



## Formulation and Evaluation of Herbal 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.

This research highlights the potential of herbal-based skincare solutions and supports the development of natural, affordable, and efficacious formulations for dermatological applications.

**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.

### 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 routine 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 not

create any additional issues.

The following are some of the risk factors and conditions –

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]

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### Objectives:

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.
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]

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## DRUG PROFILE:

### Turmeric:



**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[4]

### Aloe Vera:



**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.[3]

**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.[5]

**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 :**

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.[6]

**Coconut Oil:**



**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.[7]

**Rose Oil:**

**Synonyms:** Rosa damascena, Rosa centifolia

**Family:** Rosaceae

**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.[8]

**Beeswax:**

Beeswax 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.[9]

**Uses:**

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

## 7. Reduces Stretch Marks

**Formulation Table:**

Sr No.	Ingredients	Quantity (50 gm)
1	Turmeric	0.5 gm
2	Aloe-vera	21.05 ml
3	Camphor	1 gm
4	Mustored Oil	5.49 ml
5	Coconut oil	10.87 ml
6	Beeswax	5 gm
7	Methylparaben	1 ml
8	Glycerin	3.17 ml
9	Rose Oil	1 ml

**Material and Method:****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.[10]

**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. [11]

**Formulation Of Cream:**

**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.

**Melt the Oils and Waxes:**

In a double boiler or heatproof pot, combine Mustard Oil, Coconut Oil, and 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.

**Prepare the Water 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).

**Combine Oil and Water Phases:**

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.

Mustard Oil – acts as an antioxidant and promotes skin repair.

Mix well to incorporate all the active ingredients into the cream.

**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.

**Preservation :**



If you plan to store the cream for a longer period, add an appropriate preservative according to the manufacturer's guidelines to prevent microbial growth.

Make sure the preservative is thoroughly mixed into the cream.

#### 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 [12]

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### Evaluation of Cream:

#### Organoleptic Evaluation:



##### a. Appearance:

- **Consistency:** The cream should have a smooth, thick, and creamy consistency that is easy to spread without being too runny or too thick.
- **Color:** The color of the cream should be uniform and natural (pale yellow depending on the ingredients used). Turmeric may give a slight yellowish tint.
- **Homogeneity:** Ensure there are no lumps, separation, or uneven texture in the final cream.

##### b. Odor:

- The herbal crack cream should have a mild, pleasant herbal scent derived from ingredients like **rose oil**, **turmeric**, and **coconut oil**. The presence of **camphor** will give it a slightly minty or cooling aroma.
- There should be no overpowering or unpleasant smells, indicating the absence of contamination or improper mixing.

##### c. Feel/Touch:

- The cream should have a non-greasy, non-sticky texture that is smooth to the touch.
- It should absorb well into the skin, leaving the skin feeling moisturized without any oily residue.

#### Physical and Chemical Evaluation:

##### a. pH Level:

- 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.

##### b. 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.

##### c. 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.[13]

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**Result and Discussion:**

Herbal crack cream can be made from a combination of mustard oil, turmeric, camphor, coconut oil, and wax. The cream can be used to treat cracked heels. It can be concluded that herbal creams without side effects having anti-inflammatory property can be used as the provision of a barrier to protect the skin ..

**Safety:** The cream is safe and non-irritating

**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



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**Conclusion:**

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.

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:

1. Effectiveness in Moisturization and Healing

The cream provides intense hydration due to the humectant properties of glycerin and Aloe vera, which help in retaining moisture and preventing further dryness. The presence of coconut oil, mustard oil, and beeswax enhances the skin's barrier function, ensuring prolonged moisturization. Aloe vera and turmeric accelerate wound healing by stimulating skin regeneration and reducing inflammation.

2. Anti-inflammatory and Antimicrobial Benefits

The cream exhibits anti-inflammatory properties due to the action of turmeric, camphor, and mustard oil. These ingredients help in reducing redness, swelling, and irritation. Turmeric and camphor contribute to the antimicrobial action, preventing infections in cracked skin and enhancing the healing process. The formulation helps in soothing itchiness and discomfort, making it suitable for individuals with skin conditions like eczema and psoriasis.

3. Non-Greasy, Easily Absorbable Texture

The cream has a smooth, non-greasy texture, making it easy to apply and absorb into the skin without leaving an oily residue. The spreadability and viscosity tests confirmed that the cream maintains an ideal consistency, allowing for uniform application and deep penetration into the skin layers.

4. Stability and Safety of the Formulation

Stability tests confirmed that the cream remains physically and chemically stable at different temperatures, ensuring its effectiveness over time. The pH of the cream (between 4.5 and 6.5) aligns with the natural pH of human skin, minimizing the risk of irritation. The cream is free from synthetic chemicals and artificial preservatives, making it a safer alternative for individuals with sensitive skin.

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