

A Review On the Herbal Foot Crack Cream.

Mukesh Kale¹, Miss Pooja Makh², Dr. Gajanan Sanap³

^{1,2,3}Late Bhagirathi Yashwantrao Pathrikar College of Pharmacy. Pathri, Phulambri. Chh. Sambhajanagar. 431111 Maharashtra India

Abstract

Skin illnesses can be harmful in a variety of ways and are a common and widespread health issue that affect people of all ages, from newborns to the elderly. When someone has severe heel cracks, it might hurt to stand on them and occasionally cause bleeding. Many times, these illnesses are treated with certain wild plants and their parts. The five plant extracts that make up the herbal crack cream are: Daruharida (*Berberisaristata* DC.), Pashanbheda (*Bergenia ligulata* (Wall.) Engl.), Jivanti (*Leptadenia reticulata* W. & A.), kampilak (*Mallotus philippensis* Muell.-Arg.), and Manjistha (*Rubiacordifolia* Linn.). Making and assessing herbal crack cream and comparing it to commercially available herbal crack cream was the primary goal of the study project. The findings indicated that the herbal crack cream met all the requirements for cream and that the created cream and extract, as well as the marketed cream, had been found to include tannins, flavonoids, and alkaloids. The quality of formulated and sold herbal crack cream is same.

Keywords: Herbal, Crack Heel, Foot Skin

1. INTRODUCTION

1.1 Dosage forms

The oral, topical, injectable, and many other dosage forms that are currently used in drug therapy are essential pharmaceutical products in the form that they are marketed and used in daily life. Typically, these dosage forms involve a combination of active drug and excipients, as well as non-reusable materials that may not be considered ingredients or packaging. Occasionally, the term "dosage form" refers only to the chemical formulation of a drug product, including the drug substances and any blends involved, without taking into account issues that go beyond that (such as consumable products like capsules, patches, etc.). In order to prevent the main problems of oral formulation, which include painful injections that might result in infections and side effects in the GI tract, topical drug delivery systems are used. [1, 2]

1.1.2 Topical drug delivery

One appealing approach to both local and systemic treatment is topical administration. It is acknowledged that topical medication distribution is a successful therapeutic approach for treating localized dermatologic conditions. It can better absorb substances by penetrating the skin deeper. Drug carriers that guarantee sufficient localization or penetration of the drug within or through the skin are being used in the formulation of topical dosage forms in an effort to maximize local and reduce systemic effects, or to ensure appropriate percutaneous absorption. Topical preparation reduces GI discomfort, stops medications from being metabolized in the liver, and boosts the drug's bioavailability. Topical

preparations are self-contained, discrete dose forms that work directly at the site of action to transfer a medicine to the systemic circulation at a controlled rate when applied to undamaged skin. [3-5]

1.2 Topical delivery includes two basic types of product:

Internal topicals are administered orally, vaginally, or on the tissues of the mucous membrane for local action. Because topical preparations allow drugs to permeate into the underlying layers of skin or mucous membranes, they are typically employed for localized effects at the application site. While some unintentional drug absorption may happen, it usually happens in amounts below therapeutic levels and is not a major problem. Topicals applied externally to the cutaneous tissues in a spread, spray, or other manner to cover the affected areas. [6]

1.2.1 Advantages of topical drug delivery systems [7-10]

avoidance of the dangers and drawbacks associated with intravenous therapy as well as the various absorption conditions, such as pH variations, the presence of enzymes, the length of the stomach emptying time, etc. Attainment of efficacy with a reduced total daily drug dosage with continuous drug administration prevents changes between and among patients, as well as fluctuations in drug level ability to more precisely administer the medication to a particular location and to quickly stop taking it when necessary Preventing gastrointestinal incongruity enabling the use of medications with brief biological half-lives and limited therapeutic windows to enhance pharmacological and physiological responses Boost adherence from patients Assist with appropriate self-medication.

1.2.2. Disadvantages of topical drug delivery systems [11, 12]

The medication and/or excipients may cause skin irritation or contact dermatitis. Certain medications have poor skin permeability Potential for allergic responses Can only be applied to medications whose actions depend on extremely low plasma concentrations Drugs may be denatured by an enzyme in the epidermis

1.2.2. Limitations of topical drug delivery system [2]

Sometimes it causes skin irritation or contact dermatitis due to drug, excipients or penetration enhancer so as to increase percutaneous absorption The drug should be lipophilic, low dose, and low molecular weight, for penetration through stratum.

1.2.3. Rational approach to topical formulations [13]

Topical formulations can be used Sunscreen products and the horny layer shield the living tissues from ultraviolet light, while topical antibiotics and antibacterials help repair a compromised skin barrier against infection. Give medications directly to the living skin tissues, such as anesthetics, anti-inflammatory, antipruritics, and antihistaminics, without the need for oral, systemic, or other forms of therapy. Antiperspirants, exfoliants, and depilatories, for example, should be applied to the skin appendages in order to treat them.

To administer medications for systemic therapy, such as transdermal therapeutic systems, which offer systemic therapy for hypertension, angina, and motion sickness.

1.2.4. Classification of topical drug delivery systems [14] Classification of topical drug delivery systems based on physical state and is as follows:

1. Solid Powder

Plaster
Aerosol

2. Liquid
Solution
Suspension
Emulsion
Lotion
Liniment

3. Semi-solids
Cream
Paste
Gel
Ointment
Jelly
Suppository

1.3. Semisolid formulations [15]

In the late 1800s, the term "Gel" was coined to refer to a class of semi-solid materials based more on their physiological properties than their molecular makeup. The words "gel" and "jelly" are derived from "gelatin."

Gels are semisolid systems in which a high degree of physical or chemical cross linking has been established within a three-dimensional polymeric matrix of natural or synthetic gums, thereby confining a liquid phase.

Gel primarily denotes a physical state whose characteristics lie halfway between those of liquids and solids. Nevertheless, it is frequently applied incorrectly to any fluid system displaying some degree of rigidity. A gel is made up of a polymer that swells when fluid is present and possibly even inside the polymer itself. The volume of fluid a gel can hold determines its rigidity.

Gels are generally considered to be more rigid than jellies because gels contain more 11.

1.5 Topical cream [16]

- A topical medication is one that is applied to a specific area of the body. The term "topical administration" refers to the application of a wide range of product classes, such as creams, foams, gels, lotions, and ointments, to body surfaces like the skin or mucous membranes in order to treat illnesses. (Source:) A lot of topical drugs are applied topically, or epicutaneously, to the skin[16].
- Topical agents are substances applied to the body's surface, such as those used in internal bodily activities that are visible outside the body, such as oral vaginal
- Topical agents do not absorb directly into the circulation;
- These compounds primarily act locally on the skin or mucous membranes through mechanical or physical means;
- They have minimal pharmacological effects. (Source:)

1.6 classification of cream

1. Cleansing and Cold Creams.
2. Foundation and Vanishing Creams.
3. Night and Message Creams.
4. Hand and Body Creams.
5. All-purpose Creams is Cleansing and Cold Creams[17]

1.7 Properties of cream

- They're simple to use.
- They adhere to the skin with ease.
- When they are applied to the skin, they ought to liquefy or melt.
- They ought to cause the skin's pore apertures to flush.
- After application, they ought to leave the skin with an emollient coating.
- They shouldn't cause skin to become dry, which can occur while washing the skin with soap and water.
- They need to successfully eliminate the chemicals in face makeup.
- They remove the pigment by dissolving the oily binding materials that held it. • In addition to washing, they serve to soften, lubricate, and protect skin. They should remove surface oil layer, sebum, hardened oil, and sebum plaques from the skin. [18]

1.8 characteristic of cream

- It should be liquefy at body temperature
- It should be penetrate epidermis
- It viscosity should be low enough to permit spreading
- It should non inflammatory
- It should be non toxic
- It should be non irritant [19]

1.9 uses of cream

- Cleaning creams are face care treatments that are used to cleanse the skin's surface of dead cells, grime, and other contaminants.
- Vanishing cream is used in environments where facial perspiration occurs.[21]
- the availability of a skin-protecting barrier
- To facilitate the moisture's retention
- soothing impact
- A cream is a skin preparation that is typically applied topically. creams for use on mucosal membranes, such as those of the rectum or vagina; these creams can be used for a variety of ailments, including eczema, dermatitis, allergies, rash, itchin, and insect bites.[20]

1.11 Introduction

How do you define foot?

- the entire portion ofThe five metatarsals on your foot join your toes to the remainder of the foot. Pain in the ball of your foot may result from increased pressure on one or more of these bones. We refer to this as metatarsalgia.[24]
- For each mile travelled, the foot needs to be able to withstand more than 100,000 pounds of pressure.[22]–[23]
- The five lengthier bones (metatarsals) and five toes (phalanges) are found in the forefoot. The midfoot is a group of bones that resembles a pyramid and makes up the foot arches. The three cuneiform bones, among others, the the navicular bone and the cuboid bone. The heel is formed by the hindfoot and

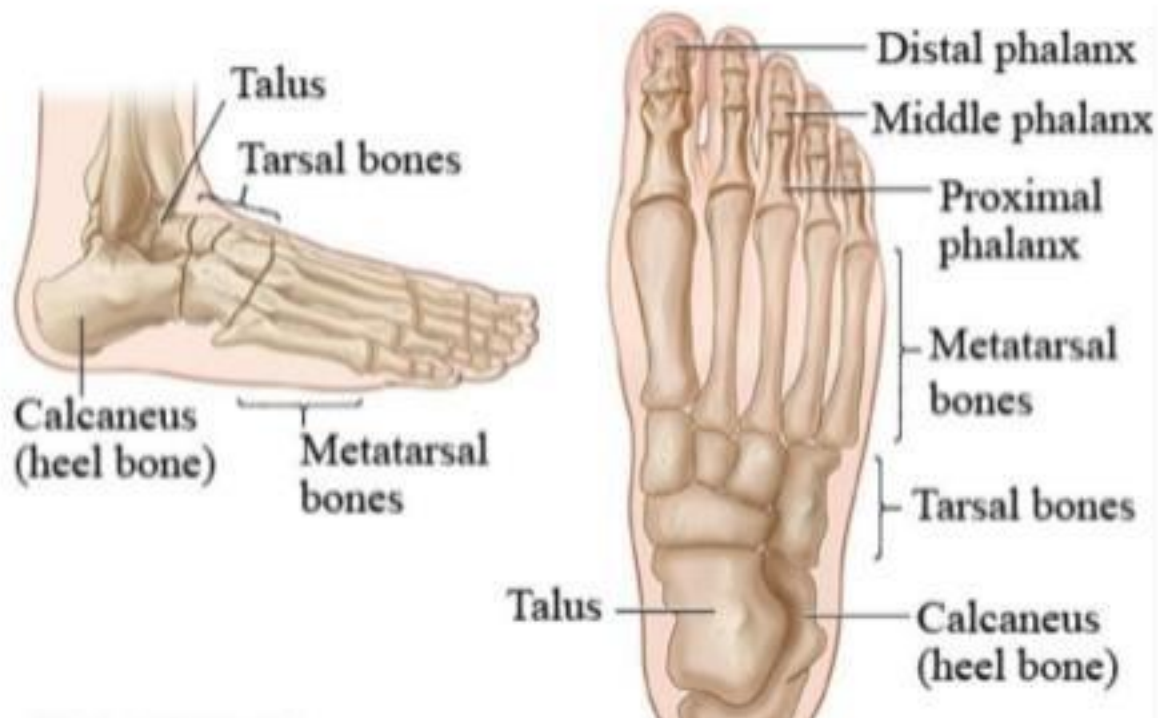


Fig.1.2 Structure of foot cracked [26]

Cracking.

- can happen for a variety of reasons, such as inadequate moisture or exposed footwear. Understanding the causes of the condition can help you prevent further relapses if you've noticed symptoms like cracked skin, dry skin thickening around your heels, or heel pain.
- One type of chemical reaction that undergoes thermal decomposition is cracking.
- The following are the most typical causes of dry, cracked heels: diseases like Sjögren's syndrome, juvenile plantar dermatosis, eczema, hypothyroidism, obesity, and infections
 - such as biomechanical issues like flat feet, heel spurs, or prolonged standing, athlete's foot,[26] · Dryness of the skin caused cracking to occur. Wetness from



Fig.1.3 cracked heel

Reason of cracking

- **Deficit of moisture:** The most frequent reason for cracked heels. Often, the skin beneath your feet is rough, dry, and chapped. This is due to the skin surrounding your heels having a comparatively low quantity of sweat glands. Because there is less elasticity in extremely dry skin, cracked skin develops more quickly and can be made worse by any of the issues listed below.
- **Deficiencies:** A diet deficient in zinc, vitamins, and minerals can have a negative impact on the health of your heels.
- **Pressure:** Prolonged standing at home or at work can cause tension in the 16
- **Ageing skin:** Cracks are more likely as we age because our thick, dry, scaly skin loses its elasticity. Disorders: Cracked heels may result from psoriasis, eczema, thyroid issues, diabetes, athlete's foot, and a few other skin conditions.
- **Disorders:** Cracked heels may result from psoriasis, eczema, thyroid issues, diabetes, athlete's foot, and a few other skin conditions.
- **Obesity:** Carrying excess weight can put more strain on the fat pad beneath the heel. This may cause it to spread laterally and exert pressure on the feet if the skin is not flexible enough. This causes heels to crack.
- **Exposing footwear:** Shoes or sandals with an open back can cause fat under the heel to spread outward and raise the risk of developing heel cracks. When wearing shoes that expose your heels, it's crucial to take regular care of your feet. Hygiene: Another factor contributing to cracked heels is inadequate foot cleaning.
- **Water:** Putting water on your feet can strip the skin of its natural oils, leaving it parched and/or rough. Prolonged standing in moist environments, like a bathroom, can result in cracked and dry heels. Shoes that don't fit right: Wearing shoes that don't fit right can lead to cracked heels. Reference [25]

Application of foot crack cream

- infused with antimicrobial properties. The severe conditions can lead to a number of infections, such

as calluses or blisters, and the antimicrobial qualities • The best foot cream should be moisturising in order to prevent cracked heels and give you flawless, healthy-looking feet. Thus, choose a foot cream that is enhanced with goodness.

- Without a doubt, eating a healthy, balanced diet gives our bodies the nourishment they need to stay smooth and healthy. Even so, the harsh functioning causes the feet to become dry and cracked. Consequently, it is crucial to have an outer layer of skin that can rebind the skin's nourishment. The inclusion of ingredients in the foot cream that form a layer to bind the skin's nourishment is therefore the next crucial factor.
- The best foot cream should be moisturising, anti-inflammatory, astringent, and anti-microbial with anti-inflammatory properties to protect and treat cracked feet and painful heels.(26)
 - Softens and smoothes rough, dry skin. Frequent use energises and revitalises the skin and feet, aiding in the healing of corns and cracks. softens and smoothes dry skin in areas like elbows, feet, and other places. It mends broken feet.
- instantly hydrates and softens skin, shields it from drying out and cracking, and absorbs quickly. It is advised for diabetics and suitable for skin that is sensitive.Reference[27]

REVIEW LITERATURE

2.1 G.R SHAH et al :- Many therapeutic plants in varnya kashaya are mentioned in the ayurvedic literature, particularly in the Charak Samhita. Herbs like chakmard, amla, bavchi, guduchi, khas, nagkeshar, manjistha, and yastimadhu are said to be kustaharan, and they are used to achieve a radiant complexion. Herbs with varying potential from Khshthagna and Mahakashiya, such as amalaki, haridra, khadira, vidyanga, jati saptaparna, and karavira, are mentioned as effective in treating skin disorders. Various properties, such as antioxidant, anti-inflammatory, antiseptic, and antibacterial, are present in herbs used in cosmetic preparation.

2.2 S.Ramachandran et al :- Using a standard cream preparation procedure, herbal crack cream was made and contrasted with commercial cream. The colours of the crack creams from Market and Herbal were greyish yellow and light brown, respectively. Each has a pleasant scent. The viscosities of Market Crack Cream and Herbal Crack Cream were 16.567 and 13.194 P/sec, respectively. The PH of Market Crack Cream and Herbal Crack Cream were 5.6 and 5.4, respectively. Both market crack cream and herbal crack cream had bulk densities of 0.8661 and 0.8572 gm/ml. Because neither cream contained any hard or sharply edged particles, they both had exceptional smoothness, homogeneity, and finesse. The market crack cream and herbal crack cream had outstanding spreadability and very good palatability. The squeezing out effects of market crack cream and herbal crack cream are excellent, respectively. It is stable at 25 °C, 30 °C, and 40 °C.[28]

2.3 S.parial et al; Cosmetics are multipurpose products that are widely used globally to preserve and enhance the overall appearance of the face and other body parts, such as the hands, eyes, skin, and hair. Herbal cosmetics are preparations that resemble cosmetics containing pharmaceuticals, nutraceuticals, and active bio-ingredients. Products used to cleanse and beautify the skin are called cosmetics. In 4000 B.C., Egyptians are credited with using cosmetics for the first time in history. Pharmaceuticals are essentially drug products, which are defined as goods that alter the structure or function of the body and prevent, mitigate, treat, or cure disease.

Often, the skin beneath your feet is rough, dry, and chapped. Disorders: Cracked skin can result from a number of skin conditions, including diabetes, thyroid disease, eczema, psoriasis, and athlete's foot. A healthy body depends on having healthy skin. Natural medicine is said to be safe and inexpensive. A summary of the latest technological developments in this field over the previous 17 years is given, along with a review of some plants used to treat skin conditions. Additionally, it is a good raw material for making new synthetic agents..[29]

EVOLUTIONS OF HERBAL CRACK CREAM

Table 4.1 Evaluation of Herbal Crack cream

Sr.no	Physicochemical Parameters	Results
1.	color	Light Brown
2.	odor	Pleasant flavor
3.	Viscosity(P/sec)	13.194
4.	PH	5.4
5.	Bulk density(gm/ml) 0.8572	EXCELLENT EXCELLENT EXCELLENT
	Homogeneity	
	Fitness	
6.	Palatbility	Very Good
	Smoothness Spreadability	Excellent
	Squeezing out	Excellent
	Removabilit	Very Good Easily Remove
7.0	Thermal 25 °C	Stable
	30 °C	Stable
8.	Sensitivity test	No Irritation
9.	Irritation test	No Irritation
10.	Squeezing out effect Good	Effect Good

Table 4.1. Evaluation formula crack crea

MARKETING PREPARATION

Herbal foot crack cream



Fig .5.1 herbal foot crack creamMRP: 340 RS[31]

Ingredients

Citrus aurantifolia (lime), Citrus bergamia (bergamot), Jasmineum officinale (jasmine), Camellia sinensis (green tea), beeswax, shea butter, almond oil, olive oil, triticum vulgare (wheat germ), and myristica oil

Active ingredient

Jasmine Uses: Khadi foot cream, which is formulated with splenda, is a great way to pamper and soothe tired feet at the end of the day. not oily rapid absorption recipe replenish moisture, avoid crack smoothness, and eliminate roughness



Pedisoft

Moisturizing foot cream



MRP: 340 RS[31] Fig .5.2 pedisoft

Ingredients

calendula (calendula officinalis) ext. 0.5%, nutmeg (myristica fragrans) ext.0.5%, peppermint (mentha piperita) oil 0.5%, indian frankincense (boswellia serrata) ext. 0.2%, fenugreek* (trigonella foenum graecum) ext 0.2%, yashtimadhu (glycyrrhiza glabra) ext. 0.2%, yashad (zinc oxide) 1%, purified water (aqua), cold pressed sunflower (helianthus annuus) seed oil, extra virgin coconut (cocos nucifera) oil, cold pressed rosehip (rosa mosqueta) seed oil, cold pressed moringa seed (moringa oleifera) oil, cold pressed jojoba (simmondsia chinensis) oil, aloe vera* (aloe barbadensis) leaf juice, cetearyl olivate*, cold pressed castor (ricinus communis) oil, cold pressed safflower (carthamus tinctorius) oil, cold pressed avocado (persea gratissima) oil, vegetable glycerine, octyldodecanol, sorbitan olivate, shea (butyrospermum parkii) butter, soy lecithin, caprylyl glycol, potassium sorbate, gluconolactone, sodium gluconate*, ethylhexylglycerin, natural preservative blend of herbs and essential oils.UNIQAYA FOOT CREAM

MRP: 331 RS[32]



Fig .5.3 UNIQAYA FOOT CREAM

Ingredients

AloeVera, Hydroxyethyl Urea, Coffee Seed Extract, Kokum Butter, Olive Oil, and Peppermint• Sunflower oil • Shea butter • Vitamin E

Active ingredient coffee seed extract

Shea butter is used to treat dryness, inflammation, and crack heels. It also aids in the fight against coffee seed extract [30].



Fig 5.4 coffee seed extract

Moisturizing Foot Cream



Fig 5.5 moisturizing foot cream
MRP:450 RS

Ingredient

5% Shea Butter, Omega 3 & 6, Silver Citrate & Lavender Oil Bid farewell to your painful, rough, and parched feet. This richly moisturising cream for cracked heels on the feet will soothe your skin irritations and help to rebuild the natural barrier. It functions with your skin to provide long-lasting hydration and defence..

Active ingredient shea butter



Fig 5.6 shea butter

CONCLUSION

Based on the current study, it can be concluded that the antimicrobial activity, spreadability, and appearance of the polyherbal foot care cream made from the various plants mentioned above are acceptable. The polyherbal foot care cream has good healing properties for cracked heels and is effective against *S. aureus*

REFERENCE

1. Keisuke H, Satoshi T, Yasunobu O. Preparation of a Liposomes and Niosomes of New Topical Formulation. J. Geo phys. Res. 2011;118:1-7.
2. Madhusudan RY, Jithan YA. Pharmaceutical dosage form and drug delivery system. Advances in Drug Delivery. Volume II. Pharma. Med Press. 1-49.
3. Mikari BV, Mahadik KR, Korde SA. Formulation and evaluation of topical liposomal gel for fluconazole, Indian J. Pharm.Sci. 2010;44(4):324-325.
4. Dodov GD, Simonoska M. 5-Fluorouracil in topical liposome gels for anticancer treatment Formulation and evaluation. Acta Pharm.2003;53:241-250.
5. Jani R., Jani K, Setty C, Mallikarjuna P. Preparation and evaluation of topical gel valdecoxib. Int.J.Pharm.Sci.Research. 2010;2(1):51-54.
6. Murthy R. Vesicular and Particulate Drug Delivery Systems. CarrierPublication; 105- 140.
7. Nayank SH, Nkhat PD, Yeole PG. The IndianPharmacist.2004;3(27):7-14.
8. Jain NK. Novel drug delivery system. Pharma Times. 1st Ed. May 2000; 21.
9. Misra AN. Controlled and novel drug delivery. CBS Publishers and Distributors. New Delhi. 1997;107-109.
10. Nandu S, et.al. Topical drug delivey system. Ind. J. Pharm. Sci. 1998; 60(4):185-88.

11. Kumari P, Shankar C, Mishra B. The Indian Pharmacist. 2004;3(24):7-16.
12. Lee VH, Robinson JR. A Handbook of Non-Perception Drug Delivery. J. Pharm152.24.
13. Chowdary PR, Gupta ME, Topical Dosage Forms. The Eastern Pharmacist. 1996.
14. Banker GB, Rodes CT. Modern Pharmacist. 2nd Ed. Vol. 40. MarcelDekker. New York.1979; 263-273, 283, 286-287, 299-311
15. Alan DM., Andrew RW. Compendium of Chemical Terminology: IUPAC Recommendations (the Gold Book), Oxford: Blackwell Science, 1997.
16. Ansel HC, Popovich NG, Allen. Pharmaceutical Dosage Forms and Drug Delivery Systems. 8th Ed. B. I. Publications Pvt. Ltd., 2005
17. [https://en.m.wikipedia.org/wiki/Cream_\(pharmacy\)](https://en.m.wikipedia.org/wiki/Cream_(pharmacy))
18. <https://www.pharmacy180.com/article/classification-of-creams-831/>
19. <https://www.slideshare.net/ravikumarpatil26/cream-71753395>
20. [https://www.slideshare.net/SauravSharma57/cold-cream vanishing-cream](https://www.slideshare.net/SauravSharma57/cold-cream-vanishing-cream)
21. <https://pt.slideshare.net/AnupriyaSinghRajpoot/pharmaceutica-1-creams/27>
22. <https://my.clevelandclinic.org/health/body/21901-epidermis>
23. https://www.medicinenet.com/image-collection/foot_anatomy_detail_picture/picture.htm
24. <https://orthopaedia.com/page/Anatom>
25. [https://www.amope.com/blogs/problems-solutions/how-to avoid-the-most-common-causes-of-cracked-heels](https://www.amope.com/blogs/problems-solutions/how-to-avoid-the-most-common-causes-of-cracked-heels)
26. <https://www.tricitymed.org/2018/08/b-vitamins-secret-good-skin-health/>
27. <https://www.dermaessentia.com/blogs/foot-care/essentialsof-cracked-heels-treatment-cream>.
28. https://www.researchgate.net/figure/Evaluation-of-Herbal-Creack-cream_tbl2_347909728
29. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6639817>
30. https://www.justherbs.in/products/pedisoft-calendulapeppermintcrack-cure-footcream?currency=INR&variant=29251234496589&utm_source=google&utm_medium=cpc&utm_campaign=16363013163&utm_term=&utm_content=&gclid=Cj0KCQjwvtvqVBhCVARIsAFUxcRvVxDV0OQg6zxsye757IQ8azaDzDRg3L0REOIPzNSD6uElgKYYWu9saAqSUEALw_cB
31. Tamizhmani T, Ponnusankar S, Nancy J, Suresh B, 2003, Toxicity of using Herb The Indian Pharmacist, volume 14(2),13.
32. https://www.amazon.in/Booty-Aloevera-Purpose-Cream-Grape/dp/B09QD15P1F/ref=asc_df_B09QD15P1F/?tag=googleshopdes-21&linkCode=df0&hvadid=586332797663&hvpos=&hvnetw=g&hvrand=6673755610202098570&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmidl=&hvlocint=&hvlocphy=1007780&hvtargid=pla-1643982216863&psc=1