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FORMULATION AND EVALUATION HERBAL FOOT CREAM

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1] INTRODUCTION

The word "Cosmetic" derived from a Greek word "kosmetikos". that means materials used to beautification or promoting appearance is known as cosmetic.[1] 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.[2] The skin is the body's first line of defence for external exposure.[3] Foot is an important organ of the human body and are exposed to lots of friction and external environment. The lacks of oil glands on the sole of foot predispose it to the dry skin.[4] The foot is define as the entire portion of the 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.[5] Unlike the rest of our body, the skin of our feet is normally dry. Because our foot skin lacks oil glands, it is dependent on the hundreds of millions of the sweat glands to maintain moisture levels.[6] The skin of the feet is classified as thick skin and contains five distinct layers stratum Basale, stratum spinosum, stratum granulosum, stratum lucidum, and stratum corneum but the skin of the feet becomes dry and feels uncomfortable and painful as there is no oil gland present. Synthetic heel fissure creams are engineered with advanced formulations to effectively treat and prevent dry, cracked skin on the heels, a common and uncomfortable condition for many. Burning, stinging, redness or irritation may occur, and then several people are reduced to using a synthetic product. In herbal heel fissures creams have no artificial chemicals we use only natural products to make an herbal cream aloe vera extract contains 75 active ingredients it has not harmful to your skin.[7]

The intensity of dry feet can vary, ranging from moderate, transient skin that is dehydrated to extreme dry skin that results in further issues. When compared to younger females, older

women tend to have broken heels. In a similar vein, this issue affects older women more than men. Foot cracks allow germs to enter the body, which can worsen foot ulcers, block wounds, and even result in the amputation. The outermost protective layer of the epidermis, known as the stratum corneum, is made up of dead cells. This thickness ranged from 10 to 40 µm and varied across the body.[8] The carneometer monitors the electrical conductivity behavior of the skin using the electric conductance concept as its foundation. Conductance and skin moisture content are intimately connected. Our exclusive foot healing formula has been created, and its efficacy is evaluated against industry benchmark samples. The goal of this study is to create a special foot cream. to compare the effectiveness to top benchmark samples and maintain the moisture content for up to six hours.[9]

It has been regarded as valuable in the past. Diabetes, cardiovascular disease, and other diseases have been treated with biochemical compounds found in bael leaves, fruits, and seeds. The most important substances present in plants include tannins, phenols, terpenoids, steroids, and alkaloid.[10]

➢ PHYSIOLOGY OF HUMAN SKIN

Epidermis: The epidermis is the most superficial layer of the skin and is composed of stratified keratinised squamous epithelium, which varies in thickness in different parts of the body. It is thickest on the palms of the hands and soles of the feet. There are no blood vessels or nerve endings in the epidermis, but its deeper layers are bathed in interstitial fluid from the dermis, which provides oxygen and nutrients, and drains away as lymph.

In thick skin areas like the palms of the hands and soles of the feet, the epidermis consists of five distinct layers.

Stratum Basale (Basal Layer): This deepest layer is a single row of columnar or cuboidal basal cells. These cells are attached to the basement membrane and are responsible for the continuous generation of new keratinocytes.

Stratum Spinosum (Spiny Layer): Located above the stratum basale, this layer consists of several layers of keratinocytes connected by desmosome.

Stratum Granulosum (Granular Layer): In this layer, keratinocytes begin to die and become more flattened. They accumulate dense granules containing keratohyalin, which contributes to the formation of keratin in the upper layers.

Stratum Lucidum (Clear Layer): This thin, transparent layer is found only in thick skin areas like the palms and soles. It consists of a few rows of flat, dead keratinocytes that provide an additional layer of protection.

Stratum Corneum (Horny Layer): The outermost layer, composed of 15–20 layers of dead, flattened keratinocytes known as corneocytes.

Dermis: The dermis is tough and elastic. It is formed from connective tissue and the matrix contains collagen fibres interlaced with elastic fibres. Rupture of elastic fibres occurs when the skin is overstretched, resulting in permanent striate, or stretch marks, that may be found in pregnancy and obesity. Collagen fibres bind water and give the skin its tensile strength, but as this ability declines with age, wrinkles develop. Fibroblasts, macrophages and mast cells are the main cells found in the dermis. Underlying its deepest layer there is areolar tissue and varying amounts of adipose (fat) tissue.

Subcutaneous gland: These consist of secretory epithelial cells derived from the same tissue as the hair follicles. They secrete an oily substance, sebum, into the hair follicles and are present in the skin of all parts of the body except the palms of the hands and the soles of the feet. They are most numerous in the skin of the scalp, face, axillae and groins. In regions of transition from one type of superficial epithelium to another, such as lips, eyelids, nipple, labia minora and glans penis, there are sebaceous glands that are independent of hair follicles, secreting sebum directly onto the surface.[11]

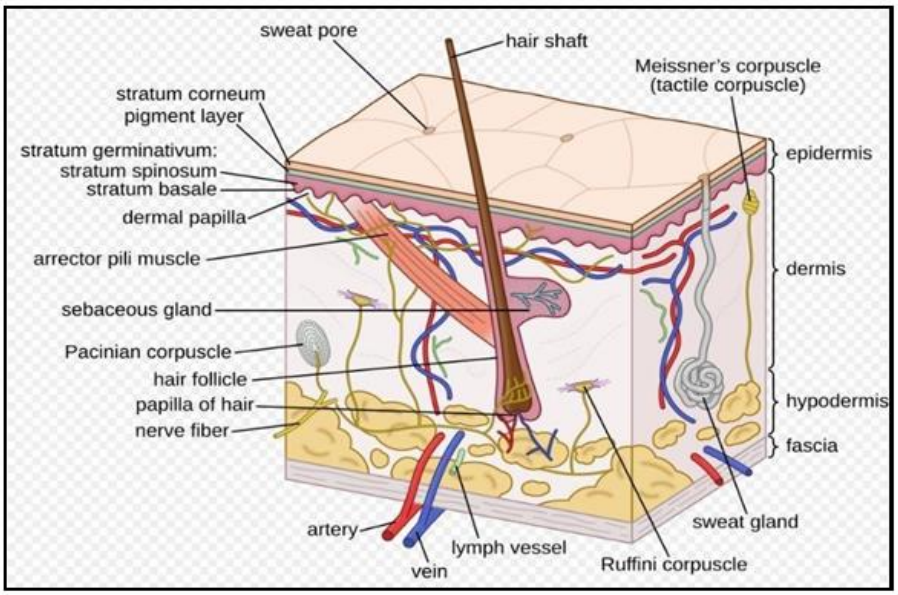

Fig. No. 01

➢ WHAT ARE CRACKS

Cracks are breaks in your skin. They may be the result of skin that is too dry. Due to the dryness skin become rough. A large fissure often forms on the base of the heel. Observe your daily rooting and if you identify anything affecting.

- **Cracked Heels**

Cracked heels, also known as heel fissures, are a common foot condition among humans. They result from dry skin and are accompanied by thickened skin, and sometimes yellow or brown calluses around the heel edge. Cracks in the heels are generally caused by insufficient moisture. These cracks can become sore and may even bleed. The two biggest risk factors for cracked heels are diabetes and obesity. Diabetics are likely to experience cracked heels because damage to nerves in the feet from uncontrolled blood sugars can cause dry skin. Obesity increases your chances of having cracked heels because there is even more weight on the heel pad, which causes it to expand out further. Dry skin is unable to handle the added pressure and cracks. Most common causes of cracked heels: There horse several potential too moist you may get a bacterial o fungal infection. This can cause cracks between the toes. People who often walk bare foot or wear open shoes are of risk for dry skin. people who wear shoes without socks on shoes Water on your feet can Take away natural oil from the skin & can leave the skin rough or dry.[12]

Fig. No: 2 Cracked Heels.

- **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.[13]

Dry Soles

Dry soles of the feet refer to a condition where the skin on the bottom (plantar surface) of the feet becomes rough, flaky, scaly, or cracked due to a loss of moisture and natural oils. The dryness may be mild, causing a slightly rough texture, or severe, resulting in deep fissures, pain, and possible secondary infections.

- **Commonly Affected Areas**

- Heel
- Ball of the foot
- Lateral edges of the sole.

- **Causes**

- Environmental (cold weather, low humidity)
- Mechanical (excess friction or pressure)
- Poor foot hygiene or excessive washing
- Use of harsh soaps or hot water.

FOOT CREAM

Foot creams are topical formulations designed to moisturize, protect, and treat the skin of the feet. They are commonly used to address issues like dryness, cracked heels, rough skin, infections and foot odour.[14]

- **Ideal Properties of foot 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.
- It should penetrate epidermis.
- It viscosity should be law they enough to permit spreading.
- It should non inflammatory, nontoxic, non-irritant.
- They remove the pigment by dissolving the oily binding materials that held it.[15]

- **Advantages of Foot Cream**

1. **Moisturize dry skin-** Hydrating dry skin is one of the main benefits of applying crack heel cream.
2. **Heals cracked creams**- Crams for crack heels can also aid in the healing of fissures and cracks that may appear on dry, rough skin.
3. **Reduce irritation-** Anti-inflammatory components like aloe vera, which are include in some crack heel creams, can help reduce inflammation and soothe irritated skin.
4. **Prevents infections-** While cracked heels can be more prone to infection, applying a crack heel cream can help to keep the skin healthy and moisturized.
5. **Enhance appearance-** Applying a crack heel cream can also aid in enhancing the appearance of rough, dry skin on the feet. Frequent use can lead to softer, smoother skin that feels and looks better.[16]

2] LITERATURES SURVEY

1. Vaishnavi Daldale et.al. (2023)

The main objective of the study was to formulate and develop an anti-crack herbal cream using aloe vera gel and hibiscus extract, known for their healing and antimicrobial properties. The product aimed to provide effective foot care by promoting skin repair, reducing inflammation, and protecting against microbial infections. The final product was concluded to be effective, safe, and beneficial for foot care, offering comfort, beautification, and protection from microorganisms.

2. Urvesh Parmar et.al. (2023)

The study focused on the development of a herbal foot cream designed to treat cracked heels and prevent skin infections. The cream was formulated as a water-in-oil emulsion base, which form an oily layer on skin, reducing water loss and promoting hydration. The cream contains beeswax and cocoa butter as emollients, which soften and smooth the skin. Argan oil, rich in vitamin E, serves as the key ingredient, providing deep moisturization. Neem extract offers antibacterial and antifungal properties, while lemongrass essential oil adds fragrance. The formulation maintains an acidic pH (within the skin's natural range) and shows no phase separation, indicating good stability. The herbal cream demonstrated effective hydration and improved skin texture. It spread easily, was homogeneous, and had a naturally fatty consistency. The combination of emollients and antimicrobial agents made it suitable for treating dry, cracked heels, with no adverse effects observed.

3. Supriya Dayanand Khutwad et.al (2024)

The primary aim of this study was to formulate and develop a herbal foot crack cream using beal leaf extract, known for their healing, antibacterial, and antimicrobial properties. The goal was to create an effective and safe cream to treat cracked heels, reduce inflammation, and prevent infections. The herbal cream showed significant healing effects, reducing dryness, cracking, and inflammation of the heels.

4. Dr. Kavitha. P.N et.al (2024)

The study focused on the development of herbal anti-cracking heel cream containing aloe vera and beeswax. These ingredients were chosen for their anti-inflammatory, wound-healing, and antioxidant properties. The formulated herbal cream demonstrated significant healing effects by reducing dryness, cracking, and inflammation of the heels. The combination of natural ingredients improved skin hydration and promoted faster skin repair without any noticeable side effects.

The cream was found to be safe and effective for treating cracked heels.

5. Mukesh Kale et.al 2024

Skin issues like cracked heels are common and often treated with medicinal plants due to their healing properties. Plants such as Berberis aristata, Bergenia ligulata, Leptadenia reticulata, Mallotus philippensis, and Rubia cordifolia are known for containing tannins, flavonoids, and alkaloids—compounds beneficial for skin repair and protection. The

formulated herbal crack cream showed good texture, stability, and healing effects. It contained key phytochemicals and was as effective as commercial herbal creams in treating heel cracks without side effects.

6. Dr. Borade Priyanka et.al (2024)

The skin on the feet lacks oil glands and depends on sweat glands for moisture, making it prone to dryness and cracks. Environmental exposure and insufficient moisturizing worsen this condition. Ficus racemosa, a traditional medicinal plant widely used in India, is known for its healing and anti-inflammatory properties. Its leaf extract has been recognized for treating skin issues, including cracked feet. The Ficus racemosa leaf extract were tested. The formulation showed the best healing and moisturizing effect. The study concluded that the herbal foot cream effectively restored skin moisture and had no harmful effects.

7. Dr. Suryawanshi Shubham et.al (2024)

Cracked heels are a common skin issue affecting people of all ages, often due to dryness and lack of proper foot care. Natural ingredients like shea butter, beeswax, aloe vera, are known for their moisturizing properties. These herbal components are traditionally used in skincare to heal and protect dry, damaged skin. To formulate and evaluate an anti-crack heel cream using natural ingredients such as shea butter, beeswax, aloe vera for the treatment of cracked heels. The formulated cream was found to be safe, effective, and beneficial in treating cracked heels, showing good healing properties without any adverse effects.

8. Dr. Nisha Umesh Pardeshi eet.al (2024)

Aegle marmelos (Bael tree) is used in traditional medicine for its astringent, antiinflammatory, and wound-healing properties. Its leaves contain bioactive compounds like alkaloids, coumarins, and steroids, which contribute to various therapeutic effect. The foot crack cream formulated with Aegle marmelos leaf extract showed effective moisturizing, antiinflammatory, and skin-repairing properties, proving its potential for treating cracked feet.

9. Dr. Reshma N et.al (2024)

The skin on the feet is naturally dry due to the absence of oil glands, making it vulnerable to dryness and cracking, especially in elderly females. Cracked heels can lead to serious issues like bacterial infections and foot ulcers. Traditional herbs like Neem shows antiinflammatory, antimicrobial, and healing properties, making them suitable for treating foot skin problems. To develop and evaluate an anti-cracked heel cream using Neem and tulsi leaf extract,

focusing on hydration, healing, and antimicrobial properties. It maintained higher skin moisture levels when applied twice daily and demonstrated good hydration lock, healing, and antimicrobial effects.

10. Dr. Vishnu Bhat et.al (2024)

Foot health is essential for overall well-being, and herbs have been traditionally used to treat foot problems. Ficus racemosa contains active compounds like gluconal acetate, β-sitosterol, lupeol, and lupeol acetate, which offer wound healing, antioxidant, anti-inflammatory, and antifungal benefits—making it ideal for foot cream formulations.

The formulated foot cream with Ficus racemosa extract was found to be effective, stable, and compatible with other ingredients. It showed good wound healing and skin-protective properties when applied topically.

3] AIM AND OBJECTIVE

Aim

- To Formulate and Evaluate Herbal foot cream.

OBJECTIVES

- To hydrate and soften rough, dry skin on the feet.
- To promote healing of cracked heels and prevent further damage.
- To provide antimicrobial protection
- To reduce foot odour using natural herbs.
- To offer a cooling and soothing effect of swollen feet.
- To Reduce Unpleasant smell/odour.

4] PLAN OF WORK

- Literature survey
- Selection and Collection of ingredients
- Formulation of the product
- Evaluation parameters

1) Colour
2) Odour
3) Texture
4) Appearance

5) Spreadability test
6) Washability test
7) Homogeneity test
8) Grittiness

▶ Results and discussions

▶ Conclusions Future scopes

▶ References

5] MATERIALS AND ITS PROPERTIES

• Excipients used in preparation are as follows

Table No. 1: List of Ingredients.

Sr. No	Ingredients	Role	Sources
1.	Bees wax	Cream base	Deepak enterprises
2.	Shea Butter	Skin Sooftner	Venture PVT.LTD
3.	Stearic Acid	Emulsifier & Emollient	Deepak enterprises
4.	Cetyl Alcohol	Thickener	Essancia PVT.LTD
5.	Beal leaf	Antimicrobial activity	Deepak enterprises
6.	Ficus racemosa extract	Moisturizing properties	Prepare in lab
7.	Neem powder	Antifungal activity	Deepak enterprises
8.	Distilled Water	Provides stability	Venture PVT.LTD
9.	Honey	Humectant	From local market
10.	Aloe vera	Healing property	From local market
11.	Lemon oil	Perfuming, Antioxidants	Arora Traders

6] Herbs and excipients Profile

1. Beal leaf powder

- Synonym: Aegle marmelos linn.
- Biological source: Aegle marmelos (beal tree), It consists of the unripe or half-ripe fruits or their slices or irregular pieces of Aegle marmelos Corr.
- Family: Rutaceae
- Chemical constituents:

- The chief constituent of the drug is marmelosin A, B and C (0.5%), which is a furocoumarin.
- Other coumarins are marmesin, psoralin and umbelliferone.
- The drug also contains carbohydrates (11–17%), protein, volatile oil and tannins. The pulp also contains good amount of vitamins C and A.

- Uses:

- Used for treating various ailments, including digestive problems, diarrhea, diabetes, skin conditions, and respiratory problems.
- Used to relieve pain, inflammation, and symptoms of conditions like arthritis and asthma.
- Bael leaf extracts are sometimes used as dietary supplements, although there's no strong scientific evidence to support these uses.[17]

Fig. No: 3 Beal Leaf Powder.[17]

2. Ficus Racemosa Powder

- Synonym: Ficus glomerata
- Biological source: It is obtained from its leaves, root, bark, fruit.
- Family: Moraceae
- Chemical constituents:

- **Triterpenoids:** Such as oleanolic acid, ursolic acid, and hydroxy ursolic acid.
- **Tannins:** Polyphenols with astringent properties.
- **Flavonoids:** Including kaempferol, rutin, and quercetin.
- **Saponins:** May exhibit foaming and emulsifying properties.
- **Phenolic acids:** Like gallic acid and ellagic acid.

- **Uses**

- **Traditional medicine:** Used in Ayurveda for various ailments.
- **Antidiabetic:** Reduces blood glucose concentration.
- **Antioxidant:** Protects against oxidative stress.
- **Anti-inflammatory:** Reduces inflammation.[18]

Fig. No: 4: Ficus Racemosa.[18]

3. Aloe Vera Gel

- Synonym: Kummari, Mussabar
- Biological source: It is obtained from dried Juice collected by incision from the bases of the leaves of various species of Aloe.
- Family: Liliaceae.
- Chemical constituents: **Vitamins:** A, B1, B2, B4, B6, B12, and tocopherol.

- **Enzymes:** Allantoin, catalase, amylase, cellulase, lipase, and others.
- **Minerals:** Calcium, phosphorus, zinc, copper, selenium, magnesium, and chromium.
- **Amino Acids:** Approximately 18 amino acids, including those essential for the body.
- **Phenolic Compounds:** Anthraquinones (aloin, emodin), and other phenolic compounds.

- Uses

- **Skin conditions:** Sunburn relief, wound healing, reducing skin irritation.
- **Cosmetics:** Moisturizing, soothing, and used in various skincare products.
- **medicinal properties:** Anti-inflammatory, antioxidant properties.[19]

Fig. No: 5 Aloe Vera Gel.[19]

4. Neem leaves

- Synonyms: Azadirachta indica
- Biological Source: Neem is derived from the leaves, seeds, bark, and oil of the tree Azadirachta indica.
- Family: Meliaceae
- Chemical Constituents: Limonoids: Azadirachtin (major bioactive compound), nimbin, nimbidin, salannin, meliantriol. Flavonoids: Quercetin, kaempferol.
  Triterpenoids: Gedunin, nimbolide. Fatty Acids (from seed oil):- Oleic, stearic, palmitic, linoleic acids, Others: Polysaccharides, tannins, and essential oils.
- Uses

- Medicinal: Antibacterial, antifungal, antiviral, Antimalarial, antiparasitic, antidiabetic
- Agricultural: Natural pesticide and insect repellent (due to azadirachtin)
- Cosmetic: In soaps, shampoos, and creams for its antimicrobial and antiinflammatory effects.[20]

Fig. No: 6 Neem Leaves.[20]

5. Honey

- Synonyms: Madhu, Bee honey
- Biological Source: Honey is a natural sweet substance produced by Apis mellifera and other bee species from the nectar of flowers and stored in honeycombs. • Family: Apidae (insect family)
- Chemical Constituents:

- Sugars (Approx. 95–99% of dry matter), Fructose (~38%), Glucose (~31%), Sucrose, maltose, and other oligosaccharides.
- Minerals: Potassium, calcium, phosphorus, magnesium, iron, zinc

• Uses:

- Antibacterial, wound healing, anti-inflammatory, cough suppressant,
- Cosmetic: Moisturizer, skin rejuvenator in masks and creams
- Traditional Medicine: Used in Ayurveda, Unani, and folk systems for treating sore throat, digestive issues, and skin conditions.[21]

Fig. No: 7 Honey.[21]

6. Bees wax

• Synonyms: Cera Flava, Cera Alba, Yellow wax, Yellow Beeswax, White Beeswax.

• Biological Source: It is obtained from the honey comb of the bees Apis Mellifera, Apis dorsata and other species of Apis.

• Family: Apidae.

• Chemical constituents: Unhydrolyzed Beeswax consists of approximately 71% esters, 15% hydrocarbon, 8% free fatty acid and 6% other components.

• Uses

- Softness the skin.
- Relieves dry skin disorders such as rough and cracked heels, Chapped hands, Fissures and chilblains.
- Provide a protective barrier to the skin.[22]

Fig. No: 8 Bees Wax.[22]

7. Shea butter

- Synonyms: Butyrospermum parkii (botanical synonym)
- Biological Source: Shea butter is a fat obtained from the dried kernels (nuts) of the fruit of Vitellaria paradoxa Gaertn. (formerly Butyrospermum parkii).
- Family: Sapotaceae
- Chemical Constituents: Triglycerides: Mainly stearic acid (20–50%) and oleic acid (40–60%), Unsaponifiable Matter: Tocopherols (vitamin E), triterpenes (lupeol, amyrin), sterols (campesterol, stigmasterol), catechins, cinnamic acid esters,

Other: Vitamin A and F.

- Uses:

- Cosmetics & Skincare: Moisturizer, anti-aging, sun protection, anti-inflammatory agent.
- Medicinal: Treatment of wounds, dermatitis, muscle aches, and rheumatism.
- Haircare: Scalp conditioner and anti-dandruff.[23]

Fig. No. 9: Shea Butter.[23]

8. STEARIC ACID

- Synonym: Octadecanoic acid.
- Biological Source: Animal and vegetable fats and oils. Specific examples include beef tallow, lard, cocoa butter, and palm oil.
- Family: Saturated fatty acids.
- Chemical Constituents: CH3(CH2)16COOH (also written as C18H36O2).
- Uses:

- Lubricant: In pharmaceutical applications, like tablet production.
- Emulsifier: Helps to mix oil and water-based ingredients in cosmetics and other products.
- Hardening agent: Used in soap, candle, and cosmetic manufacturing to create a desired texture and consistency.
- Cosmetics: Used in creams, lotions, and other skin care products to improve texture, act as a protectant, and potentially provide some moisturizing effects.
- Food additive: Used to improve texture and stability in various foods.[24]

Fig. No. 10: Stearic Acid.[24]

9. Cetyl Alcohol

- Synonym: 1-Hexadecanol, hexadecyl alcohol, palmityl alcohol.
- Biological Source: Vegetable oils such as coconut, palm, and soybean oil.
- Chemical Constituents: A long-chain fatty alcohol with 16 carbon atoms (CH3(CH2)15OH).
- Family: Fatty alcohols.

- Uses:

- Cosmetics: Emollient, moisturizer, thickening agent, opacifier, emulsifier, stabilizer, foam booster.
- Food: Emulsifier, stabilizer, flavouring agent.
- Personal Care: Emulsifier, thickening agent, stabilizer in shampoos, creams, and lotions.[25]

Fig. No. 11: Cetyl Alcohol.[25]

7] LIST OF INSTRUMENTS

- **The list of instruments used in the formulation study**

Table No. 2: List of instruments used in the formulation study.

Sr. No	Name of Instruments	Uses
1	Porcelain Dish	Holding material mixture
2	Magnetic stirrer	Stirring or mixing a solution, immerse a liquid.
3	Weighing machine	To determined weight or mass of solid materials used.
4	Pipette	To measuring volume of liquids.

- **The list of instruments used in evaluation study**

Table No. 3: The list of instruments used in evaluation study.

Sr. No	Name of Instruments	Use and Manufacturer
1	Digital pH meter	Measures electric potential using two electrodes inserted into liquid to create an electric circuit.

8] METHOD OF PREPARATION

Step 1

- **Preparation of oil phase**

Oil phase ingredients such as bees wax, stearic acid, shea butter, cetyl alcohol, peppermint oil were weighed and heated in the China dish at temperature 60-70 C to form liquid.

Step 2

- **Preparation of water phase**

Water phase Ingredients ficus racemosa extract, bael leaf extract, tulsi powder, neem powder, distilled water were weighed and heated with continuous stirring in China dish at temperature of 60-70^{0}C until it forms liquid.

Step 3

After that glycerine, honey, aloe vera was added into another beaker & mixed.

Step4

The Contents of Oil Phase and honey mixture were mixed in the water phases and the formulations was mixed thoroughly and allowed to equilibrate for 24 hrs, at room temperature. Then drop of lemon oil was added into formulation and the prepared cream were filled & stored in final container and was closed tightly.

Fig. No: 12 Oil Phase.

Fig. No: 13 Water Phase.

9] FORMULATION TABLE

Table No. 4: Quantity wise batches formulated.

Sr. No	Ingredients	F1	F2	F3	F4	F5	F6
1.	Bees wax	4g	4g	4g	4g	4g	4g
2.	Shea Butter	4g	4g	4g	4g	4g	4g

3.	Stearic Acid	1.5g	1.5g	1.5g	1.5g	1.5g	1.5g
4.	Cetyl Alcohol	1g	1 g	1g	1g	1g	1g
5.	Beal leaf	1g	1.5g	0.5g	1g	1g	1g
6.	Ficus racemosa extract	1ml	1.5ml	1ml	2ml	2ml	1.5ml
7.	Neem powder	2g	2g	1g	1.5g	0.5g	1g
8.	Distilled Water	2ml	1ml	2ml	2ml	2ml	2ml
9.	Honey	1.5ml	1.5ml	2ml	1ml	2.5ml	2.5ml
10.	Aloe vera	2ml	2ml	3ml	2ml	1.5ml	1.5ml
11.	Lemon oil	-	-	-	-	-	q. s
12.	Total	20g	20g	20g	20g	20g	20g

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Fig. No 14: VARIOUS FORMULATED BATCHES

10] EVALUATION OF HERBAL FOOT CREAM

1. **Colour:** A visual inspection was used to determine cream colour.
2. **Odor:** The Odor of formulated cream was checked by smelling it.
3. **Texture:** The foot cream was smooth and having uniformity in texture.

4. **Homogeneity:** Developed cream was tested for homogeneity by visual inspection. They were checked for their appearance and presence of any particles.
5. **Water proof test:** The formulations were applied on skin; the easy and extent of washing with water were checked manually.
6. **Ph evaluation:** Take 1gm of sample & dissolve in 10ml of ethanol. By heating on water bath for 10 minuets, then filter the content & measure PH using PH meter.
7. **Grittiness:** The grittiness was assessed by application on the skin.
8. **Spreadability:** The formulation was evenly or uniformly spread. It didn't feel dry and rough to the skin or feet of skin after applying.[26]

11] OBSERVATION TABLE

Sr. No	Evaluation Parameter	F1	F2	F3	F4	F5	F6
1.	**Colour**	Dark brown	Dark brown	Light brown	Light brown	Light yellow	Brown
2.	**Odor**	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant
3.	**Appearance**	Good	Good	Good	Good	Good	Good
4.	**PH**	5.28	5.14	5.17	5.4	5.2	5.5
5.	**Homogeneity**	Homogeneous	Homogeneous	Homogeneous	Homogeneous	Homogeneous	Homogeneous
6.	**Water proof test**	Non washable	Non washable	Non washable	Non washable	Non washable	Non washable
7.	**Grittiness**	Gritty	Gritty	Non gritty	Non gritty	Non gritty	Non gritty
8.	**Spreadability**	Poor	Poor	Good	Good	Good	Good
9.	**Irritation**	Non irritant	Non irritant	Non irritant	Non irritant	Non irritant	Non irritant

12] RESULTS AND DISCUSSIONS

We formulated six batches for selection of Foot cream Base (F1, F2, F3, F4, F5, F6,). In F1 & F2 separation of oil and water phase and cream was not properly formed. We reject F1 and F2 batch. F3 batch was rough consistency was observed. Then F4 batch was formulated and problems of small particles of extract. Then F5 batch was formulated but problem related to smell. F6 batch was formulated & there was no problem therefore F6 batch has best formulation & final batch.

When formulating herbal foot cream for cracked heels enhancer you will need to consider the ingredients that promote both foot cream activity and crack heels. Herbal ingredients like

lemon oil, honey, aloe vera are known for their cracking heels properties and can be beneficial in foot cream formulation. This foot cream enhance the feet appearance, dry soles, moisturising effect.

13] CONCLUSION

Based on the present study, it is seen that the herbal foot cream formulated from the materials used to its acceptable in terms of appearance, spreadability, and antimicrobial activity. Additionally, the cream demonstrates good healing properties for cracked heels when regularly used.

14] FUTURE SCOPES

1. Product Innovation and Customization:

Companies are focusing on innovative formulations-such as foot creams with anti-bacterial properties, cooling effects, pain relief, and quick absorption. There is also a trend toward foot creams tailored to specific needs, such as diabetic foot cream or creams for athletes**.**

2. Influence of E-commerce and Digital Marketing

Online platforms and social media influencers play a huge role in promoting skincare products. Foot cream brands can reach a global audience through digital marketing, boosting sales and brand awareness.

3. Demand for Natural and Organic Products

There is a growing preference for natural, herbal, and chemical-free foot creams, made with ingredients such as tea tree oil, aloe vera, coconut oil, and shea butter. Consumers are seeking safe and effective solutions, giving rise to a new segment of eco-friendly and sustainable foot creams.

4. Expanding Market in the Wellness and Beauty Industry

The foot cream market is growing within the broader wellness and beauty sector, with increased focus on self-care and specialized foot treatments.

5. Opportunities for E-commerce and Direct-to-Consumer Sales

Online platforms and direct sales channels offer significant growth opportunities, allowing brands to reach a wider audience and offer personalized product recommendations.[26]

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