

Formation and characterization of crack heel cream from Aloe vera and bees wax

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Abstract: The main aim of our research was to develop an anti-cracked heels cream formulation consisting of cocoa butter, Aloe barbadensis, ginger, bees wax for the treatment of cracked heels.

Methods: An anti-cracked heels cream formulation consisting of ginger, Aloe barbadensis extract, bees wax, cocoa butter, essential oils was prepared. Microbiological studies were performed the safety of materials used in the formulation.

Results: The developed cream consisting of ginger, Aloe barbadensis, cocoa butter was found to be safe and effective for the treatment of cracked heels.

Conclusion: 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.

Skin diseases are numerous and a frequently occurring health problem affecting all ages from the neonates to the elderly and cause harm in number of ways. If the cracks in the heels are deep, they can be painful, hurting when a person stands up, and they may sometimes bleed. Some wild plants and their parts are frequently used to treat these diseases.

Introduction:

What are Cracked Heels?

1. Cracked heels are THE most common foot problem.
2. Often referred to as fissures.
3. For most people, cracked heels are a cosmetic problem, however,
4. When the fissures or cracks are deep, they are painful to stand on and the skin may bleed, which can become infected in severe cases.

5 COMMON CAUSES THAT CAN CAUSE CRACK HEELS:

fig.no.01



1. Prolong standing, particularly on hard floors
2. Overweight (Causes more pressure on the heels due to the body weight)
3. Constantly wearing shoes that are open-backed (Skin is easier to expand)
4. Skin conditions like psoriasis and eczema (Dry skin causes skin to crack easily)

COMPLICATIONS OF CRACKED HEELS

1. Discolorations can occur due to the thick skins.
2. Yellow or dark brown skin will instead appear around the border of your heels.
3. Unsightly when paired with your favorite footwear
4. If left untreated, cracked heels can cause bleedingCan lead to an infection.

5. For those suffering from chronic ailments such as diabetes this can be dangerous.
6. It hurts when walking due to the thick skin around the heels Prevention is the key!
7. The skin on the feet tends to become drier as there are no any oil glands present. This dryness causes the skin to crack. Lack of moisturization, over exposure to pollution and a few medical conditions like eczema, diabetes, thyroid, and psoriasis cause dry and cracked feet. *Hedychium spicatum* Buch Ham (Family: Zingiberaceae) is commonly known as Spiked ginger lily, has a rich history of use in India. It is a perennial rhizomatous herb, commonly found in Himalayas at altitudes 3500-7500 ft. It has been valued in the Traditional.

Material and Methods:

Material:

1. Ginger

Ginger contains chemicals that may reduce nausea and inflammation. Researchers believe the chemicals work primarily in the stomach and intestines, but they may also work in the brain and nervous system to control nausea.

2. Lemon

- Support Heart Health. Lemons are a good source of vitamin C.
- Help Control Weight.
- Prevent Kidney Stones.
- Protect Against Anemia.
- Reduce Cancer Risk.
- Improve Digestive Health.

3. Almond oil

Sweet almond oil is one of the proficient strategies to use over cracked feet.

Sweet almond oil is at the same time light as well as hydrating which is perfect for summers if you don't want to deal with the stickiness of other heavy oils!

4. Bees wax

Beeswax is a beneficial ingredient in many skin soothing recipes. In fact, making a homemade beeswax balm is a great way to show our feet some love. The moisturizing properties of this natural wax are well known. This recipe for beeswax foot balm is a favorite for dry, cracked heels.

5. Coconut oil

Coconut oil is excellent for cracked heels. It contains a high concentration of vitamin E and natural proteins that help repair damaged skin cells,' says Natalie.

'It also contains natural lauric acid, which has both antibacterial and anti-fungal properties.'

6. cocoa butter

Cocoa butter is a highly efficacious emollient that can tackle some of the roughest, driest skin making it the perfect ingredient for caring for even the worst cracked heels and feet and a must have in your foot care routine.

7. Aloe vera

Aloe vera is an excellent moisturiser and is also extremely hydrating. It also arrests the moisture in the skin, boosting the production of collagen too which will aid in repairing cracked heels. Extract some amount of fresh aloe vera gel and apply it by massaging it to your feet. Then wash it off after 20 mins.

Method:

Extraction of Aloe vera

Samples were kept frozen (-40 °C) and protected from light until the analytical procedure took place.

The aloe vera used for extractions measured between 40 and 60 cm in length and were taken from 2 year old plants.



fig.no.02

Whole leaves were cleaned by washing them individually with distilled water and water with 0.5% chlorine. The margins and spikes were removed before slicing the leaf. The cortex was separated from the parenchyma. Filets were washed thoroughly with distilled water to remove the exudates from surfaces.

Formulation table:

Sr.no.	Ingredients	Quantity
1.	Beeswax	15 gm
2.	Aloe vera juice	5 ml
3.	Ginger juice	4 to 5 drops
4.	Cocoabutter	15 gm
5.	Coconutoil	15 gm
6.	Almond oil	10 gm

Table no.01

Procedure:

- Take 15 gm of bees wax and 15 gm of coconut oil in the beaker.
- Place the beaker in hot water bath for melting the wax.
- Add 1 tablespoon of almond oil in the mixture.
- Let the ingredients melt.
- Now, add 4-5 drops of ginger Juice.
- Then add cocoa butter and mix it well.
- After mixed and make it normal cool .Add aloe Juice 15 ml in it. And mix it well.
- Mix well and store it in a jar
- Apply this mixture on your feet before going to sleep andCover them by putting socks



fig.no.03

Direction for use :

Wash and Clean the affected area (Preferably with warm water), wipe it dry. Scrape the dead skin with a scraper (deal skin remover), then apply Krack Cream 2-3 times a day. Spread gently. Allow 15 minutes to dry after application.

Evaluation of crack heel cream:

Spreadability:

The spreadability of samples was determined. Take 0.5 g crack cream formulation was placed within a circle of 1 cm diameter on a glass slide over which a second glass plate was placed. A weight of 500 g was allowed to rest on the upper glass slide for 5 min. Spreadability refers to the area covered by a fixed amount of crack cream sample after the uniform spread of the sample on the glass slide.

Irritancy:

Mark a neighborhood (1sq. cm) on the left dorsal surface. The cream was applied to the required area and time was noted. Irritancy, erythema, edema, was checked if any for normal intervals up to 24 h and reported .

Washability:

A small amount of cream applied available and washed under running water.

Viscosity:

Brookfield Synchro-Lectric Viscometer with helipath stand was used for viscosity studies. The sample (10 g) was taken in a beaker and was allowed to equilibrate for 5 min before measuring the reading using a T-D spindle at 10, 20,30,50,60,100 rpm. Each speed the corresponding reading on the viscometer was noted. The spindle speed was successively lowered and the corresponding reading was noted. The measurements were carried in 3 times at ambient temperature. Direct multiplication of the readings with factors given in the Brookfield viscometer catalogue gave the viscosity in cps. Average of three triplicates was computed.

Determination of pH :

The pH value of a solution was determined potentiometrically by means of a glass electrode, a reference electrode and a digital pH meter. The pH meter was operated according to the manufacturer's instructions. First the apparatus was calibrated using buffer of 4, 9 and 7 pH. 1 g cream was taken and dissolved in 10 ml demineralized water. The electrodes were immersed in the solution and measured the pH.

Bulk Density at room temperature:

Weight a clean & dry stainless steel bulk density cup. Fill cup with water & again weight to know the weight of water filled. Dry the cup in hot air oven & fill with the paste sample place on bulk density apparatus & stroke times. Remove any excess paste by cutting with the help of a spatula. Clean paste adhered outside & weigh. Subtract weight of empty cup to know the weight of paste filled. Operate bulk density apparatus.

Calculation:

Bulk density = gm/ml weight of paste/weight of water same Volume.

Medicinal uses of crack heel cream:

Fig.no.04

1. Crack Heel Repair Cream comes with the healing power of 7 herbs moisturises, heals, soothes (Specialist heel care cream) softens, hydrates and shields with its unique action.
2. Crack Happy Feet repairs and relieves dry skin disorders such as rough and cracked heels, chapped hands, fissures and chilblains.
3. Helps in healing rough and cracked heels
4. Hydrates dry skin of heels and makes it soft
5. Enriched with goodness of 7 healing herbs
6. Useful in dry skin ailments such as rough and cracked heels, chapped hands, fissures and chilblains
7. Also beneficial in case of minor burns, cuts and wounds.
8. Also helps in minor burns, cuts and wounds. Crack Happy Feet cream is specially formulated to give you effective relief from sore, cracked heels and hardened soles.
9. Crack Happy Feet Heel Repair is fortified with the healing power of 7 herbs, which help to soften cracked, rough skin.

Conclusion:

All the formulations showed pseudoplastic flow on the basis of viscosity. The spreadability of formulation F2 is greater as compared to other formulations as well as the prototype formulation. Amongst all of the formulations, only F1, F3 and F2 showed better thermal stability at 20 °C, 30 °C and 40 °C. The F2 was selected as an optimized formulation on the basis of results of spreadability and viscosity.



Fig.no.05

Result and discussion:

The main aim of our research was to develop an anti-cracked heels cream formulation consisting of bees wax, cocoa butter, almond oil, coconut oil, Aloe vera, ginger for the treatment of cracked heels.

An anti-cracked heels cream formulation consisting of cocoa butter, Aloe vera, bees wax, almond oil was prepared. Microbiological studies were performed the safety of materials used in the formulation.

The developed cream consisting of bees wax, coconut oil, almond oil was found to be safe and effective for the treatment of cracked heel.

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. Prepared crack cream formulations were subjected to various assessment parameters and the findings obtained were within the limits. All the formulations were found to be alkaline in pH test.

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Footnotes :

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Conflict of interest : No

REFERENCES:

1. Stylecraze.com/articles/simple-home-remedies-for-cracked-heels/#gref. [Last accessed on 10 Dec 2019]
2. <https://www.slideshare.net/anupriyaSinghRajpoot/pharmaceutical-cream>. [Last accessed on 10 Dec 2019]
3. Shivani Ghildiyal, Manisha K Gautam, Vinod K Joshi, Raj K Go el. Pharmacological evaluation of extraction of *Hedychium spicatum* (Ham-ex-Smith) rhizome, US national library of medical. National Institute Health 2012;31:117-2.
4. Muñoz OM, Leal X, Quitral V, Cardemil L. Extraction, characterization and properties of the gel of burn plant (*Aloe barbadensis miller*) cultivated in Chile. *Med Aromat Plants* 2015;4:3.
5. Shakeel Ahmed, Saifullah, Mudasar Ahmad, Babu Lal Swami, Saiqalkram. Green synthesis of silver nanoparticles using *Azadirachta Indica* aqueous leaf extract. *J Radiat Res Appl Sci* 2016;9:1-
6. Akash S Mali, Karekar P, Yadav AV. Formulation and evaluation of multipurpose herbal cream. *Int J Sci Res* 2017;1:1-18.
7. Mei X Chen, Kenneth S Alexander, Gabriella Baki. Formulation and evaluation of antibacterial creams and gels containing metal ions for topical application. *J Pharm* 2016. Doi:10.1155/2016/5754349

8. Abhay Prakash Mishra. Available from:

https://www.researchgate.net/publication/289835679_Health_Promoting_Phytochemicals_Their_Concentration_and_Antioxidant_Activity_of_Wild_Edible_Fruits_of_Uttarakhand_India?ev=auth_pub. [Last accessed 15 Dec 2019].

9. AnuradhaKeshwar, UnmeshKeshwar, AshwiniDeogirkar, SS Dhurde, VeenaDeo, BK Shrikhande. Formulation development and evaluation of cream containing natural essential oils having mosquito repellent property. *World J Pharm PharmSci* 2018;8:1586-93.

10. NR Patel, HU Momin, RL Dhumal, KL Mohite. Preparapreparation and evaluation of multipurpose herbal cream. *Adv J Pharm Life Sci Res* 2017;5:27-32.

11. Ashwini SD, Somishwar SK, Shweta SS. Formulation and evaluation of vanishing herbal cream of crude drugs. *Am J Ethnomed* 2014;1:313-8.

