

FORMULATION AND EVALUATION OF CRACK HEEL HEALING HERBAL CREAM

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DOI: <https://doi.org/10.5281/zenodo.20525441>

How to cite this Article: Sneha Santosh Gaikwad*¹, Aditya Balu Khatekar², Samiksha Ravindra Varpe³, Pallavi Balasaheb Vitnor⁴, Suraj Daulatrao Bendre⁵. (2026). Tformulation And Evaluation of Crack Heel Healing Herbal Cream. World Journal of Pharmaceutical and Medical Research, 12(6), 374–380.

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Article Received on 05/05/2026

Article Revised on 25/05/2026

Article Published on 01/06/2026

ABSTRACT

Cracked heels, also known as heel fissures, are a common skin issue where the skin on the heels becomes dry, thick, and cracked. This condition is often caused by a lack of moisture, standing for long periods, and environmental factors. This study looks into making a natural cream using herbal ingredients that can help heal and manage cracked heels. The ingredients used are beeswax, coconut oil, kokum butter, aloe vera gel, glycerin, turmeric extract, and rose water. These were chosen because they have good moisturizing, healing, and antibacterial properties. The cream was made with a method that ensures it is smooth and stable.

KEYWORDS: Moisturizing agents, Natural ingredients, Skin fissures, Emollients, Aloe vera, Kokum butter, Turmeric extract, Antimicrobial activity, Skin repair.

INTRODUCTION

Cracked heels are a common foot problem where the skin on the heels becomes dry, thick, and cracked.

This happens mostly due to dryness, pressure on the feet, standing for long times, and poor foot care. If left untreated, the cracks can get deeper, causing pain, bleeding, and an increased risk of infections, which affects daily life and well-being. The skin on the heels is naturally thicker and has less oil, making it more prone to dryness. Cold weather, low humidity, walking barefoot, and wearing open-back shoes can make this condition worse. Health issues like diabetes, obesity, and poor nutrition also make people more likely to have cracked heels and slow down the healing process.

Conventional treatments for cracked heels include creams with ingredients like urea, salicylic acid, and lactic acid.

While these can help, they might cause skin irritation or allergic reactions, especially for people with sensitive skin. This has sparked interest in natural and herbal treatments that are safer, cheaper, and have fewer side effects.



Fig. No. 1: Crack Heel Healing Herbal Cream.

Advantages

1. Natural and Safe: Made with herbal ingredients, which makes it safe and suitable for long-term use.

- 2. **Effective Moisturization:** Ingredients such as glycerin, aloe vera, and coconut oil help keep the skin hydrated and prevent dryness.
- 3. **Antimicrobial Properties:** Helps prevent infections in deep cracks.
- 4. **Anti-inflammatory Action:** Reduces pain, redness, and swelling.
- 5. **Improves Skin Elasticity:** Emollients like kokum butter and beeswax soften and flex the skin, preventing more cracks.
- 6. **Cost-effective:** Uses easily available natural ingredients, making it more affordable.
- 7. **Suitable for All Skin Types:** The gentle formula works well for sensitive and dry skin.

• **Causes**

- 1. Dry skin
- 2. Lack of moisturization
- 3. Prolonged standing

• **Materials**

Sr.no.	Ingredient	Role
1	Aloe vera gel	Moisturizing agent
2	Turmeric extract	Active ingredient Anti-bacterial
3	Bees wax	Base Thickening agent
4	Glycerine	Humectant
5	Coconut oil	Healing agent
6	Rose water	Soothing
7	Kokum butter	Emollient

• **Drug description**

• **Aloe vera gel**

- **Synonym:** Aloe spica, Aloes, Aloes de curacao, Aloes des barbadensis, Cape aloe, Chritkumari.
- **Biological source:** It comes from the dried juice of

- 4. Walking barefoot
- 5. Use of open-back footwear
- 6. Poor foot care
- 7. Ageing

• **Direction of use**

- 1. Wash the heels with lukewarm water and mild soap.
- 2. Dry the feet with a clean towel.
- 3. Take some herbal cream on your fingers.
- 4. Apply it evenly on the cracked heels and the surrounding area.
- 5. Gently massage in a circular motion until it's fully absorbed.
- 6. Use it twice a day, preferably in the morning and before bed.
- 7. Wear cotton socks after applying at night to keep the skin moist.
- 8. Continue using it until the cracks have completely healed.

the leaves of Aloe Barbadensis Miller.

- **Family:** Asphodelaceae, Liliaceae.
- **Geographical source:** Africa, Asia, Europe, and America.

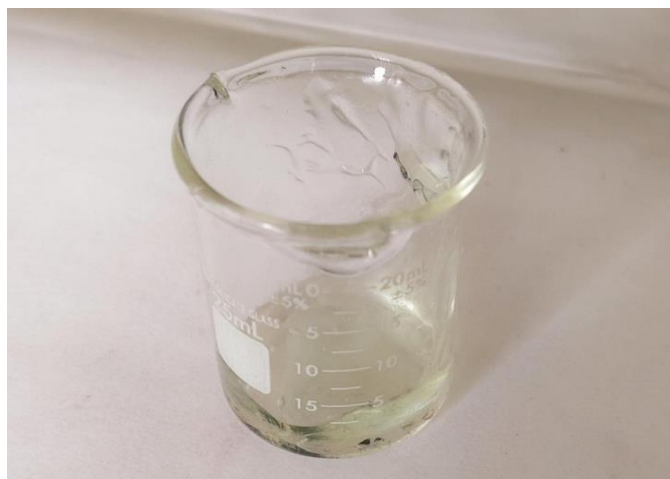


Fig. No. 2 Aloe Vera Gel

➤ **Description**

- a. Aloe vera gel is a great natural remedy for cracked heels as it soothes, moisturizes, and helps the skin heal.
- b. It contains almost 99% water, which helps soften and hydrate the dry, rough skin on the heels. It also keeps

the skin flexible, preventing further cracks.

• **Turmeric extract**

- **Synonyms:** Curcuma longa, saffron Indian, Haldi, Curcuma, Rhizoma curcumae.
- **Biological source:** Turmeric comes from the dried

root-like part of the plant called *Curcuma longa* Linn.

- Family: Zingiberaceae
- Geographical source: Turmeric is grown a lot in

India, China, East Indies, and Pakistan.

- Chemical constituents: The main active part of turmeric is called curcumin, along with resins, 5% volatile oils, fixed oils, and acids.



Fig. No. 3: Turmeric extract.

- **Description**

- a. Turmeric has curcumin, which has strong anti-inflammatory effects.
- b. It helps reduce pain, swelling, and redness around cracked heels. It also has natural antiviral, antifungal, and antibacterial properties, which help prevent infections. Curcumin helps repair tissue and promotes collagen production.

- **Bees wax**

- Synonym: Cera Alba, Cera Flava, Yellow Wax, Yellow Beeswax, and White Beeswax.
- Biological source: The honeycomb of *Apis mellifera*, *Apis dorsata*, and other *Apis* species.

- Family: Apidae

- Geographical sources: Include India, Jamaica, France, Italy, and West Africa.

- **Description**

- c. Beeswax forms a protective layer on the skin that stops moisture from escaping, helping to retain moisture in the skin.
- d. It softens rough skin and works as a natural humectant and emollient. Regular use helps prevent cracks from forming again. Beeswax helps heal small wounds and cracks, encouraging collagen production and skin cell renewal.



Fig. No. 4 Bees wax.

- **Glycerine**

- Biological Source: It comes from fats and oils like

coconut oil, palm oil, and animal fat, which are leftover after making soap or biodiesel.



Fig. No. 5: Glycerine.

➤ **Description**

- Glycerine is a strong humectant that pulls water into the top layer of the skin, keeping it moist.
- This helps reduce dryness and prevents more cracks by keeping the heel skin soft, flexible, and moist.
- It fills the small spaces between dry skin layers, making the skin softer and smoother. This improves the texture of heel skin and helps stop the formation of thick, rough patches called calluses.
- Glycerine helps the skin heal by keeping the right amount of moisture in the skin. Moisturized skin heals faster than dry, cracked skin.

• **Coconut oil**

- Synonyms: coconut oil, coconut butter, copra oil, coconut water, coco palm.
- Biological source: coconut oil is the solid oil that comes from the seed of the coconut palm, extracted through pressing or other methods.
- Family: Palmae.
- Geographic source: Coconut grows in many places around the world.
- It is mostly grown in African and Southeast Asian countries.

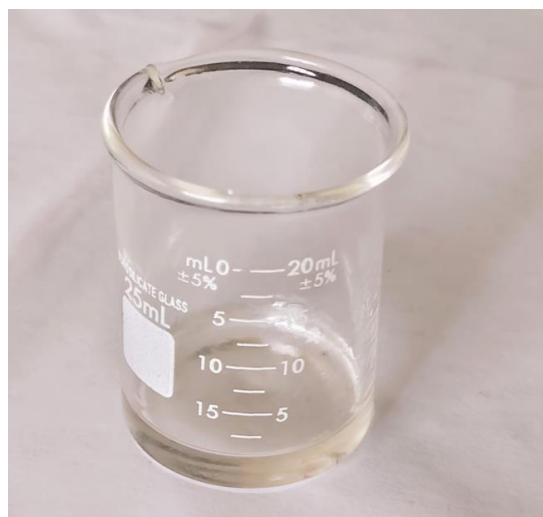


Fig. No. 6: Coconut oil.

➤ **Description**

- Coconut oil has a lot of medium-chain fatty acids, especially lauric acid, capric acid, and caprylic acid.
- These fatty acids go deep into the skin layers, keeping moisture in and stopping dryness that leads to heel cracks. Coconut oil helps the body make more collagen and speeds up the healing of small cuts and wounds on the heels. It forms a protective layer that stops more damage from happening.

• **Rose water**

- Synonyms: Attar of roses, eau de toilette, lavender water.
- Biological source: Rose water is made by soaking rose petals in water.
- Family: Rosaceae



Fig. No. 7: Rose water.

➤ **Description**

- Rose water feels cool and refreshing when used.
- It also helps get rid of bad smells on feet, which often happen when heels crack because bacteria

- grow there.
- g. Rose water helps keep the skin's natural balance and gives it a little moisture.
 - h. It makes rough, hard heel skin softer and less likely to crack again.
 - i. The special chemicals in rose petals, like flavonoids, terpenes, and tannins, help with redness, irritation, and swelling.

- **Kokum butter**

- Synonym: Goa butter
- Biological source: Kokum butter comes from the seeds of the *Garcinia indica* plant, which is also known as Kokum.
- Family: Clusiaceae
- Geographical source: This plant is commonly found in areas like the Western Ghats, Konkan region, Goa, Maharashtra, Karnataka, and Kerala in India.

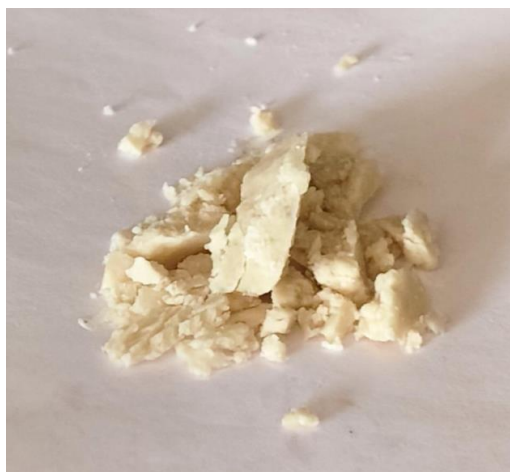


Fig. No. 8: Kokum butter.

- **Description**

- a. Kokum butter contains a lot of stearic acid and oleic acid triglycerides.
- b. It helps soften rough and hardened skin on heels by going deep into the skin layers.
- c. It brings back skin elasticity, stopping dryness and cracking.
- d. It helps the body make more collagen and encourages skin cell growth.

- **Preparation**

- ✓ **Weighing of Ingredients**

Accurately weigh all required ingredients using a digital balance.

- ✓ **Preparation of Oil Phase**

Take beeswax, kokum butter, and coconut oil in a beaker and heat on a water bath until completely melted.

- ✓ **Preparation of Aqueous Phase**

In another beaker, take aloe vera gel, glycerin, and rose water and heat gently to the same temperature as the oil phase.

- ✓ **Emulsification**

Slowly add the aqueous phase into the oil phase with continuous stirring to form an emulsion.

- ✓ **Addition of Active Ingredient**

Add turmeric extract to the mixture and mix thoroughly.

- ✓ **Homogenization**

Stir continuously or use a homogenizer to obtain a smooth and uniform cream.

- ✓ **Cooling**

Allow the cream to cool at room temperature while stirring gently.

- ✓ **Filling and Storage**

Transfer the prepared cream into a clean, dry, airtight container and store in a cool, dry place.

- **Formulation**

Sr.no.	Ingredient	Batch 1	Batch 2	Batch 3
1	Aloe vera gel	5g	4g	5g
2	Turmeric extract	2ml	0.5ml	1ml
3	Bees wax	4g	7g	3g
4	Glycerine	2g	2g	3v
5	Coconut oil	5ml	3ml	4ml
6	Rose water	1ml	1ml	2ml
7	Kokum butter	1g	2g	2g

- **Evaluation parameters**

1. **Physical Appearance**

The cream was observed for color, odor, texture, and homogeneity to ensure a smooth and uniform formulation.

2. **pH Determination**

The pH of the cream was measured using a pH paper to ensure it is compatible with skin (usually between 5–7).



Fig. No. 9: pH Determination.

3. Viscosity

Viscosity was determined using a viscometer to evaluate the thickness and flow property of the cream.

4. Spreadability

Spreadability was assessed by applying a small amount of cream between two glass slides and measuring how easily it spreads.

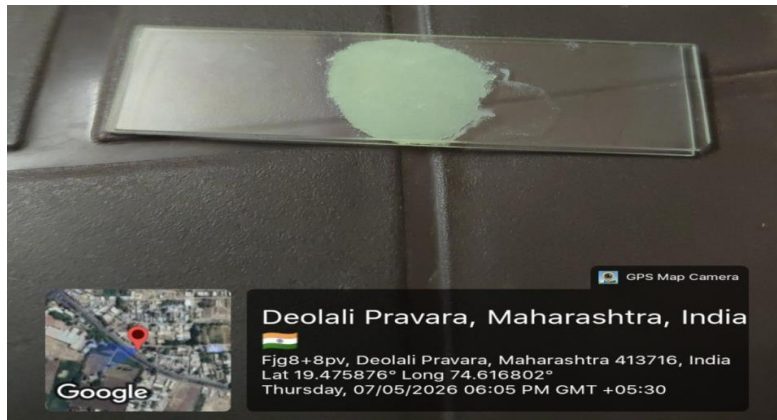


Fig. No. 10: Spreadability.

5. Washability

The ease of removal of the cream with water was tested to determine its user-friendliness.



Fig. No. 11: Washability.

6. Skin Irritation Test

The formulation was applied to a small area of skin to check for redness, itching, or irritation.



Fig. No. 12: Irritancy.

7. Homogeneity

The cream was visually inspected to ensure uniform distribution of all ingredients without lumps.

8. Stability Studies

The formulation was stored at different temperatures to observe any changes in color, phase separation, or consistency over time.

• Benefits of herbal crack cream

- ❖ Provides deep moisturization to cracked heels
- ❖ Promotes faster wound healing
- ❖ Softens hard and rough skin
- ❖ Improves skin elasticity and prevents further cracks
- ❖ Possesses antimicrobial properties
- ❖ Reduces pain, inflammation, and irritation
- ❖ Safe and suitable for regular use.

• CONCLUSION

The herbal cream for cracked heels was successfully formulated and evaluated. It showed good physicochemical properties and was safe for skin application. The formulation provided effective moisturization and healing. Hence, it can be considered a natural and cost-effective alternative for treating cracked heels.

• RESULT

The prepared herbal cream showed satisfactory results in all evaluation parameters. It exhibited good physical appearance, smooth texture, and homogeneity. The pH was found to be suitable for skin application, and the cream showed good spreadability and viscosity. No signs of irritation were observed during the skin test. Overall, the formulation was stable, effective, and suitable for the treatment of cracked heels.

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