sr. No.	Ingredients	Quantity
1	Turmeric extract	1 gm
2	Hyacinth seeds extract	2 gm
3	Ginger extract	0.5 gm
4	Aloe vera gel	20 gm
5	Coconut oil	10 gm
6	Emulsifying wax	3 gm
7	Beeswax	2 gm
8	cetyl Alcohol	2 gm
9	Glycerin	3 gm
10	Distilled water	7 gm
11	Preservatives	0.2 gm
12	Orange oil	0.2 gm

METHOD OF EXTRACTION

Drying and powder process

Select appropriate medicinal plants with known anti-inflammatory properties (e.g., Turmeric , Hyacinth seeds And Ginger).Wash the fresh plant materials thoroughly to remove dirt and contaminants. Dry the materials Under shade (not direct sunlight) to prevent loss of volatile compounds and Degradation of phytochemicals. Once completely dry, grind the materials into a fine powder using a mechanical grinder or Pulverizer. Store The powder in airtight containers away from light. [8]

Maceration Process Steps

Preparation: Dry turmeric rhizomes hyacinth seeds and ginger individually are finely ground into a powder.

Solvent Selection: Ethanol (70%-96%) is the preferred solvent, though methanol or acetone can Be used.

Soaking (Maceration): The powder is soaked in the solvent, often using a 1:20 (w/v) ratio (e.g.,

15g powder In 100ml alcohol).

Agitation: The mixture is kept at room temperature (25 ± 5°C) and shaken regularly, often for 3–7 days, to Enhance the yield.

Filtration: The mixture is filtered to remove solid residue. Evaporation: The solvent is removed using a Evaporator to obtain the concentrated turmeric Extract. [5]

Fig. no. 4. Extraction of herbal ingredients

PHYTOCHEMICAL SCREENING OF EXTRACTION

Table No. 2. Phytochemical screening of herbal extracts

Phytochemical constituents	Turmeric	Hyacinth seeds	Ginger
Alkaloid	+	+	+
Flavonoid	+	+	+
Tannins	+	+	+
Saponins	+	+	+
Phenols	+	+	+
Terpenoids	+	+	+
Protein	+	+	+

PREPARATION

Preparation of Oil Phase: Coconut oil, emulsifying wax, beeswax and cetyl alcohol were taken in a beaker And melted using a water bath at about 70°C.

• Preparation of Aqueous Phase: Aloe Vera gel, glycerin and distilled water were taken in another beaker andHeated to the same temperature with continuous stirring

• Emulsification: The hot oil phase was slowly added into the aqueous phase with continuous stirring to form auniform cream base.

• Addition of Herbal Extracts: Turmeric extract, hyacinth seed extract and ginger extract were added slowly into the cream base after emulsification and mixed properly.

• Cooling and Addition of Other Ingredients: The cream was allowed to cool with continuous stirring. Preservative and orange oil were added after cooling.

• Filling and Storage: The prepared herbal anti-Inflammatory cream was filled into suitable containers and stored at room temperature for further evaluation.[4]Fig. No. 8. Preparation of Cream.

Fig. no.5. Preparation of cream.

EVALUATION PARAMETERS

1] Physical appearance: The formulated cream is visually inspected for color, texture, and uniformity. A good formulation should exhibit a smooth, homogeneous consistency without any phase Separation or grittiness. The color is typically yellowish due to the presence of turmeric.

Color: Light yellowish-orange or pale orange.

Odor / Fragrance: Pleasant, characteristic citrus aroma.

Texture & Feel: Smooth, non-gritty, and non-greasy upon rubbing.

State / Consistency: Semisolid and uniform. pH Determination

2] pH test:

Procedure: 1 g of cream was dispersed in 10 ml of distilled water and the pH was measured using a digital pH meter.

Result: The pH of the formulation was found to be within the acceptable skin-friendly range. pH is 6.5

Fig.No. 6. pH test

3] Homogeneity Test:

A small amount of the prepared cream was taken on a clean glass slide. The cream was spread evenly using a spatula or fingertip. The sample was visually observed for uniform distribution. The cream was gently rubbed to check for any lumps, grittiness, or phase separation. The texture and consistency were carefully evaluated.

Result / Observation:

• The cream was found to be homogeneous and uniform in nature.

• No lumps, grittiness, or phase separation were observed.

• The texture was smooth and consistent throughout the sample.

• Hence, the formulation was considered homogeneous and stable.

4] Wash ability Test:

Procedure: The applied cream was washed with tap water and its removability was observed

Result: The formulation was easily washable.

5] Irritancy test:

Procedure: A small amount of cream was applied on the skin and observed for redness, itching, or irritation. Non-irritant, safe for skin.

6] Spreadability Test:

Procedure: A small amount of cream was placed between two glass slides and spreadability was observed by applying slight pressure.

Result -The spreadability of the prepared herbal cream formulation was found to be good and satisfactory.

$S = M \times L / T$

$S = 100 \times 6.3 / 1$

$= 630$ gm. Cm/ min

7] Anti-bacterial test:

Procedure – Prepare nutrient agar plates and inoculate them with Staphylococcus aureus culture. Make wells (6 mm diameter) in the agar using a sterile cork borer.Add 100 µL of the cream sample solution into one well.Add 100 µL of solution as Ciprofloxacin the standard and 100 µL of sterile distilled water as the control. Incubate the plates at 37°C for 24 hours. Observe and measure the zone of inhibition around the wells.

Test Bacteria: Staphylococcus aureus

Standard: Ciprofloxacin

Control: Sterile Distilled Water

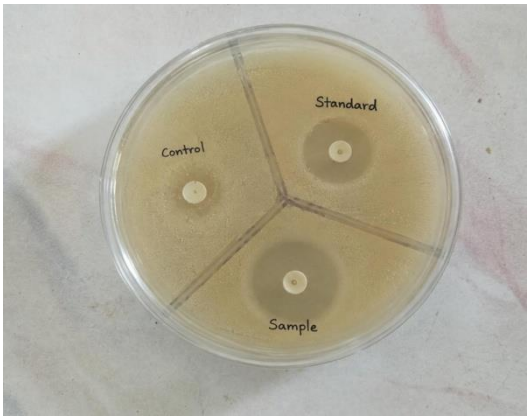

Fig. No 7. Zone of Inhibition Showing Antibacterial Activity of Formulated Herbal Cream

The formulated cream showed effective antibacterial activity with a clear zone of inhibition against the test bacteria, indicating successful antibacterial efficacy.

8] Viscosity test :

1. Take the cream sample in a clean beaker.

2. Switch on the digital viscometer.

3. Immerse the spindle into the cream up to the marked level.

4. Set the required speed (e.g., 10 rpm).

5. Allow the spindle to rotate until the reading becomes stable.

6. Record the viscosity value displayed on the screen in cp.

7. Repeat three times and calculate the average.

The viscosity of the formulated cream was found to be 15,000 ± 500 cP, indicating good consistency and spreadability.

9] Stability Studies:

Stability studies are conducted by storing the formulation under different conditions such as room

Temperature and elevated temperature. The cream is evaluated periodically for: Color changes Phase

separation Consistency. This ensures long-term stability of the formulation

Prepare the cream and fill it in a clean, airtight container.

Record the initial appearance, color, odor, pH, consistency, and homogeneity.

Store samples under different conditions:

Room temperature (25 ± 2°C)

Refrigerated condition (4 ± 2°C)

Accelerated condition (40 ± 2°C, if available)

10] anti inflammatory activity test:

Procedure -

Take 1 ml of egg albumin in a test tube.

Add 1 ml of herbal cream extract to the test tube.

Incubate the mixture at 37°C for 15 minutes.

Heat the mixture at 70°C for 5 minutes.

Allow it to cool to room temperature.

Observe the turbidity and compare it with the control sample.

Observation table:

Table. No.3. Observation Table: Anti-inflammatory Activity

Sample	Absorbance (660 nm)	% Inhibition of Protein Denaturation
Control	0.85	0
Standard (Diclofenac Sodium)	0.18	78.82
Herbal Formulation	0.29	65.88

Result: The formulated herbal cream showed good inhibition of protein denaturation. The percentage inhibition was found to be 65.88%, indicating significant anti-inflammatory activity

OBSERVATION TABLE

Table. No. 4. Observation table

Sr. No.	Parameters	Observation
1	Color	Light yellow
2	Odor	Characteristics pleasant odor
3	Appearance	Smooth and creamy
4	Texture	Soft
5	pH	6.5
6	Spreadability	Good
7	Homogeneity	Uniform
8	Irritancy	No irritation
9	Stability	Stable

RESULT AND DISCUSSION

The prepared herbal anti-inflammatory cream showed good physical appearance, smooth texture, and acceptable consistency. The cream was pale yellow in color due to the presence of turmeric extract and had a pleasant odor because of orange oil. It was easily spreadable on the skin without producing irritation or greasiness. The formulation exhibited good homogeneity with no phase separation or grittiness observed during evaluation. The pH of the cream was found to be suitable for skin application, indicating good compatibility with the skin surface. The cream also showed satisfactory washability and stability during storage. The anti-inflammatory activity of the formulation may be attributed to the combined action of turmeric, Hyacinth seed, and ginger extracts, which possess natural anti-inflammatory and antioxidantproperties. Overall, the developed herbal cream was found to be stable, safe, and effective for topical anti-inflammatory use.

CONCLUSION

The formulated herbal anti-inflammatory cream containing turmeric and hyacinth seeds demonstrated promising results in terms of physicochemical properties and anti-inflammatory activity. The synergistic combination of these herbal ingredients enhanced the cream's therapeutic benefits, Offering a natural and effective remedy for skin inflammation. The study highlights the potential of Aloe Vera and curcumin as valuable components in topical formulations for managing Inflammatory skin conditions. Further research, including clinical trials, could further validate the. Efficacy and safety of this herbal cream, paving the way for its application in dermatological treatments and expanding the scope of natural therapies in skincare.

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