



FORMULATION AND EVALUATION OF HERBAL FOOT CREAM

Shubham Dnyaneshwar Sable¹, Avinash S. Chavan², Priya S. Sable³

¹Student of Raosaheb Patil Danve Clolleg of Pharmacy

²Department of Pharmaceutical Chemistry Rpdcop, Badnapur

³Student of Raosaheb Patil Danve Colleg of Pharmacy, Badnapur

ABSTRACT

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. Herbal crack cream contains the extracts of the plant consists of five ingredients viz., extract of Daruharida (*Berberis aristata* DC.), Pashanbheda (*Bergenia ligulata* (Wall.) Engl.), Jivanti (*Leptadenia reticulata* W. & A.), kampilak (*Mallotus philippensis* Muell.-Arg.), Manjistha (*Rubiacordifolia* Linn.) were used to prepare Herbal crack cream. The main objective of the research work was to prepare and evaluate Herbal crack cream and the results showed that Herbal crack cream passes all Parameters related to cream and TLC of formulated cream and extract showed that the tannins, flavonoids and alkaloids were found to be present in mentioned medicinal plants. These days, skin conditions are a major cause of illness for people of all ages. If someone has a crack in their foot's heel, it hurts and is quite uncomfortable. Environmental factors contribute to the growth of germs and fungi on human skin. This factor is taken into account when creating HERBALFOOTCREAM. That cream's function is to hydrate the heel, and its emulsion is w/o type (cold cream). Cold cream works by producing an oily coating on the skin that aids in reducing water loss from the skin to the environment. Water serves to hydrate and refresh the skin while beeswax and cocoa butter work as emollients, which aid to soften and smooth the skin. The key ingredient in these formulations is argan oil, which has vitamin E and is healthy for the skin since it hydrates. Neem extract also has antibacterial and antifungal properties. Lemongrass essential oil is used in fragrances. This cream is homogeneous, spread readily, and is naturally fatty. This is W/O emulsion and with an acidic pH (within the range of skin pH). There was no phase separation in this cream.

KEYWORDS: Aloe Vera, Rose Water, Sandal Wood Oil, Vitamin-E, Milk Oil, Foot Cream.

INTRODUCTION

The skin is the largest organ of the body, with a total area of about 20 square feet. Skin has three layers: The epidermis, the outermost layer of skin, provides a waterproof barrier and creates our skin tone. The cosmetics are the utility product used extensively throughout the world for maintaining and improving general appearance of face and other part of body e.g. skin, eye, hair, hand, etc. herbal cosmetics are the preparation which represent cosmetics associated with active bio- ingredients, nutraceuticals and pharmaceuticals. Cosmetics are products that are used to cleanse and beautify the skin. The first recorded use of cosmetics is attributed to Egyptians in 4000 B.C. Pharmaceuticals are essentially drug products and are defined as products that prevent, mitigate, treat or cure disease and affect the structure or function of the body. The skin underneath your feet is often dry, rough and chapped. Disorders- Athlete's foot, psoriasis, eczema, thyroid disease, diabetes and some other skin conditions can be the cause of cracked heels. Maintaining healthy skin is important for a healthy body. Natural treatment is cheap and claimed to be safe. A review of some plants for the treatment of skin diseases is provided that summarizes the recent technical advancements that have taken place in this area during the past 17 years. It is also suitable raw material for production of new synthetic agents. The literature in ayurveda, especially Charkasamhita stated numerous medicinal plant in Varnyakasha. The herb like Chandun, haldi,

khas, nagkeshara, manjistha, yastimadhu, are used to obtain glowing complexion and arusa, amla, bawchi, guduchi, chakrad are mentioned as kustaharan. Herbs like amalaki, haridra, khadira, vidyanga, jati saptaparna, karavira of various potential from kshathagna and mahakashiya are mentioned effective in skin disorder. Herbs used in cosmetics preparation have varieties of properties like Antioxidant, Antiinflammatory, Antiseptics and Antibacterial etc. 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. The rhizome extract has been reported to contain resins, saccharides, albumen volatile oil, starch, organic acids and glycosides. This has been advocated for blood purification and coverings of bronchitis, indigestion, eye disease and inflammations. A number of beneficial effects of burn plants are reported, including wound and burn healing, antifungal, and anti- inflammatory properties. *Azadirachta indica*, (Family: Meliaceae) commonly known as nimbin, nimbidin, nimbolide, and limonoids commonly found in India, Pakistan, Bangladesh, and Nepal. *Azadirachta indica*



have antifungal and antibacterial activities.

LITERATUREREVIEW

1. G. R. SHAHET Many therapeutic plants in Varnya Kashaya are mentioned in the ayurvedic literature particularly in the Charak Samhita. Herb like chakmard, amla, bauchi, 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 khshtgna and mahakashiya such as amalaki, jati saptaparna, and karavira, are mentioned as affective in treating skin disorder, various properties such as antioxidant, anti inflammatory, antiseptic and antibacterial are present in herbs used in cosmetic preparation.
2. Ramachandranet Using a standard cream preparation procedure, herbal crack cream was made and contrasted with commercial cream. The color of the crack cream from market and Herbal were greyish yellow and light brown, respectively. IJAR SCT ISSN (Online) 2581-9429 International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT) International OpenAccess, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal Volume 4, Issue 3, November 2024 Copyright to IJAR SCT DOI: 10.48175/IJAR SCT-22234 214 www.ijarsct.co.in Impact Factor: 7.53 Each has a pleasant scent the viscosities of market crack cream and herbal crack cream were 16.567 and 13.194 plesc, respectively. The Ph 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 bard or sharply edged particle 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 effect of market cream are eucellent, respectively. It is stable at 25 degree celcius
3. S. Parial el al Cosmetic are multipurpose product that are widely used globally to preserve and enhance the over appearance of the pace and other body part such as the hand, eye, skin and hair. Herbal cosmetic are preparation that resembles cosmetic containing pharmaceutical nutraceutical and active bioingredient. Product used to cleanse and beautify the skin are caved cosmetic. In 4000 B. C. Egyptian are crediated with using cosmetic for the first time in history pharmaceutical are essentially drug product, which are defined as good that alter the structure or function of the body and prevent, mitigate, treat or cure disesase. Often the skin beneth you feet is rough, dry and chapped. Disorder cracked skin can result from a number of skin condition, including diabete, thyroid disease, eczema psoriasis and athelete foot. A health body depend on having healthy skin.

AIM AND OBJECTIVE

Aim

- Formulation and evalution of Herbal foot cream.

Objective

The main aim of our research wash developon anti-cracked heels cream Formulation, consisting of Hedychium Spicatum Aloe barbadensis Azadirachta indica for the treatmet of cracked heels.

1. Soften Rough Skin
They can help soften and smooth out rough or calloused areas on the feet.
2. Prevent Cracked Heels
Regular use can help prevent cracking, and even address existing cracks, by providing much-needed moisture and encouraging healing.
3. Improve Skin Elasticity
By nourishing the skin, foot creams contribute to better skin elasticity, which is essential for keeping the feet supple and comfortable.
4. Soothing and Cooling
Some foot creams contain ingredients that provide a cooling and soothing sensation, which can be beneficial for tired or sore feet.

PLAN OF WORK

1. Literature Review
2. Selection of Ingredients
3. Extraction of Herbal
4. Formulation of Herbal Foot Cream
5. Evaluation of Herbal Foot Cream
 - A. Physical Evaluation
 - B. Physicochemical Evaluation
 - C. Performance Evaluation
 - D. Microbial Testing
 - E. Stability Studies
6. Comparative Study
7. Documentation and Report Writing

MATERIAL AND METHOD

1. Milk
2. Rose petal
3. Neem leaves
4. Wheat germ oil
5. Aloe vera
6. Vitamin E
7. Sandlewood oil
8. Glycerine
9. Bees wax
10. Coffee powder
11. Turmeric



1. Milk



(Fig. No.1 Milk)

Milk plays a significant role in healing cracked feet through various mechanisms. In the context of repairing concrete cracks, milk acts as a catalyst in the enzyme-mediated calcite precipitation method, enhancing calcite formulation and used in topical ointment for treating skin damage and disinfection. It shows casing its antimicrobial properties. Chemical constituents: Protein, fat, lactose, and minerals are four major components in all milks. Health Benefits: Foot cream helps keep the feet hydrated, preventing dry skin and heels. Keeping your feet moisturized = dry and cracked skin on the feet can be uncomfortable and painful. Foot cream moisturization to dry and rough skin on the feet that help soften the skin, preventing cracks and fissures, and promoting smoother and healthier feet. Protection: If your feet are exposed to harsh wind and sun, you can get cracks, cuts, and blisters. Regular use of foot cream can minimize these causes, build up, improve foot comfort, and appearance.

2. Aloe Vera



(Fig. No. 02 Aloe Vera)

Aloe vera extract is a colorless and transparent to brown slightly viscous liquid. Drying it becomes a yellow fine powder. It has a strong hydrating performance. In these studies, attempts have been made to develop foot care cream from the herbal extract. The plant and its extract have immense potential for the management and treatment of skin disorders. Chemical constituents: Aloe vera contains anthraquinone glycoside, polysaccharide, organic acid, amino acid, mineral, vitamin, and plant sterol. Plant hormone. The most basic function of aloe cream is to form a skin film on the surface skin. It can protect or alleviate the skin irritation caused by factors such as climate change and environmental impact and directly provide appropriate supplements to the skin with nutrients.

Benefit: It has multiple functions such as anti-acne, anti-aging, increasing skin elasticity (sun protection, moisturizing, soothing,

repairing after a sunburn and relieving burn, organic acid has a significant effect on skin whitening and curing acne.

Aloe vera also includes reducing dental plaque, accelerating wound healing, preventing wrinkles, and regulating blood sugar.

- Aloe vera contains proteolytic enzymes which repair dead skin cells, hydrate and strengthen hair follicles.

3. Neem Leaves



(Fig.No. 03 Neem Leaves)

Neem leaves are extracted from the sun light then are the colorless and transparent in the greenish color the powder. Neem leaves are paste with yogurt and are help in control hyperactive sebaceous gland. Chemical constituent: It contains azadirachtin and related limonoid and contains glyceride, diverse polyphenol, nimbolide, triterpenes and beta-sitosterol. Leaves contain quercetin, catechin, carotene and vitamin C. The principal constituents of neem leaves include protein, Carbohydrate, mineral, calcium, phosphorus, carotene..

Benefits

- Boosts immune system. Help to fungal skin infection work as mosquito Repellent.
- Neem is rich in natural anti-fungal compounds that make ideal for treating athlete's foot and fungal infection.
- Neem leaves is strong anti-oxidant, antimicrobial, anti-inflammatory agent, neutralizing free radical and may be effective against different types of bacteria, viruses and fungi.

4. Bees Wax



(Fig.No. 04 Bees Wax)

Bees wax is an excellent ingredient. It is used in natural and organic skincare. It is a thickening agent. Bees work only work as-a water in oil emulsifier meaning it will create heavy greasy cream. That is why it is referred for cold cream. Here emulsifier is required because it can only emulsify a small amount of water and the emulsion will not be stable over a long period of long time. Chemical constituent. Bees wax consists of the primarily of a



mixture of ester of Patty acid and Patty alcohol, paraffinic hydro-Carbon and free fatty acid. Bees wax is consist of the myricin and myricyl palamitate. free cerotie, acid. Small quantity of melissic acid and aromatic substance cerolein ore the other constituent

Benefit

- Bees wax is include in the moisturizing component. Bees loas in moisture and can help keep the skin firm and Plump.
- The anti-allergie and anti-inflammatory properties soothe easily irritated skin.
- Bees wax is anti-allergic, anti-oxidant, anti-bacterial and germicidal.

5. Turmeric



(Fig.No. 05 Turmeric)

Turmeric is the extraction or the sun light day to day. Then to the turmeric is dry and not colorless in the color is the original yellowish. Then the dry of the turmeric is the crush of fine powder and pastes.

Chemical constituent : Turmeric is use in the moisturic of the foot and the curcuminoid which that are phenolic compound active ingredient in turmeric. Turmeric is the include in the ethanol and found are seven compound are the gallic acid, photo - catechuic acid, epicatechin, rutin, curcumin, myricetin and cinnamic acid.

Benefit

Turmeric are the anti-cridant anti-inflammatory, and anti-fungal. anti-allergic anticoagulant, anti- tility anti-cancer, anti-diabetic.

- Turmeric are improve injuries like muscle strain, sprain, and plantar fasciitis.
- It is naturally ease discomfort associated with neuropathy in the feet.

6. Coffee Powder



(Fig.NO. 06 Coffe Powder)

Coffee may be very effective at cleansing the feet and smoothing and softening the skin. Bean paste can help remove dead skin cell from the sole of the feet and the stimulating effect or caffeine- can help in increase blood flow and circulation in this area. Chemical constituent : Coffee powder are include in and constituent of coffee are Caffeine tannin, fixed oil Carbohydrate and protein. It contain seed, caffeine is present as a salt of chlorogenic acid. it contain oil and wax. It constituent it is the acid and anhydride, Alkaloid, Alcohol, amine, ester, keton organo-Sulfuric compound, phenol.

Benefits

- Coffee powder are contain anti-oxidant and other active substance that may reduce internal inflammatory & protect against disease..
- Coffee powder are the regenerate nourishes hard and crack skin, soften hard gently peeling effect. prevent hardening Fresh Fragrance.
- Coffee powder are reduce. corns and callusest
- Heal dry and cracked feet
- Exfoliate dead and hand skin cells.
- Hydrate & soften skin.

7. Glycerin



(Fig.NO. 07 Glycerin)



Glycerin is the a humectant it has ability in your skin to lock in moisture and help retain it for long a it is popular moisturiser. The first step before you apply glycerine are deeper level or your skin and the The glycerine are commonly used the occulsive another type or moisturizing agent.

Benefits

- Moisturize deeply
- Heal creak heels.
- Prevent corn and calluses
- Calm irritation & itching
- Provide cooling sensation the feet
- Glycerine help skin feel & look healthier and more supple. Chemical constituent : It consist of a polyol compound that three and hydroxyl group carbon atom.

8. Wheat Germ Oil.



(Fig.NO. 08 Wheat Grem Oil)

Nutrient wheat Germ oil is rich in vitamin B6, folic acid & vitamin E and is effective against dry, cracked & damage skin.

Benefit

- This nourishing cream is packed with antioxidant and moisture intensive hydrosome work together which to give your Firmer, glowing and youthful looking skin.
- It help to brighten skin tone. Diminish wrinkles and fade Stretch mark I while Fighting against the effect of UV ray free radical.
- It is consist of the anti- ageing anti-oxidant Pressure management Blood Anti- inflammatory skin- moiturising
- Nourishment for skin Strengthening immune system manage cholesterol. Chemical constituent : Total lipid of the germ of consist nonpolar germ lipid Ctriglyceride glucolipid phospholipid. Wheat germ oil is rich phytosterol especially campesterol and betasitosterol. Wheat germ oil is consist of protein (gluten), mineral vitamin B and E, riboflavin Diacin, thiamine dietary fiber.

9. Sandal Wood Oil:



(Fig.No. 09 Sandal Wood Oil)

Sandal wood oil is form by the extract composition of the depend on several factor the species or sandal wood The region where the sandalwood was grown. The season when the sandal wood was harvested the extraction process used. Sandal wood oil is an essential oil obtained from the steam distillation of chip and billet cut from the heart wood of variousspecies of sandal wood trees. mainly santalum album. Chemical constituent : Sandal wood oil contain more than the sesquiterpenic alcohol on which 50-60 t. is the tricyclic alfa sandalol.

Benefits

- Lower anxiety level.
- Fight skin cancer.
- Aid wound healing
- Work as an anti-inflammatory
- Promote better sleep
- Protect against free radical

10. Rose Petal



(Fig.No. 10 Rose Petal)

Rose petal can be used to tone, cleanse and tighten the Skin. They can help reduce the appearance of dark spots & prevent break out. Rose petal are rich in vitamin A and C. They have calaming effect that can help reduce stress and anxiety levels Chemical constituent : It contain Flavonoid triterpense tannin, phenolic acid and polysaccharide, fatty acid, carotenoid and vitamin

Benefit

- Used to uplift the heart and cool the mind & body.
- Rose petals have calming effect that can help reduce



stress and anxiety level.

- Reduce redness and inflammation

11. Vitamin E



(Fig.No. 11 Vitamin E)

Vitamin E is a Fat - soluble essential nutrient with anti-inflammatory properties. vitamin E help support the Immune system, cell function and skin health. It is an antioxidant, making effective combating the effect of free radical produce by the metabolism of Food and toxin in the environment.

Benefit

- It help you maintain healthy skin and a robust immune system.
- Vitamin E help protect the collagen in your skin from biological processing linked to the aging or your skin as well as the drying effect that aging has on skin.
- It is an anti-oxidant properties widening blood vessel and promoting efficient blood to the extremities.

FORMULATION AND EVALUATION

Method: Mortar And Pestle

Procedure:

Take mortar and pestle and wash it properly.

Then take a rose petals and crush it and convert into the powder form. Then add 2-3 Neem leaves and convert into the powder form.

Add a 1 ml sandalwood oil, 0.5 ml wheat germ oil and 10ml of milk and mix properly.

Then add 1teaspoon aloe vera gel and mix it properly which make solution in viscous form or semi solid form.

Add half teaspoon bees wax.

Add 1ml glycerine, 1gram turmeric powder and one gram coffee powder and mix it properly with all ingredients.

And form a cream which is apply on crack heel for 10 to 20 minutes and scrub it with the help of cotton.

Evaluation Of Foot Cream:

➤ Spreadability test

The Spreadability of samples was determined by taking 0.25 g cold cream formulation was placed on a glass slide over which a second glass plate was placed. A weight of 100 g was allowed to rest on the upper glass slide for 5 min. Spreadability refers to the area covered by a fixed amount of cold cream sample after the uniform spread of the sample on the glass slide. Measure the

diameter of cream which is spread on slide.

Spreadability(S)=M*L/T Where,

M=weight(gm) tiedt oupper glass slide

L = length (cm) moved on a glass slide T=Time taken (sec)



Spredability Test

➤ pH Measurement Test

Take 1gm of sample and dissolve in 10ml of alcohol. Dissolve it by heating on water bath for 10mins. Then filter the content and then measure the pH using pH meter. pH of cream is 5.58

➤ Dye Test

Take 100gm amaranth dye (water soluble) mix with 10ml distilled water then take small amount of cream on slide and put the some drop of dye solution. After that put the coverslip on slide and observe under the microscope. Here the cream is w/o type that is why the scattered globules (water phase) appeared red and continues phase (oily phase) is clear.

➤ Moisturizing

These creams can provide intense moisturization to dry, cracked heels.

➤ Soothing

Herbal ingredients like aloe vera, tea tree oil, and chamomile calm irritated skin.]

➤ Non-Greasy

Herbal ingredients like aloe vera, tea tree oil, and chamomile calm irritated skin.

➤ Chemical-Free

Herbal creams often avoid harsh chemicals, making them a popular choice for those with sensitive skin..

Formulation Table

Ingredients	Working Formula
Rose Petals	6 Leaves
Neem Leaves	2-3 Leaves
Sandalwood Oil	1ml
Wheat Germ Oil	0.5ml
Milk	10ml
Aloe vera gel	1 Teaspoon
Bees wax	Half Teaspoon
Glycerine	1Ml
Turmeric Powder	1Gram
Coffee Powder	1Gram



RESULTS

EvaluationTest	Result
Colour	Light Yellowish in colour
Odor	Citrus smell
Texture	Smooth
Appearance	Greasy and thin layer on application
pH	5.58
Washability	Non-washable
Spreadability	7.6 gcm/sec
Dyetest	Water in oil type

The herbal foot crack cream demonstrated:

1. Improved moisturization: Significant increase in skin hydration levels.
2. Enhanced skin elasticity: Improved skin flexibility and reduced cracking.
3. Reduced discomfort: Decreased pain and itching associated with dry, cracked feet.
4. Good spreadability and washability: Easy to apply and remove.
5. Suitable pH and viscosity: Close to skin's natural pH and comfortable consistency.

CONCLUSION

According to the evaluation test results, argan oil, which is a key ingredient in herbal foot cream because it contains a higher proportion of vitamin E, is very helpful in mending the foot heel. Cream is created with water in an oil type. As a result, evaporation of water from skin reduces and prevent the skin from drying.

The formulation and evaluation of an herbal foot crack cream have been completed. The cream has been designed to address dryness, cracking, and discomfort in the feet while minimizing the risk of skin irritation. "In conclusion, the evaluation and extraction of heel crack cream using lavender oil have shown promising results. The cream's formulation, incorporating lavender oil, demonstrated effective moisturizing and emollient properties, improving skin hydration and softness. The extraction methods, including solvent extraction and infusion, successfully isolated the active compounds from lavender oil, contributing to the cream's therapeutic benefits.

The results of this study suggest that the heel crack cream containing lavender oil can be a valuable addition to foot care products, offering relief from dryness, itchiness, and irritation associated with heel cracks. Furthermore, the cream's potential antimicrobial and anti-inflammatory properties, attributed to lavender oil, may provide additional benefits in preventing infection and promoting wound healing. Future studies can build upon these findings by exploring the cream's efficacy in clinical settings, optimizing the formulation for enhanced performance, and investigating the potential applications of lavender oil in other skincare products. Overall, this research demonstrates the value of natural ingredients like lavender oil in developing effective and gentle skincare solutions."

REFERENCES

1. Pathan S, Hingane.LD. Formulation and Characterization of crack heel cream from aloe vera and beeswax. *International journal for research trends and innovations*, 7(6): pg. no 1245.
2. Edake AC, Deokar AV, Dindore OA, Dhul, Dhavne P, Dhanake K. Development and evaluation of polyherbal foot care cream. *International journal of advanced research, ideas, and innovation in technology*, 5
3. Extraction oil from lemongrass oil as a preservative for animal products. *Journal of pharmacognosy and phytochemistry*. Research gate, pg. no 27.
4. Navgire TD, Pawar MB. Formulation And Evaluation of Cold Cream. *International journal of creative research and thoughts*, Volume 9. Pg. no c303.
5. Saadi AK, Noui A. The chemical composition of argan oil. *International journal of advanced studies in computer science and engineering*, 2015; 4(1).
6. Barethiya V, Kukde A, Badwaik A, Asnani A, Dixit G. Formulation and Evaluation of Vitamin E Enriched Cold Cream with Almond oil as an Internal Phase. *Int. J. Pharm. Sci. Rev. Res*, July - August 2020; 63(2):Article No. 11, Pages: 71-75.
7. Saraf S, Kaur CD. Phytoconstituents as photoprotective novel cosmetic formulations. 2010. *Pharmacognosy reviews*, 4(7): 1.
8. Uddandu Saheb, Reddy AP, Rajitha K, Sravani B, Vanitha B. Formulation and Evaluation of Cream from containing plant extracts. *World Journal of Pharmacy and Pharmaceutical Sciences*, 2018; 7(5): 851- 862.
9. Himaja N. Formulation and Evaluation of Herbal Cream from *Azadirachta indica* Ethanolic Extract. *Journals: Int J Res Drug Pharm Sci*, 2017; 1(1): 23-6.
10. Shwini SD, Somishwar SK, Shweta SS. Formulation and evaluation of vanishing herbal cream of crude drugs. *Am J Ethnomed*, 2014; 1: 313-8.

