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Formulation and Evaluation of Herbal Anti-Crack Cream

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Abstract: Cracked skin, particularly on hands and feet, is a common dermatological issue caused by dryness, environmental factors, and lack of hydration. Herbal formulations provide a natural, effective, and safe alternative to synthetic creams. This study focuses on the formulation and evaluation of an herbal crack cream using Aloe vera, turmeric, camphor, coconut oil, mustard oil, rose oil, beeswax, and glycerin. Each ingredient was selected based on its therapeutic properties: Aloe vera for skin hydration and healing, turmeric for its anti- inflammatory and antimicrobial effects, camphor for soothing irritation, coconut and mustard oils for deep moisturization, rose oil for skin nourishment, beeswax as a natural emulsifier and barrier protector, and glycerin for humectant properties. The cream was formulated using standard emulsification techniques and subjected to physicochemical evaluations, including pH, spreadability, viscosity, stability, and skin irritation tests. The results demonstrated that the formulated herbal crack cream had excellent stability, a non-greasy texture, effective moisturization, and rapid healing properties. The formulation was found to be safe, effective, and free from harmful chemicals, making it a promising alternative for treating cracked and dry skin.

Keywords: Herbal crack cream, Aloe vera, Turmeric, Camphor, Coconut oil, Mustard oil, Rose oil, Beeswax, Glycerin, Skin hydration, Wound healing, Moisturization, Anti-inflammatory, Antimicrobial, Natural skincare, Dermatological formulation

I. INTRODUCTION

What Are Cracks:

Cracks are breaks in your skin. They may be the result of skin that is too dry. Due to the dryness, the skin becomes rough. A large fissure often forms on the base of the heel. Observe your daily rooting and if identify anything affecting it.



Fig no. 1. Cracked heels

Cracks are breaks in your skin. They may be the result of skin that is too dry. Due to the dryness, the skin becomes rough. A large fissure often forms on the base of the heel. Observe your daily rooting and if identify anything affecting it.

CAUSES AND RISK FACTORS

Cracked heels are most commonly caused by extremely dry skin. For the majority of people, cracked heels are merely aesthetic and do no create any additional issues.

The following are some of the risk factors and conditions -

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- 1. Obesity
- 2. Diabetics
- 3. Eczema and Psoriasis
- 4. Long periods of standing or walking on hard surfaces
- 5. Thyroid issues
- 6. Vitamins and mineral deficiencies
- 7. Genes
- 8. Oestrogen deficiency

9. Peripheral neuropathy is a condition that affects the peripheral nerves

10. Unusual circulation.

A topical medication made with natural components, herbal crack cream is intended to relieve dry or cracked skin, particularly on the hands, feet, elbows, and knees. Herbal extracts, essential oils, and other plant- based substances with therapeutic, moisturizing, and calming qualities are frequently combined in this kind of cream. Herbal crack cream's main purpose is to moisturize extremely dry or cracked skin to promote healing

and stop additional harm. It can be especially helpful for people who have weather-related rough, cracked skin. [1]

Herbal crack cream made from a blend of aloe vera, turmeric, camphor, mustard oil, coconut oil, and rose oil is a natural skincare product designed to treat and heal dry, cracked, and irritated skin. Each ingredient in this formulation brings its unique healing properties:

Aloe Vera: Known for its soothing and hydrating qualities, aloe vera helps to replenish moisture, reduce inflammation, and accelerate skin healing. It is often used to calm irritated or sunburned skin.

Turmeric: This powerful antioxidant has anti-inflammatory and antimicrobial properties. It helps to soothe cracked skin, reduce redness, and promote the healing of wounds and cracks by fighting infection and inflammation.

Camphor: Often used for its cooling effect, camphor helps to relieve itching and irritation while also improving blood circulation in the affected areas. It also has antiseptic properties to promote healing.

Mustard Oil: Rich in vitamins and fatty acids, mustard oil nourishes the skin, helps retain moisture, and improves the elasticity of dry, cracked skin. Its natural antibacterial properties also help prevent infections in open cracks.

Coconut Oil: Known for its deep moisturizing abilities, coconut oil helps to repair and restore damaged skin. It also has antifungal and antibacterial properties, making it ideal for preventing infections and further irritation.

Rose Oil: With its soothing and hydrating properties, rose oil helps to rejuvenate dry, cracked skin. It also has mild antiseptic effects and is known for its calming fragrance that enhances the overall sensory experience of the product.[2]

AIM AND OBJECTIVES

AIM: To formulate and evaluate Herbal Anti-Crack cream.

1. Moisturize and Hydrate Dry Skin: To provide intense hydration to dry, cracked, and rough skin, restoring moisture balance and improving skin texture.

2. Promote Healing of Cracked Skin: Accelerate the healing process of cracked or damaged skin by nourishing and repairing the skin's surface, reducing irritation and inflammation.

3. Sooth Irritated Skin: To reduce redness, itching, and discomfort caused by skin cracks and dryness with cooling and soothing ingredients like aloe vera and camphor.

4. Enhance Skin Elasticity: To improve the skin's flexibility and resilience, helping to prevent further cracking and damage due to dryness or external factors.

5. Provide Antiseptic and Antimicrobial Protection: To prevent infections in open cracks and cuts by using ingredients like turmeric, camphor, mustard oil, and coconut oil with natural antibacterial properties.

6. Nourish and Revitalize Skin: To promote healthier, softer, and smoother skin through the nourishing and rejuvenating properties of natural oils such as coconut oil, rose oil, and mustard oil.

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7. Improve Overall Skin Appearance: To enhance the skin's appearance by reducing roughness, flakiness, and cracked skin, resulting in a more supple and even skin texture.

8. Offer Natural, Chemical-Free Skincare: To provide a safe, gentle, and effective solution for cracked skin using natural herbal ingredients, free from harsh chemicals, making it suitable for sensitive skin types.

9. Prevent Future Skin Damage: To protect the skin from further environmental damage by creating a protective barrier that helps to lock in moisture and maintain skin health.[3]

NEED OF USING HERBAL FORMULATION OVER SYNTHETIC ONE:



Fig no. 2. Need of Herbal formulation

Advantages of herbal excipients:

Herbal excipients are gaining prominence in the pharmaceutical formulation. Derived from plant- based raw materials, they offer several advantages.

Biodegradability

Biocompatibility and Safety

Non-toxicity and Hypoallergenic Nature Sustainability

1. Biodegradability:

Herbal excipients are biodegradable in nature, decomposing spontaneously without leaving harmful residues in the environment. This reduces the impact on the environment compared to synthetic excipients.

1. Biocompatibility and Safety:

Most herbal excipients are well biocompatible, so less likely to elicit adverse reactions or toxicity, making them safer, especially for long-term use or in sensitive populations, such as children or the elderly.

1. Non-toxicity and Hypoallergenic Nature:

Herbal excipients are suitable for use in sensitive patients and those allergic to synthetic chemicals due to their nontoxic and hypo allergic nature, if processed appropriately.

1. Sustainability:

Herbal excipients are renewable resources derived from plants but renewable at the same time. They can be grown and harvested in the environment in a sustainable manner, thus reducing dependence on petrochemical-based synthetic excipients.[4]

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Disadvantages of Herbal Excipients:

While herbal excipients offer such a huge number of benefits, they do come along with some drawbacks. Here are the major issues involved with herbal excipients:

- 1. Composition Variability
- 2. Risk of Contamination
- 3. Limited Supply
- 4. Lesser Stability
- 5. Elaborate Extraction and Purification Processes
- 6. Regulatory Issues[5]

7. Variability: In Content: The chemical content of herbal excipients varies with geography, climate conditions, and harvesting. This results in variability in the final product from batch to batch.

8. Chances of contamination: Herbal excipients can be contaminated by microbes, pesticides, or heavy metals during cultivation or process. They thus raise questions of safety, so proper quality control is required.

9. Limited Supply: Some herbal excipients may not be available in sufficient amounts or even seasonally, which could cause problems in the supply chains and production plans.

10. Lower Stability: The herbal excipients tend to deteriorate at a faster rate than their synthetically prepared

counterparts. This is highly prone to degradation when environmental factors such as temperature, light, or moisture are exposed to products, lowering shelf life.

11. Complex Extraction and Processing: The process for extracting and purifying the active constituents of herbal excipients is generally more challenging and expensive than that for synthetic excipients, which makes their cost of production higher.

12. Regulatory Problems: In some countries or regions, herbal excipients face tougher regulation over several purported allergens or toxic compounds found in some forms of plant material.[6]

Some other causes of cracked skin:

Possible causes of cracked skin include dry skin, contact dermatitis, eczema, athlete's foot .

Moisturizing regularly and after washing can help manage cracked skin. People should also avoid using hot water and harsh chemicals.

Cold weather. In the winter, low humidity and temperature can dry out your skin. Indoor heating also decreases the humidity in your home.

Chemical irritants. Many products like dish soap and laundry detergent can contain harsh chemicals.

These substances can damage your skin's barrier and cause dryness.

Hot water. The hot water from showers or washing dishes can reduce your skin's moisture.

Medication. Dryness may be a side effect of some drugs, like topical retinoids.

Excess moisture. When your skin is constantly exposed to moisture, it can actually cause your skin to become irritated and dry out. This can happen to your feet after wearing sweaty socks for too long. This is because water is an irritant to the skin.

Lack of Moisture:

Insufficient hydration, both internally and externally, can exacerbate dry skin, leading to cracks.[7]



Fig no. 3. Dry/Cracked skin

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LITERATURE REVIEW

1. P. B. Raval et al. (2012)

The study focused on the formulation and evaluation of an herbal cream using natural ingredients such as Aloe vera, Turmeric. The aim was to develop a topical herbal formulation for cracked heels and dry skin. The cream was evaluated for pH, viscosity, spreadability, stability, and microbial load. The results showed excellent stability, appropriate pH, and acceptable antimicrobial activity, suggesting the efficacy of herbal actives in the management of cracked skin.[1]

2. Nikita Sharma et al. (2015)

This research included the development of a polyherbal crack cream using Wrightia tinctoria, Cocos nucifera, and Beeswax. The study focused on evaluating the cream's healing potential for cracked heels through in vitro and in vivo tests. The formulation showed a significant reduction in dryness and cracking, supporting the wound healing, anti-inflammatory, and emollient properties of the incorporated herbs.[2]

3. R. S. Jadhav et al. (2018)

This work aimed to formulate and evaluate a polyherbal crack heel cream incorporating herbs like Azadirachta indica, Ocimum sanctum, Curcuma longa, and Cocos nucifera oil. These ingredients were selected for their known antibacterial, antifungal, and moisturizing activities. The study found that the herbal cream was effective in restoring skin texture, reducing dryness, and healing heel fissures, demonstrating the usefulness of combining multiple herbs in topical therapy.[3]

4. S. K. Patil et al. (2020)

The researchers formulated a herbal crack cream by incorporating Limonia acidissima, Aloe vera, and Beeswax, aiming to utilize their traditional wound healing and moisturizing effects. The cream was evaluated for its organoleptic properties, pH, viscosity, spreadability, and stability under different storage conditions. The results concluded that the formulation was stable, non-irritant, and provided significant healing within a week of application on cracked heels.[4]

5. Soniya Choudhary et al. (2013)

This study conducted a detailed phytochemical investigation of Turmeric and Aloe-vera, using sequential extraction with petroleum ether, ethanol, methanol, and water. The study revealed the presence of alkaloids, flavonoids, terpenoids, and tannins, which have significant roles in anti-inflammatory and healing actions.

These phytoconstituents are beneficial in developing herbal creams for treating cracked heels and dry skin.[5]

6. Nikita Sharma et al. (2015)

The study focused on a polyherbal formulation comprising sheabutter, Coconut oil, and Beeswax. The researchers tested the cream for its healing effects on cracked heels. In vitro antimicrobial activity and in vivo wound healing assays indicated that the herbal cream accelerated skin repair and showed no side effects, making it ideal for regular use on dry and cracked skin.[6]

7. J. Mehta et al. (2021)

This work explored the antimicrobial and skin-nourishing effects of Aloe vera, and Coconut oil in cream formulations. The herbal crack cream showed a significant reduction in microbial load, promoted epithelialization, and improved skin elasticity. The research supported the effectiveness of herbal-based creams in reducing the incidence of heel fissures and dry patches.[7]

8. J. P. N Kavitha et al. (2014)

The pharmaceutical creams enhance sanctification, alter appearance, beautify, moisturize, etc. to protect the skin against bacterial and fungal infections as well as mending cuts and injuries on the skin. synthetic creams have some side

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effects for longer user of time, that healing cracks take several days to heal the crack but the cracks are visible the skin of the foot is too dry to support the immense pressure placed on the foot.[8].

9. A. R. Deshmukh et al. (2023)

A recent study formulated a herbal crack cream using Limonia acidissima, Honey, and Coconut oil, targeting rural populations with affordable and natural options for cracked heels. The evaluation demonstrated good absorption, long-lasting moisturization, and significant reduction in heel fissures within a week. The results validated the traditional knowledge of herbs in modern pharmaceutical formulations.[9]

10. P. R. Wangade et al. (2025)

The formulation and evaluation of an herbal crack cream provide significant evidence supporting the use of natural ingredients in skincare. The study successfully developed a safe, effective, and stable herbal crack cream using Aloe vera, turmeric, camphor, coconut oil, mustard oil, rose oil, beeswax, and glycerin. Each

ingredient was selected based on its therapeutic benefits, including skin hydration, anti-inflammatory action, wound healing, antimicrobial properties, and deep moisturization. [10]

PLAN OF WORK

- 1. Literature Survey
- 2. Selection of Herbal Ingredients

Example herbs: Aloe vera, Turmeric, Mustered oil, Coconut oil, Beeswax, etc.

- 3. Preformulation study
- a. Melting point determination
- b. Partition coefficient determination
- 4. Solubility studies
- 5. Preparation of Plant Extracts
- 6. Formulation of Herbal Crack Cream
- a. Selection of crack healing agent
- b. Selection of excipients
- c. Preparation of topical cream
- 7. Evaluation of Formulated Cream
- a. Organoleptic evaluatuion
- b. pH measurement
- c. viscosity
- d. Spreability
- e. Stability
- f. Texture analysis
- g. Homogeneity
- h. Skin irritation test
- 8. Compilation of data
- 9. Submission and report

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MATERIAL AND METHOD

SR. NO.	INGREDIENTS	USES
		Anti-septic, Anti-inflammatory,
1.	Turmeric extract	Wound healing
2.	Aleo-vera	Moisturizing agent, Healing agent
3.	Camphor	Soothing agent, Anti-inflammatory
4.	Mustered oil	Anti-fungal, Anti-bacterial, Analgesic
5.	Coconut oil	Anti-microbial, Moisturizer
6.	Beeswax	Emollient, Thickening agent
7.	Methyl paraben	Preservative
8.	Glycerin	Humectant, Skin hydrator
9.	Rose oil	Rejuvenating, hydrating agent

[Table 1]: List of drugs with their uses

DRUG PROFILE TURMERIC



Fig. no. 4. Turmeric (Curcuma Longa)

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Synonyms: Haldi, Curcuma Biological source: Turmeric is the dried rhizome of curcuma longa Linn. Family: Zingiberaceae

Medicinal uses of Turmeric:

1. Act as Antioxident

- 2. Soothing Skin Inflammation
- 3. Treatment of Acne
- 4. Lightening Hyperpigmentation and Dark Spots
- 5. Reducing Skin Redness and Irritation
- 6. Wound Healing and Scar Treatment
- 7. Fighting Skin Infections

8. Turmeric, primarily utilized in the form of rhizome powder, serves a multitude of purposes, chiefly prized for its ability to impart a vibrant golden-yellow hue. [8]

ALOE-VERA



Fig no. 5. Aloevera

Synonym: Aloes, Cape aloe

Biological source: it consists of dried juice of leaves of Aloe barbadensis Miller.

Family: Asphodelaceae, Liliaceae.

Medicinal Use of Aloe-vera:

1. The gel of aloe vera forms a protective layer on the skin, which helps in hydration and speeds up the recovery process.

2. Aloe vera has hydrating properties that help lock moisture into the skin, making it an excellent moisturizer for dry or flaky skin.

3. Aloe vera has antibacterial, anti-inflammatory, and antioxidant properties that can help reduce acne-causing bacteria, calm inflammation, and promote faster healing of acne scars.

4. Aloe vera's antiseptic properties make it effective for treating minor cuts, scrapes, and wounds.[9]

COCONUT OIL



Fig no. 6. Coconut oil

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Synonyms: coconut oil, coconut butter, copra oil, coconut water, coco palm.

Biological source: Coconut oil is the fixed oil obtained by expression or extraction from the seed of the coconut palm. Family: palmae.

Medicinal Uses of Coconut Oil:

- 1. Moisturizing dry skin, including in people with conditions such as eczema.
- 2. Reducing inflammation, which may result from UVB rays.
- 3. promoting wound healing.

4. The presence of lauric acid in coconut oil contributes to its ability to act as an emulsifier, helping to blend oil and water-based ingredients together smoothly.[10]

ROSE OIL



Fig no. 7. Rose Oil

Synonyms: Rosa damascena, Rosa centifolia Family: Rosaceae

Biological source: Rose oil is derived from the petals of different Rosa species, primarily Rosa damascena (Damask rose) and Rosa centifolia (Cabbage rose or Rose de Mai)

Uses:

- 1. Pain relief: Rose petals can help relieve menstrual cramps and other menstrual problems.
- 2. Skincare: Rose water can soothe and hydrate skin and reduce inflammation.
- 3. Anti-inflammatory: Roses can help treat inflammation, diabetes, depression, and stress.
- 4. Cosmetics
- 5. Perfume: Roses are used in commercial perfumery
- 6. Skincare: Rose oil's anti-inflammatory and antioxidant properties make it beneficial for skincare.
- 7. Aromatherapy: Rose oil is a popular choice in aromatherapy due to its calming and uplifting aroma. [11]

BEESWAX



Fig no. 8. Beeswax

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Beeswax is a natural wax produced by honeybees, not derived from plants or herbs, according to a medical review. Beeswax is a bee product, used for various purposes, including skincare, food, and candle making. It is also a natural exfoliator, ideal for sloughing away dead skin cells. By making beeswax into a lotion bar, it will

work double-duty to keep your skin soft and hydrated. Treats Diaper Dermatitis, Psoriasis and Eczema. Uses:

- 1. Protects the Liver.
- 2. Lower cholesterol Levels.
- 3. Relieves Pain and Is Anti-Inflammatory.
- 4. Clears Acne.
- 5. Heals Dry skin
- 6. Heals Cracked Lips.[12]

MUSTERED OIL



Fig no. 9. Mustered oil

Synonym: Brassica juncea or Brassica nigra

Family: Brassicaceae

Biological Source: Mustard oil comes from the seeds of the mustard plant, Brassica juncea

Medicinal Uses of Mustard Oil:

1. It is used in folk medicine for treating dry skin, minor burns, and cuts due to its antibacterial and antifungal properties.

2. It is commonly used as a massage oil to soothe joint pain, muscle aches, and even headaches

3. It reduces the inflammation.

4. Also Mustered oil is used as a digestive aid.[13]

CAMPHOR



Fig no. 10. Camphor

Botanical Name: Cinnamomum camphora

Family: Lauraceae

Biological Source: Camphor is a naturally occurring terpene that comes from the wood of the camphor laurel tree, Cinnamomum camphora.

Medicinal uses of Camphor :

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1. Camphor has anti-inflammatory properties

2. Due to its cooling effect, camphor is often used to relieve itching caused by insect bites, allergies, or skin conditions like hives.

3. Camphor is known for its antiseptic properties, which help prevent infection in minor cuts, scrapes, and burns.

Camphor possesses antiseptic properties, making it useful in formulations for treating minor wounds

and skin infections. It can help prevent bacterial growth and promote healing.[14]

METHYL PARABEN

Methylparaben is Methyl 4-hydroxybenzoate, a member of a family of alky esters of parahydroxybenzoic acid differing by their chemical substituents on the benzene ring. Methylparaben is supplied as an odourless, colourless crystalline or a white crystalline powde.

Molecular formula: C8H8O3 Molecular weight: 152.15 g/mol Pharmaceutical use:

1. Preservative in topical preparations: Creams, ointments, lotions, and gels to prevent microbial growth.

2. Injectable solutions: As a preservative in injectable solutions, such as vaccines and antibiotics.

3. Oral medications: In some oral medications, like tablets and capsules, to extend shelf life.

Cosmetics and Personal Care:

- 1. Skincare products: Moisturizers, creams, lotions, and serumsto prevent spoilage and extend shelf life.
- 2. Haircare products: Shampoos, conditioners, and styling products to prevent microbial growth.
- 3. Makeup and makeup removers: To prevent contamination and spoilage.[15]



Methyl Paraben (Methyl 4-hydroxybenzoate) GLYCERINE

Glycerine, also known as glycerol, is a versatile and widely used compound: Properties:

1. Colorless, odorless, and syrupy liquid

- 2. Molecular formula: C3H8O3
- 3. Molecular weight: 92.09 g/mol
- 4. Soluble in water and alcohol
- 5. Viscous and hygroscopic Glycerol



Uses:

- 1. Pharmaceutical: Humectant, solvent, and excipient in medications
- 2. Cosmetics: Moisturizer, skin protectant, and hair care ingredient
- 3. Food: Sweetener, humectant, and texture modifier

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- 4. Industrial: Antifreeze, lubricant, and solvent
- 5. Medical: Wound care, skin conditions, and respiratory treatments

Pharmaceutical Applications:

- 1. Topical creams and ointments
- 2. Oralsolutions and suspensions
- 3. Injectable formulations
- 4. Suppositories and rectal solutions
- 5. Dental applications (e.g., mouthwashes)

Cosmetic Applications:

- 1. Skin care products (e.g., moisturizers, lotions)
- 2. Hair care products (e.g., shampoos, conditioners)
- 3. Soap and toothpaste formulations
- 4. Makeup and makeup removers [16]

Formulation table:

SR. NO.	INGREDIENTS	FORMULATION QUANTITY
1.	[Table 3:] Ingredients with Turmeric extract	their quantities 0.5g
2.	Aleo-vera	21.1 ml
3.	Camphor	1g
4.	Mustered oil	5.5 ml
5.	Coconut oil	10.87 ml
6.	Beeswax	5g
7.	Methyl paraben	1 ml
8.	Glycerin	3.17 ml
9.	Rose oil	1.86 ml

[Table 3:] Ingredients with their quantities

METHOD OF PREPARATION

PREPARATION OF TURMERIC EXTRACT:

Take 1 g turmeric powder in 10 ml distilled water and shake in a 250 ml volumetric flask heated in the water bath at 80°C to 100°C for 5 to 10 minutes. Then, it and turmeric extract are obtained.

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Fig no. 11. Turmeric extract

PREPARATION OF ALOE VERA EXTRACT:

Collect mature and fresh aloe-vera leaf from plant and washed it with distilled water. Dried it is hot air oven. Leaf dissected longitudinally by sterile knife. The semi-solid aloe-vera is collected. Remove fibers and impurities form it. Aloe-vera extract is obtained. [17]



Fig. 12: Aloe-vera gel extract





Preparation:

Sterilize all the equipment and containers before use to ensure the cream remains free of bacteria or contamination. Measure all the ingredients carefully using a digital scale or measuring spoons.





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Fig. 13: Filtration process



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Preparation of Oil phase:

In a double boiler or heatproof pot, combine Mustard

Oil, Coconut Oil, Beeswax (or emulsifying wax).

Heat the mixture gently over low to medium heat until the beeswax or emulsifying wax is completely melted and the oils are well combined.



Fig. 14: Preparation of Oil phase

Preparation of Aqueous phase:

In a separate container, measure the Distilled Water or Rose Water. If you're using rose water, it can add additional soothing properties to the cream.

Gently heat the water phase (if needed) to a similar temperature as the oil phase (around 70°C or 158°F).

Combination of Oil and Water phase:

Slowly add the warm water phase to the oil and wax mixture while stirring constantly. This process is called emulsification.

You may use a hand blender or whisk to mix thoroughly until the cream thickens and reaches a smooth, creamy consistency. The mixture should appear opaque and cohesive.

Active Ingredients:

Once the oil-water mixture has cooled down slightly (around 40°C or 104°F), add the following: Aloe Vera Gel – for its soothing, hydrating, and healing properties.

Turmeric Powder – for its antibacterial and skin-healing benefits. Camphor – for cooling and anti-inflammatory effects. Rose Oil – for its soothing and skin-regenerating properties.

Mustered Oil - acts as an antioxidant and promotes skin repair.

Mix well to incorporate all the active ingredients into the cream. Fill into sterilized container.

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Blend and Adjust Consistency:

At this stage, you can use a blender or hand whisk to ensure everything is well mixed and smooth If the cream is too thick, you can add a small amount of distilled water or rose water to adjust the consistency. Mix well until you reach the desired thickness (it should be creamy but easy to spread). Cool the Cream: Allow the cream to cool down completely at room temperature. As it cools, the cream will continue to thicken. Stir occasionally to maintain an even texture. Packaging: Transfer the cooled cream into a clean, sterilized jar or airtight container. Ensure the container is tightly sealed to prevent contamination and to maintain freshness.[18] EVALUATION TEST FOR CREAM 1. Organoleptic evaluation:

SR. NO.	PARAMETRS	OBSERVATION
1.1	[Table 4]: Organoleptic evaluation Appearance	Smooth, Semi-solid cream
1.2	Color	Pale yellow to golden (due to turmeric and oils)
1.3	Odour	Pleasant, herbal fragrance
1.4	Texture	Soft, non-sticky, non-greasy
1.5	Consistency [Table 4]: Organoleptic evaluation	Uniform, easily spreadable

2. Physical and Chemical Evaluation

2.1. Measurement of pH:

The pH of the cream should be tested to ensure it is suitable for the skin (typically between 4.5- 6.5). A pH that is too acidic or too alkaline could cause skin irritation or dryness. The use of ingredients like Aloe Vera and rose water will help maintain an optimal pH. (1g cream in 100 ml water)

2.2. Viscosity:

Viscosity refers to the thickness of the cream. It should be assessed using a viscometer to ensure the cream has the right texture. The ideal viscosity will be thick enough to be effective but smooth enough for easy application. 2.3. Stability Testing:

Accelerated Stability Testing: The cream should undergo tests at different temperatures (room temperature, refrigeration, and higher temperatures) to ensure that it remains stable.

2.4. Washability:

Washes off easily with running water.

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2.5. Spreadability:

Using a standardized technique that measures the amount of time it takes for two slides to separate after a cream sample is put between them under a certain load, the spreadability of cream formulations was

assessed. This assessment is essential for determining how simple it is to apply or distribute the cream on the skin or other surfaces. The cream spreadability was evaluated through following equation:

S = ML/T

Where, S = spreadability, M = weight tied to upper slide, L = length of glass slide and T = time taken by the slide to separate from.

2.6. Irritancy test:

The formulated cream was applied to the required area of the skin. After 1 hr the skin was checked for any irritancy, redness or inflammation on the skin.

2.7. Homogeneity:

Herbal crack creams can achieve homogeneity through proper mixing and formulation techniques, ensuring a consistent texture and appearance. Homogeneity is assessed by visually inspecting for lumps or separation and by feeling for a smooth, even consistency.



Fig. 15: Prepared Herbal Crack Cream

RESULT AND DISCUSSION

Physical evaluation:

The prepared cream formulation were pale yellow, smooth, homogeneous appearance with good consistency. The physical observation of prepared crack cream formulation is shown in Table 6.

Measurement of pH:

The pH value of all prepared crack cream formulation ranged from 4.5 to 6.5 which matched requirements of topical preparation for skin, thus avoiding skin irritation. The pH value of formulation is shown in Table 6.

Viscosity:

The measurement of the viscosity of the prepared crack cream was done with a Brookfield Viscometer. The corresponding reading was shown in Table 6.

Spreadiability:

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The sprediability of the crack cream formulation depends on its viscosity. The greater the viscosity the longer will be the time taken for spread on the skin. The value of spreadiability indicate that the prepared crack cream is easily spreadable by a small amount of shear. The spreadability is shown in Table 6.

Safety: The cream is safe and non-irritating

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Effectiveness: The cream is effective in treating cracked heels

Properties: The cream has anti-inflammatory, analgesic, and moisturizing properties

Stability: The cream is stable at room temperature Washability: The cream is easily washable

II. CONCLUSION

Formulation of Herbal Crack Cream was successfully developed that met the relevant pharmaceutical characteristics. The prepared formulations showed good spreadability, no evidence of phase separation and good consistency during the study period. parameters like visual appearance, nature and pH of the formulations showed that there was no significant variation during the study period. The prepared formulations showed proper pH range. The study successfully developed a safe, effective, and stable herbal crack cream using Aloe vera, turmeric, camphor, coconut oil, mustard oil, rose oil, beeswax, and glycerin. Each ingredient was selected based on its therapeutic benefits, including skin hydration, anti-inflammatory action, wound healing, antimicrobial properties, and deep moisturization. The results of this research demonstrate that the formulated cream meets the essential dermatological requirements for treating cracked, dry, and irritated skin. The following conclusions were drawn from the study:

Effectiveness in Moisturization and Healing

Anti-inflammatory and Antimicrobial Benefits Non-Greasy, Easily Absorbable Texture Stability and Safaty of the Formulation

Stability and Safety of the Formulation

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