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A Review on Formulation and Evaluation on Herbal Moisturizer

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Abstract: *The increasing demand for natural and sustainable skincare solutions has led to the development of herbal moisturizers formulated with bioactive plant extracts. This study explores the formulation and evaluation of a herbal moisturizer enriched with* ***Aloe vera, Turmeric (Curcuma longa), Neem (Azadirachta indica), and Coconut oil (Cocos nucifera)****—each known for its hydrating, anti-inflammatory, and antimicrobial properties. The formulation was designed to provide deep skin hydration, enhance the skin barrier, and prevent dryness without synthetic additives. Physicochemical evaluations, including* ***pH, spreadability, viscosity, and stability studies****, were conducted to ensure optimal consistency and effectiveness. The herbal moisturizer demonstrated significant* ***moisturizing and skin-nourishing effects****, with improved hydration retention and minimal irritation potential. The study suggests that herbal-based formulations offer a safe and effective alternative to synthetic moisturizers, catering to consumers seeking eco-friendly and skin-compatible skincare solutions.*

Keywords: Herbal Moisturizer, Aloe vera, Turmeric, Neem, Skin Hydration, Natural Cosmetics

I. INTRODUCTION

The word ‘Cosmetic’ derived from a Greek word – ‘kosmesticos’ that means to adorn. From that time any materials used to beautification or promoting appearance is known as cosmetic. The word “cosmetics” actually stems from its use in Ancient Rome. They were typically produced by female slaves known as “cosmetae” which is where the word “cosmetics” stemmed from. Cosmetics are used to enhance appearance.[1-3]

Makeup has been around for many centuries. The first known people who used cosmetics to enhance their beauty were the Egyptians. Makeup those days was just simple eye colouring or some material for the body.

Now-a-days makeup plays an important role for both men and women. The importance of cosmetics has increased as many people want to stay young and attractive. Cosmetics are readily available today in the form of Moisturizer, lipstick, perfumes, eyeshadows, nail polishes, hair sprays etc. Other cosmetics like face powder give glow to the skin after applying the moisturizer. Then we have lipsticks, which are applied by many women of all ages. They are made from wax and cocoa butter in the desired amount.[4][5]

Cosmetics like moisturizer, gels, and colognes are used on a daily basis by both women and men. Moisturizer act as a cleanser for the face in many circumstances. More recently anti-ageing moisturizer have been manufactured which can retain younger looking skin for many years. The best cleansing agents are cleansing cream, soap and water. Cosmetic moisturizer serve as a skin food for hard, dry and chapped skin. It mainly lubricates, softens and removes unwanted dirt from the skin.[6][7]

Dry cream are used in the manufacture of soap and gelatin which is used as a base for the skin. The appearance and function of the skin are maintained by an important balance between the water contentstratum corneum and skin surface lipids .

Herbal moisturizer are type of skincare products formulated using natural plant based ingredients and they provide the hydration and nourishment to the skin.[8]

The use of herb cosmeceutical production has the greatly risen in recent years in the personal care system, and there is a high demand for the herbal cosmetics. Herbal products in the cosmetics or in herbs in cosmetics can also be referred as

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botanical origin products in cosmetics. Cosmetics are substances that are applied to the human body with the purpose of cleansing, beautifying, increasing attractiveness, and changing appearance without harming the body's structure or functions. The herbal cosmetics can be Grouped in to following major categories.

- For enhancing the appearance of the facial skin.
- For hair growth and care.
- For skin care, especially in teenager (acne, pimples, wrinkles).
- Shampoos, soap, powder etc.
- Miscellaneous product

Among the above mention categories, skin care will be dominate cosmetically demand in the coming years especially for the professional products used for appearance enhancing facial implants. Cosmetics like moisturizer, gels, and colognes are used on a daily basis by both women and men. Creams act as a cleanser for the face in many circumstances. Treatment with moisturizer aims at maintaining skin integrity and well-being by providing a healthy appearance of the individual.

Fig.1 Moisturizer

Moisturizer: A moisturizer is a cosmetic preparation used for protecting, moisturizing, and lubricating the skin and moisturizer is a liquid that is used for softening the skin, especially for naturally dry skins. They increase the skin's water content by reducing evaporation. Moisturizers are designed to either impart or restore hydration. There are variety of the moisturizer available in the marketmost of the available moisturizers use synthetic adhesives, emulsifiers, perfuming agents, pigments, surfactants and thickeness to form the base. There is extensive need to replace toxic synthetic agent by using natural herbs.

Objectives :

- **Hydrate the skin naturally** – To retain skin moisture using plant based ingredients such as aloe vera which have natural hydrating properties.
- **Nourish with nutrients –** To deliver essential vitamins,minerals and antioxidants to the skin through herbs.
- **Promote Healing –** Tosooth and repair damaged skin helping in recovery of irritated dry skin through use of herbs.
- **Enhance Skin Texture:** Improve elasticity, smoothness, and softness by supporting natural skin functions.
- **Promote Eco-friendly Skincare:** Offer a sustainable alternative to synthetic products by using biodegradable, plant-based ingredients.
- **Minimize Allergic Reactions:** Reduce the risk of adverse reactions with gentle, chemical-free formulations.

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- **Address Specific Skin Concerns:** Target issues like dryness, dullness, or sensitivity with customized herbal blends.

Ideal characteristics of moisturizer:

- It should not be irritating and poisonous.
- It should be non-inflammatory and non allergic.
- It should be easy to spread over the skin and give pleasant feeling during application.
- It should able to leave the skin feeling soft rather than sticky.
- It should reduce dryness and improve dull appearance of skin.

Mechanism of Action of moisturizer:

Water regularly evaporates from the deeper layers of the skin of the human body, a phenomenon known as transepidermal water loss.Human skin naturally maintains a dry, easily shed surface as a barrier against viruses, debris, or harm by managing its water content, while also keeping itself from drying out and becoming brittle and inflexible. Theability of corneocytes to retain moisture is determined by the lipid bilayer that exists between them.[10][11]

Moisturisers alter the rate of water loss, with active substances falling into one of two categories: Occlusives and humectants.

- Occlusives generate a layer on the skin's surface that prevents moisture from escaping. Occlusive the formulation, the stronger the effect. Ointments are more occlusive than aqueous
- Creams, which are more occlusive than lotion. Water loss through the skin is normally about 4-8 g/(m²-h). Petrolatum can minimise thatloss by 50-75% for several hours. When applied to normal skin.The human body naturally produces oils that moisturize using the same process.
- Humectants take up moisture. When the humidity is above 70%, they can absorb this water from the air and moisturise the skin, but more frequently, they suck water from the dermis into the epidermis, drying up the skin. Water is a common ingredient in moisturizers, serving as both a Brief hydrating agent and a conduit for the absorption of some ingredients and the evaporation of the moisturizer.

Advantages:

The main advantage of herbal moisturizer is that it enhances the Skin Dryness without any side effects.

- It reduces the further chances of skin problems.
- This moisturizer helps to fight wrinkles.
- Less greasy compared to other ointments moisturizing help your skin stay young.
- With small quantity they are very effective as compared to synthetic cosmetics.

Disadvantages:

- Herbal drugs have slower effects as compare to Allopathic dosages form Also it requires long term therapy.
- Manufacturing process are time consuming and complicated.
- Most of herbal drugs are not easily available.
- They are difficult to hide taste and odor
- Less stable as compare to ointment.

Uses of moisturizers:

- Moisturizers are used for certain skin conditions such as psoriasis, ichthyosis, xerosis and itching in atopic dermatitis. In most cases, these are the bases or tools of local medicines as in Whitfield's Ointment. They are often combined with moisturizing agents such as salicylic acid and urea .
- Moisturizers are also widely used in sunscreens,antiperspirants,skin cleansers, shaving creams,after shave and hair tonics.
- Moisturizers are used in disposable wipes to prevent skin dryness and wipe dermatitis.

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Topical Drug Delivery: Drugs have been administered to the human body by a variety of routes throughout the past few decades, including oral, sublingual, rectal, parental, topical, inhalation, etc., to cure illnesses. Topical delivery is the application of a drug-containing formulation to the skin to treat a cutaneous disorder or the cutaneous manifestations of a general disease (such as psoriasis), with the goal of containing the pharmacological or the effect of the drug to the surface of the skin or within the skin.Semisolid formulations in all their variety predominate the system for topical delivery, but foams, spray, medicated powders, solutions, and even medicated toothpaste can also be used.

Benefits Of Using Topical Drug Delivery:

- Convenient and simple to use.
- Prevent first pass metabolism.
- Alternative to oral administration.
- Fewer risk for gastrointestinal difficulties.
- Fewer risk of abuse.

Basic Structure Human Skin:

The skin is the largest organ of the body, making up 16% of bodyweight, with a surface area of 1.8m². There are three structural layers to the skin: the epidermis, the dermis and subcutis. Hair, nails, sebaceous, sweat and apocrine glands are regarded as derivatives of skin. The epidermis is the outer layer, serving as the physical and chemical barrier between the interior body and exterior environment; The dermis is the deeper layer providing the structural support of the skin, below which is a loose connective tissue layer, the subcutis or hypodermis which is an important depot of fat.

SKIN TYPES:

They are divided into two types:

Oil in water (O/W): Moisturizer consisting of small oil droplets dispersed in a continuous phase, and an emulsion in which the oil is dispersed in the form of droplets through the water phase is called oil in- water (O/W) emulsion.

Water in Oil (W/O): Moisturizer consisting of small water droplets dispersed in a continuous oil a step If the dispersed phase is water and the dispersion medium is oil, the emulsion is water-in- oil (W/O) type.

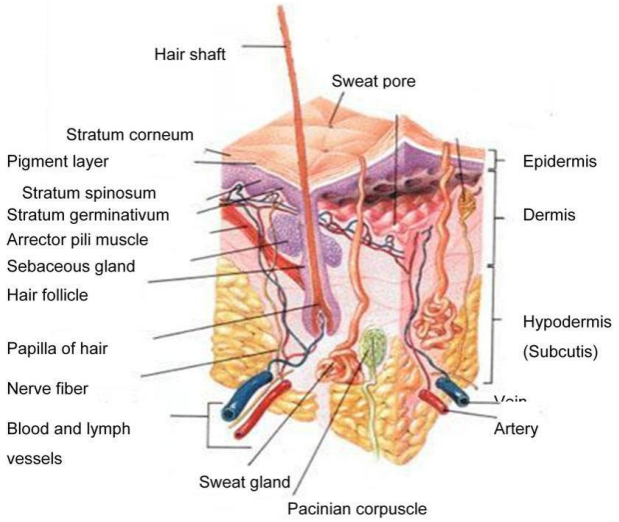

Fig.2. CROSS SECTION OF SKIN

Epidermis: The epidermis is the skin's most superficial layer, made up of stratified keratinized squamous epithelium that varies in thickness across the **body.**[13][14]It is thickest on the palms of the hands and the soles of the feet. The epidermis lacks blood vessels and nerve endings, but its deeper layers are soaked in interstitial fluid from the dermis,

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which gives oxygen and nutrients and drains away as lymph. Moving from the lower from the dermis, which gives oxygen and nutrients and drains away as lymph. Moving from the lower layer upward to surface ,the four layer of epidermis are:

- Stratum basale (basal or germinativum cell layer)
- Stratum spinosum (spinous or prickle cell layer)
- Stratum granulosum (granular cell layer)
- Stratum corneum (horny layer)

Dermis:

The dermis is tough and elastic layer varies in thickness, ranging from 0.6 mm on the eyelids to 3 mm on the back, palms and soles. It is found below the epidermis and is composed of tough, supportive cell matrix. Two layers comprise the dermis:

- A thin papillary layer
- A thicker reticular layer

The dermis is made up of fibroblasts, which produce collagen, elastin and structural proteoglycans, together with immune competent mast cells and macrophages. Collagen fibres make up 70% of the dermis, giving it strength and toughness. Elastin maintains normal elasticity and flexibility while proteoglycans provide viscosity and hydration. Fibroblast , macrophages and mast cells are the cells found in dermis.

Subcutis (Hypodermis): This is made up of loose connective tissue and fat, which can be up to 3 cm thicken the abdomen. It protects the body from external trauma and insulates from cold. It acts as a main storage site for fat and therefore energy. There are many blood and lymphatic vessels and nerves passing through the subcutis.

Functions of skin:

- Prevents loss of moisture.
- Provides a protective barrier against mechanical, thermal and physical injury and hazardous substances.
- Protection against infection and chemical's.
- Protection against Ultraviolet radiations.
- Maintaining regular body temperature
- Receiving stimuli from outside world.
- Absorption and excretion.
- Nutrients and water storage.

II. LITERATURE SURVEY

Sahu et al.(2016).investigated the hydrating and soothing properties of Aloe Vera gel.**Study Findings**: Aloe Vera significantly improved skin hydration and reduced irritation in individuals with dry skin conditions. The gel was found to be particularly beneficial for treating dry, irritated, and sensitive skin, demonstrating its effectiveness as a natural moisturizer. Aloe Vera's high content of vitamins, minerals, and amino acids contributed to its skin-soothing and healing effects.**Conclusion**: Aloe Vera is effective in providing moisture and calming inflamed or irritated skin.

Urdaneta et al. (2013).examined the moisturizing properties of glycerin in comparison to other humectants.**Study Findings**: Glycerin, derived from plant oils, was shown to be a highly effective humectant that attracted moisture from the environment into the skin, enhancing hydration. When included in herbal moisturizers, it helps to maintain skin moisture and improve skin texture.**Conclusion**: Glycerin plays a critical role in enhancing the moisture retention ability of herbal moisturizers.

Tavakkol et al. (2018).explored the anti-inflammatory properties of chamomile in skincare.**Study Findings**: Chamomile extract was shown to effectively reduce skin inflammation and irritation. It contains compounds like chamazulene and apigenin, which are known for their ability to soothe the skin and relieve conditions such as eczema

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and dermatitis.**Conclusion**: Chamomile is an excellent ingredient for treating sensitive skin and inflammation, making it a valuable addition to herbal moisturizers.

Zhang et al. (2015).studied the impact of jojoba oil on skin moisture and elasticity.**Study Findings**: Jojoba oil, due to its structure being similar to human sebum, provides deep hydration and helps regulate skin oil production. The oil improved skin elasticity and moisture retention, making it particularly effective for both dry and oily skin types. It also demonstrated anti-inflammatory properties that helped calm irritated skin.**Conclusion**: Jojoba oil is a versatile ingredient that can improve hydration and skin balance, benefiting a wide range of skin types.

Rattanathongkom et al. (2017).assessed the antioxidant effects of green tea extract in skincare.**Study Findings**: Green tea extract, rich in polyphenols like catechins, was found to protect the skin from oxidative damage caused by UV radiation. It also contributed to better skin hydration and helped reduce the appearance of wrinkles and fine lines, making it an effective anti-aging agent in moisturizers.**Conclusion**: Green tea extract is highly beneficial for protecting the skin from environmental stressors and promoting hydration, with added anti-aging benefits.

Bopape et al. (2020).investigated the moisturizing properties of shea butter in skincare formulations.**Study Findings**: Shea butter, which is rich in fatty acids, particularly oleic acid and stearic acid, helped improve skin hydration and elasticity. It also acted as an occlusive agent, sealing moisture in the skin and preventing dehydration. Regular use of shea butter moisturizers was found to reduce roughness and improve skin softness.**Conclusion**: Shea butter is highly effective in deeply moisturizing the skin and maintaining long-lasting hydration.

Otero et al. (2019).evaluated the skin-healing and regenerative properties of rosehip oil.**Study Findings**: Rosehip oil, rich in essential fatty acids and vitamin A, was found to support skin regeneration and repair, making it useful for scar healing and treating dry skin conditions. It helped improve skin elasticity and reduced the appearance of fine lines and wrinkles.**Conclusion**: Rosehip oil is an excellent ingredient for skin regeneration, helping to repair and hydrate the skin, and is particularly beneficial for aging or damaged skin.

Patel et al. (2015).compared herbal moisturizers with conventional moisturizers on individuals with sensitive skin.**Study Findings**: Herbal moisturizers containing aloe vera, chamomile, and jojoba oil were found to be significantly less irritating than synthetic moisturizers. They helped improve skin hydration without causing redness, itching, or allergic reactions, which were more common in products containing artificial fragrances or preservatives.**Conclusion**: Herbal moisturizers are gentler and safer for sensitive skin, making them a preferable option for individuals prone to allergic reactions or skin irritation.

Mohd Ali et al. (2020).investigated the stability of herbal ingredients in cosmetic formulations.**Study Findings**: Herbal moisturizers, while effective, often face challenges related to the stability of natural ingredients. Certain components, like aloe vera and chamomile, can degrade over time, affecting the overall efficacy of the product. To enhance stability, researchers have suggested improved preservation methods, such as the use of natural preservatives and encapsulation techniques.**Conclusion**: While herbal moisturizers offer many benefits, manufacturers must address the stability issues associated with plant-based ingredients to ensure long-term effectiveness.

Draelos (2015).conducted a clinical trial to assess the efficacy of jojoba oil as a moisturizer.**StudyFindings**: The study found that jojoba oil significantly improved skin hydration and elasticity in participants with dry skin. It helped restore the skin's natural barrier function and prevented water loss, making it an effective ingredient for moisturizing.**Conclusion**: Jojoba oil is a highly effective moisturizer that not only hydrates the skin but also enhances skin barrier function.

III. INGREDIENTS USED IN HERBAL MOISTURIZER

Aloe Vera:

Synonyms: Aloe, Musabbar, Kamari.

Biological source: Aloes are the Appearance: A perennial, succulent plant with thick, fleshy, and spiny-edged leaves.

Height: Grows up to 60–100 cm (24–39 inches) in height.

Leaves: Long, lance-shaped leaves containing a transparent gel and a yellow latex. juice obtained by transversely cut leaves of various species of

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Fig.3 Aloe vera

Aloe barbedensis Miller
Aloe perryi Baker
Aloe spicata Baker
Aloe Africana Miller
Family: Liliaceae
Chemical constituents: Anthracene glycosides(11 to 4),Barbaloin, Isobarbaloin, aloe-emodin and aloesone.Resins (resinotannol +cinnamic acid or coumaric acid).Also contains Aloetic acid, homonataloin etc.
Characteristics:
Appearance: A perennial, succulent plant with thick, fleshy, and spiny-edged leaves.
Height: Grows up to 60–100 cm (24–39 inches) in height.
Leaves: Long, lance-shaped leaves containing a transparent gel and a yellow latex.
Colour: colour of leaves is green
Uses :
Purgative, Laxative
Used for Ulcers and burns
Aloe found many uses in cosmetics nowadays like, Hair conditioner, Hand and body lotion, Moisture base cleanser, shampoo and facewash
Extraction of Aloe Vera :
Aloe vera leaves must first be collected from a botanical garden, cleaned with distilled water.
Then the outer portion of the leaf must be chopped longitudinally with a knife.
Then, we took out colourlessparenchymatous tissue and placed it in a 400 ml beaker.
Next, using a stirrer mixer, we must stir the aloe vera gel.
After that, it was filtered to remove various contaminants using muslin cloth.
Finally, cover the beaker with filter paper or silver foil to protect it from microbial development and other environmental effect

Neem:
The use of neem as a medicinal herb is fairly common. Because of their antibacterial, anti-inflammatory, antioxidant, and Therapeutic characteristics, neem leaves and their extracts are Frequently utilised. Fatty acids, vitamins, and minerals that are Essential for good skin and hair are abundant in this wonderful Herb. It contains medicinally effective active ingredient including nimbidin, nimbolide, and azadirachtin that can help youtreat any skin andhair issue.

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Fig.4. NEEM

Biological sources: It is consist of Leaves and other aerial parts Of Azadirachtaindica.
Family: Meliaceae
Physical Characteristics :
Tree Structure: Evergreen tree growing up to 15–20 meters tall.
Leaves: Pinnate, bright green, and used for medicinal purposes.
Flowers: Small, white, and fragrant.
Fruit: Oval-shaped drupe with a bitter seed used for oil extraction
Chemical constituents: Azadirachtan, Nimbin,Nimbidin,Nimbidol,Salannin ,Quercetin , etc.
Uses: anti fungal, anti bacterial,anti-inflammatory, antiarthritic, antipyretic, hypoglycemic, antigastric Ulcer, and antitumouractivities, etc.

Extraction of Neem :
Fresh neem leaves were weighed, sterilized (1% sodium hypochlorite), and were washed Thrice with sterile distilled water.
Leaves were ground in mortar and mixed with 10 mL sterile distilled water. The mixture was allowed to stand for 4 hours .
The homogenate was filtered with Whatman filter paper .Filtrate was plated on nutrient agar to check its sterility.
If minimum inhibitory concentration (MIC) showing no growth of microbes then use it for further experiment.

TURMERIC:

Fig.5. Turmeric

It is a popular ingredient in herbal moisturizers due to its numerous skin benefits, That'swhy turmeric is commonly used in such products.
Turmeric is as perennial herbaceous plant.The leaves are alternate and arranged in two rows.
Synonyms: Haldi, Haridra, Indian saffron
Biological Name: curcuma longa

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Biological Source: Turmeric consists of dried as well as, fresh rhizomes of the plant Curcuma longa Belonging to the family Zingiberaceae.

Family: zingiberaceae

Geographical source: Native to southern India and Indonesia, turmeric is widely cultivated on the mainland and in the islands of the Indian Ocean.

Macroscopic Characters:

Primary rhizomes ovate , oblongs or pyriform and are called in commerce as bulb or round turmeric where as the lateral rhizomes are more cylindrical and often short branched and are they are called long turmeric.

Physical Characteristics:

Colour: Bright yellow to orange, attributed to curcumin, its primary bioactive compound.

Odor: Warm, earthy, and slightly peppery

Taste: Bitter, slightly pungent, and astringent

Form: Commonly found as a dried powder, fresh rhizomes, or in extracted forms (oil or curcumin).

Phyto-constituents: Turmeric contains a yellow coloured substance known as curcuminoids. The chief component of curcuminoids is known as curcumin (50-60%). It also contains volatile oil,resin, camphor, camphene etc.

Activity : The chief constituent of Turmeric is curcumin which acts as a superoxide scavenger & as a singlet oxygen quencher. Therefore, the anti-ageing property of Turmeric is mainly due to the curcumin.

Uses :

Improve Skin health.
Fight inflammation.
Provide glow and luster to skin.
Reduce tanning of skin.
Reduce dark circles.
Protect against environmental damage.

Extraction of Turmeric -

Turmeric rhizomes were procured from a local food market.
1g turmeric powder was dissolved in 10 ml distilled Water and shaken in a 250 ml volumetric flask.
Heated in a water bath at 80°C to 100°C for 5 to 10 Minutes.
Then filtered using muslin cloth and turmeric extract was obtained.

Shea Butter:

Fig.6 Shea Butter

Biological Source: Shea butter is obtained from the seeds (nuts) of Vitellaria paradoxa (formerly Butyrospermum parkii), a tree belonging to the family Sapotaceae. It is primarily found in the savanna regions of Africa, especially in West Africa.

Family: Sapotaceae

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Geographical Distribution:

The shea tree is widely distributed across West Africa, particularly in countries such as Ghana, Nigeria, Burkina Faso, Mali, and Ivory Coast. It also grows in parts of East Africa, including Uganda and Sudan.

Chemical Constituents:

Shea butter is rich in fats and contains the following components**:**

1.Triglycerides: Comprising oleic acid (40–60%), stearic acid (20–50%), palmitic acid (3–9%), and linoleic acid (3–11%).

2.Unsaponifiable Matter: Includes compounds such as tocopherols (vitamin E), triterpenes (lupeol, amyrin), sterols, phenols, and kariten(anti-inflammatory properties)

3. Cinnamic Acid Esters: Mild UV protection.

Characteristics of Shea Butter:

Physical Properties:

Texture: Solid at room temperature but melts upon skin contact.

Colour: Varies from ivory to pale yellow, depending on processing methods

Odor: Nutty or earthy aroma, more pronounced in unrefined shea butter.

Shea butter is a highly beneficial ingredient often used in the formulation of herbal moisturizers due to its versatile properties. Here's how it contributes to such formulations:

Natural Emollient

Shea butter is rich in fatty acids, such as oleic, stearic, linoleic, and palmitic acids. These help soften and smooth the skin, making it an excellent base for moisturizers.

Skin Hydration

It acts as an occlusive agent, locking in moisture and preventing transepidermal water loss. This makes it ideal for dry and dehydrated skin.

Anti-inflammatory Properties

Shea butter contains compounds like cinnamic acid, which help reduce redness, irritation, and inflammation, making it suitable for sensitive skin.

Healing and Protective Effects

It is rich in vitamins A and E, which promote skin healing and protect against environmental stressors like UV rays .

Extraction of Shea Butter:

Modern Extraction Process

Mechanical Extraction

Step 1: Kernels are cleaned and dried.

Step 2: They are pressed in a screw press or hydraulic press to extract the oil.

Step 3: The extracted oil is clarified by heating and filtering.

This method produces higher yields and is faster than traditional methods.

Chemical Extraction

Step 1: Shea kernels are treated with a solvent like hexane to extract the oil.

Step 2: The solvent is evaporated, leaving behind refined shea butter.

This method may compromise some natural properties of shea butter.

IV. FORMULATION OF HERBAL MOISTURIZER

Heat liquid paraffin and shea butter to 75°C in a Borosilicate glass breaker (oil phase).

In a separate Beaker, dissolve borax and methylparaben in distilled water, warming it to 75°C using a water bath (aqueous phase).Stir until all solid particles Dissolve.

Gently combine the heated aqueous phase With the heated oily phase, stirring continuously.

Add water drop by drop into the oily portion while Stirring vigorously .

Allow the melted mixture to cool until the desired consistency is achieved.

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Once the phases are combined, promptly incorporate accurately weighed Aloe Vera, neem, and turmeric extracts into the emulsion while stirring continuously to achieve uniform dispersion and a smooth moisturizer consistency.

Following moiturizer formation, add rose water for fragrance, ensuring thorough mixing to blend all ingredients seamlessly.

The resulting moisturizerwas allowed to cool to room temperature with intermittent stirring to prevent phase separation. Once cooled, the moisturizer transferred to sterile Containers. Store the moisturizer in the refrigerator at 5°C.

Formulation Table:

Ingredients	Quantity	Role of ingredients
Turmeric extract	2.8 ml	Anti-inflammatory
Aloevera extract	2.8 ml	Soothing effect
Neem oil	0.8 ml	Antibacterial
Shea Butter	5g	Skin softening
Liquid paraffin	18 ml	Emollient
Borax	0.4g	Emulsifier
Methyl paraben	0.02ml	Preservative
Distilled water	q.s	Vehicle
Rose oil	q.s	Fragrance

V. EVALUATION TESTS OF MOISTURIZER

1. Physical evaluation: This is basically used to check colour, odour, texture and stability of moisturizer.

2. Irritancy: This is used to check the quality of materials as well as chemicals and whether it is harmful to skin / mucosal or not. First of all, we have to mark area on left hand (dorsal Surface). After that we have to applied formulation of cream to that area and time was noted.Then we have to leave formulation for few minutes by this we can checked for irritancy.

3. Spreadability: The cream sample was applied between the two glass slides and was compressed between the two glass slide to uniform thickness by placing100 gm of weight for 5 minutes then weight was added to the weighing pan. The time in which the upper glass slide moved.

S=weight tight to upper slide

L=length moved on the glass slide

T= time take

4. pH test: This is basically refers to acidity levels of substances. The normal value of pH (moisturizer) is pH 4-7. This test was measured either by using digital pH meter or by pH paper.

5. Phase separation: This test is basically checked in 24 hr to 30 hr. For this we have to put moisturizer in a closed container at a temperature (30 – 80 °C). Keep this formulation away from light.

6. Viscosity: This test is basically used to check or predict how materials used in moisturizer will behave in the real world. It is mainly used to check efficacy.

7. Greasiness: This test is basically used to check nature of cream either oily or greased. According to result we can say that all formulations were non-greasy.

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Marketed Product

Fig.7 Mamaearth.

Fig.8 plum.

Fig.9 Biotique

VI. FUTURE SCOPE

1. Growing Demand for Natural Skincare

Consumer Awareness: Rising awareness about the harmful effects of synthetic chemicals (e.g., parabens, sulfates) is driving the shift towards herbal and organic alternatives.

Preference for Clean Beauty: Herbal moisturizers, made from plant-based ingredients, align with the global trend of "clean beauty," emphasizing transparency and non-toxic formulations.

2. Expansion of Functional Skincare

Enhanced Benefits: Future herbal moisturizers are expected to incorporate multi-functional properties, such as anti-aging, sun protection, and skin barrier repair.

Customization: Advances in biotechnology could enable the development of personalized herbal formulations tailored to specific skin types and concerns.

3. Research and Development Innovations

Extraction Techniques: Advanced extraction methods (e.g., supercritical CO_2 extraction) can maximize the potency and stability of active herbal ingredients.

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4.Eco-Friendly and Sustainable Practices

Sustainability Focus: The use of biodegradable packaging and sustainably sourced herbal ingredients will appeal to eco-conscious consumers.

VII. CONCLUSION

Herbal moisturizers offer a natural, safe, and effective solution for skin hydration and care, making them a popular choice in modern skincare. Their use of plant-based ingredients like aloe vera, shea butter, and natural oils provides multifunctional benefits, including hydration, anti-inflammatory effects, and antioxidant protection. Unlike synthetic products, herbal moisturizers are less likely to cause irritation or adverse reactions, making them suitable for all skin types, including sensitive skin. However, it's essential to choose formulations that match individual skin needs and patch-test products to ensure compatibility.

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