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Review Article

From Cream Categorization to Wound Healing: A Comprehensive Review of Cosmetic Innovations

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Abstract

The burgeoning concept of "Cosmeceuticals" represents a fusion of pharmaceuticals and cosmetics, offering a novel approach to skin health and beauty. This review explores the diverse landscape of cosmeceuticals, emphasizing their categorization into skin, hair, and other cosmeceutical products. In particular, the article delves into the formulation and functionalities of skin care and hair care cosmeceuticals, shedding light on the intricate balance between pharmaceutical efficacy and cosmetic appeal. The exploration extends to the categorization of creams, a vital component of cosmeceuticals, emphasizing their role in topical drug delivery. The advantages and disadvantages of this delivery system are examined, providing insights into its unique attributes and challenges. Furthermore, the review investigates the physiology of the skin, crucial for understanding the efficacy of cosmeceutical products. A significant portion of the article focuses on the ingredients commonly used in skin creams, offering a comprehensive overview of water, oils, waxes, fats, and other key components. The discussion is extended to alternative medicines and creams for wound healing, incorporating insights from Ayurveda and contemporary medical formulations. Ayurvedic herbs, such as aloe vera, peppermint, and turmeric, are highlighted for their potential in promoting skin health and wound healing. The review concludes by addressing relevant methods of preparing creams for wound healing, emphasizing the importance of o/w and w/o emulsions. Additionally, key evaluation parameters for creams, including pH determination, physical appearance, and spreadability, are discussed to provide a comprehensive understanding of the quality and efficacy of cosmeceutical formulations. This review contributes to the evolving field of cosmeceuticals, offering a synthesis of pharmaceutical and cosmetic innovations that pave the way for advanced skin care practices.

Keywords: Cosmeceuticals, Skin care, Hair care, Topical drug delivery, Emulsion creams, Wound healing, Ayurvedic medicines

1. INTRODUCTION :

"Cosmeceuticals" is a new, trendy idea that has been making waves in the cosmetics industry recently. In the natural personal care sector, cosmetics is the most popular category. Cosmeceuticals are essentially nothing more than pharmaceuticals and cosmetics combined. In essence, pharmaceuticals are drug products. Drugs are defined by the D&C Act as substances intended to influence the structure or any function of the human or animal body, or to be used in the diagnosis, cure, mitigation, treatment, or prevention of disease. The term "cosmetic" refers to any item intended to be sprayed, poured, rubbed, sprinkled on, introduced into, or applied to the human body or any part of it for purposes of cleaning, beautifying, or Enhancing appearance or making changes to the appearance. Any items meant to be used as a component of cosmetics are also included.

1.1 Cosmeceuticals are cosmetic products designed to improve skin health and beauty that contain pharmaceutical activity ingredients. A product classified as cosmeceutical has an activity meant to prevent or treat a mild skin abnormality. The following could be used to describe cosmetics: [1, 2.]

The product can be used on skin that is normal or nearly normal and has pharmaceutical activity. For mild skin conditions, the product should have a clear benefit (cosmetic indication). Since the skin condition is not severe, the product's risk profile ought to be extremely low.

1.2 Categorization of cosmetic products: The terms "cosmeceutical" and "active cosmetics," "nutricosmetics," "performance cosmetics," "functional cosmetics," and "dermaceuticals" are comparable. The definition shared by all of these terms is that cosmeceuticals are products that fall somewhere between pharmaceuticals and cosmetics; they are not pure cosmetics or drugs. Products for cosmetics are divided into the following categories:

A) Skin cosmeceutical product.

B) Hair cosmeceutical product.

C) Other cosmeceutical product.

A. Skin Care Cosmeceuticals Products: In daily grooming, cosmetics and skin care products are widely used. The largest organ in the body, skin shields the internal environment from harmful radiation from the outside world, air pollution, toxic materials, and the ageing process itself, which damages the skin's underlying structures. Using makeup or other beauty products won't make the skin heal or stay in its current state. Because they contain certain functional ingredients, cosmetics products can have medicinal or drug-like effects on the biological functioning of the skin. Skin care and cosmeceutical products improve the skin's look, feel, and functionality.

B. Hair Care Cosmeceuticals Products: Unlike all other land mammals, humans have direct control over the appearance of their hair, which is one of their physical characteristics. Hair colour, style, and maintenance have a big impact on how people feel about their bodies and how they present themselves. Henna hair colouring and clay hair setting were two of the first hair cosmetic techniques used in ancient Egypt. Numerous ointments and tonics were prescribed in ancient Greece and Rome for the treatment of scalp ailments as well as for hair beauty. Topical application of hair and scalp cosmetics is used to treat hair. They must be safe for the skin, scalp, hair, and mucous membranes, and under normal use settings, they should not have any harmful effects, either local or general. However, they cannot be used therapeutically. Special care chemicals, conditioning agents, and hair growth boosters are found in hair cosmeceutical products. Fatty substances, hydrolyzed proteins, cationic polymers, silicons, and quaternized cationic derivatives are a few of the constituents. Thus, the antifungal medicines that are currently used as antidandruff components are ketoconazole, zinc pyrithione, and octopirox. 2, 4-Diamino-pyrimidine-3-oxide is a cosmetic drug that functions as a topical hair growth stimulant and is linked to minoxidil; it is used to reduce inflammation and perifollicular fibrosis.

C. Other Cosmeceutical Products: Almost entirely absent subcutaneous fat and oil glands in the area beneath the eyes. Protection and an abundance of moisture to nourish and heal the sensitive skin are essential for reducing the signs of premature ageing. As we age, our skin gets thinner, drier, and harsher. Overexposure to the elements causes the development of this disorder. In this process, many topical products act as intermediates. Gentle ingredients that interact with cells beneath the skin's surface to operate from the inside out should be used in products meant for this area without causing eye irritation. Such cosmeceutical eye creams do exist, and they provide the skin with healthy nutrients and natural emollients.[2.]

In addition to butcher's broom, calendula, and α-bisabolol, an active component of chamomile, to soothe inflamed skin, the other useful ingredients include antioxidants like vitamins A, C, and E, green tea, tiare flower, and Ginkgo biloba. The main component, yeast, smoothes out wrinkles and protects the skin from further harm. Squalene, carrot extract, wheat germ and corn oil, and other ingredients are typically found in eye wrinkle creams, which help prevent the appearance of ageing. Aosain, an algal extract from seaweed found in eye firming fluid, aids in the preservation of the skin's elasticity. Lawlor created dental care compositions that are helpful for applying a thick layer to the oral cavity's surfaces for preventive, therapeutic, and cosmetic purposes.

2. SKIN CARE COSMECEUTICAL PRODUCTS

These days, cosmetics are widely accessible in the form of lotions, lipsticks, scents, eye shadows, nail polishes, hair sprays, and more. After using the base cream, other cosmetics like face powder give the skin a radiance. Then there are lipsticks, which a lot of women of all ages apply. The appropriate amount of wax and cocoa butter are used to make them. Both men and women use cosmetics like colognes, gels, and lotions on a daily basis. In many situations, creams serve as a facial cleanser. Anti-aging treatments that help keep skin looking younger for years have been produced more recently. Water, soap, and cleansing cream are the greatest cleaning agents. For dry, chapped, and hard skin, cosmetic creams act as a skin nourishment. It primarily lubricates, softens, and cleanses the skin of undesirable filth. Vaseline and Lanolin are two common brands of fat creams that are utilised. Dry creams are utilised in the production of soap and gelatin, which serves as the skin's foundation.[3]

2.1 Topical Drug Delivery

Drugs have been administered to the human body by a variety of routes during the past few decades, including oral, sublingual, rectal, parental, topical, and inhalation. Semisolid formulations in all their diversity dominate the system for topical delivery, but foams, sprays, medicated powders, solutions, and even medicated adhesive systems are in use. Topical delivery can be defined as the application of a drug-containing formulation to the skin to directly treat cutaneous disorders or the cutaneous manifestations of a general disease (e.g., psoriasis) with the intent of containing the pharmacological or the effect of drug to the surface of the skin or within the skin.[4]

2.2 Advantages of topical route of drug administration

1. Beneficial for local delivery of agents, especially those that, if given systemically, would be harmful.
2. Applied to the majority of ophthalmologic and dermatological preparations.
3. The third is avoiding first pass metabolism.
4. Easy to use and apply with convenience.
5. There will be no gastrointestinal incompatibility.
6. Simple drug discontinuation as necessary.
7. Medication supplied just to a certain location

8. Avoiding the hazards and inconveniences associated with administration as well as the various circumstances absorption through enteral or parenteral routes, such as pH variations, the presence of enzymes, gastric emptying time, etc.
9. Offers limited therapeutic window and short biological half-life for medication utilisation.
10. Improved adherence from patients.
11. Fit for use as a self-medication.
12. Prevents variations in medication dosages and hazards.
13. Offers efficacy at low dosages and with continuous drug administration.
14. A broad application scope in comparison to alternative routes.
15. A better pharmacological and physiological reaction.

2.3 The drawbacks of administering drugs topically

1. Most medications are not absorbed through the skin or mucosal membranes because of their high molecular weight and limited lipid solubility.
2. The potential for localised skin irritation where the product is applied.
3. Some drugs and/or excipients may cause contact dermatitis.
4. Only applicable to medications whose effect depends on a low plasma concentration
5. The medications may be denatured by enzymes in the skin. [5, 6]

3. PHYSIOLOGY OF SKIN

Epidermis: The stratified keratinized squamous epithelium that makes up the epidermis, the topmost layer of skin, varies in thickness depending on the area of the body. The palms of hands and the soles of feet have the highest concentration of it. The epidermis lacks blood vessels and nerve endings, but the dermis's interstitial fluid, which supplies nutrition and oxygen and escapes as lymph, is submerged in its deeper layers.

Dermis: The dermis is elastic and hardy. It is made of connective tissue, and the matrix is made up of collagen and elastic fibres entwined. Stretch marks, also known as persistent striae, are a result of the rupture of elastic fibres in the skin, which can happen during pregnancy or after obesity. Wrinkles appear as a result of the ageing process because collagen fibres lose their capacity to bind water and provide the skin its tensile strength. The primary cells in the dermis are mast cells, fibroblasts, and macrophages. Varying levels of adipose (fat) tissue and areolar tissue lie under its deepest layer.

Subcutaneous gland: These are made up of secretory epithelial cells that come from the hair follicle's source tissue. They are found in the skin of every area of the body, with the exception of the palms of the hands and the soles of the feet, and they exude an oily material called sebum into the hair follicles. The skin of the groyne, axillae, scalp, and face has the highest concentration of them. Particularly in areas where one kind of superficial epithelium gives way to another, including the lips, eyelids, nipple, labia minora, and glans penis, sebaceous glands exist that secrete sebum straight onto the surface without the assistance of hair follicles.[7]

Functions of skin

1. Protection
2. Regulation of body temperature
3. Formation of vitamin D
4. Cutaneous sensation
5. Absorption
6. Excretion
7. Wound healing [7]

4. CREAMS

The topical medications that can be applied to the skin are called creams. Creams are characterised as thick liquid or semi-solid dosage forms that vary in viscosity depending on the type of oil and water they include.[8] Creams serve a variety of cosmetic functions, including cleansing, beautifying, enhancing appearance, protecting, and medicinal. These topical preparations are intended to deliver drugs locally, into the mucous membrane or the skin's underlying layer. These products are intended to be applied topically to improve the drug's site-specific delivery to the skin for skin conditions [9]. Since creams are made using methods developed in the pharmaceutical business, they are regarded as pharmaceutical products. Both medicated and unmedicated creams are widely used to treat dermatoses and other skin problems. People can utilise creams that are allopathic, herbal, or ayurveda based on the demands of their individual skin issues. They include one or more drug ingredients that have been diluted or spread in an appropriate foundation. Based on phases, creams can be categorised as either w/o or o/w types of emulsion. Traditionally, semisolid formulations that are either oil-in-water (vanishing cream) or water-in-oil (cold cream) have been referred to as "cream" [10].

4.1 Types of skin cream

They are divided into two types:

1. Oil-in-Water (O/W) creams are made up of tiny oil droplets distributed in a continuous phase. An oil-in-water (O/W) emulsion is one in which the oil is distributed as droplets throughout the aqueous phase.
2. Water-in-Oil (W/O) creams, which consist of tiny water droplets scattered throughout an oily phase. The emulsion is of the water-in-oil (W/O) type when the dispersed phase is water and the dispersion medium is oil.

4.2 Classification of creams

All the skin creams can be classified on different basis:

1. Based on purpose, such as cleaning, massage, foundation, etc.
2. Based on attributes, such as vanishing or cooling creams, among others.
3. Based on the kind or character of the emulsion.

Types of creams according to function, characteristic properties and type of emulsion:

1. Emulsion makeup (o/w): a) Disappearing creams. b) Creams for foundation.
2. Emulsion-free cleansing lotion, cleansing cream, and cleansing milk
3. Emulsion-free winter cream: a) Moisturisers or cold creams.
4. General purpose and all-purpose creams.
5. Massage and night creams.
6. Protective cream for skin.
7. Body and hand lotions.

- **Make-up cream-**These are primarily o/w emulsions. This cream-based product gives skin a moisturised, silky look that can be either matte or radiant. It gives skin nourishment, a dewy sheen, and is essentially sweat-resistant.
- **Vanishing creams:** they appear to vanish when applied to the skin, these creams are sometimes known as disappearing creams. Stearic acid is the foundation of these compositions. The cream dries out the skin and leaves behind a sticky, dry residue layer after use. This is the reason these are especially used in hot areas where skin perspires.
- **Foundation creams:** These creams are used as a base for makeup foundations. It serves as a foundation that adheres to makeup powders. They give the skin, which is neither too dry nor too oily, an emollient effect as well as environmental protection. Multicoloured makeup is used on the face to cover up imperfections, alter skin tones, and create a consistent, even tone that resembles the complexion.
- **Cleansing creams:** These lotions are used to wash the body, maintain personal cleanliness, and enhance appearance, all of which are crucial for makeup application. Makeup, grime, and oil can be removed from the face and neck with cleansing creams or lotions.
- **Winter creams:** These are w/o formulations, meaning that there will be more oil than water in the formulation. The primary usage of these creams is for dry, cracked skin.
- **Cold cream:** Moisturiser or moisturising cream is another name for cold cream. There must be an emollient effect to cold cream. When used, it should feel cool to the touch and leave a non-occlusive oil film on the skin.
- **Creams for all purposes and general use:** These are used more often now than they were in the past. These creams spread easily over the skin and have a somewhat oily but non-greasy texture. Additionally, this can be used as a night cream, nourishing cream, protective cream to prevent or treat sunburns, and treatment for regions of skin that have become roughened.
- **Massage or night creams:** These creams are primarily used to treat dry skin or to nourish the skin. Night creams are primarily defined as creams that are typically applied to the skin and left for a few or several hours during the night. Massage creams are emollients that are applied to the skin and work as a massage oil.
- **Creams for skin protection:** These creamy, thick-textured products are designed to give the skin a consistent, undetectable layer of protection. It assists in preserving the skin's protective layer against substances that could cause skin irritation (such as contact dermatitis and occupational dermatitis). preserves the equilibrium of normal to mixture skin and fortifies the skin's inherent qualities.
- **Body and hand creams:** One of the earliest body parts to age is the hands. We frequently wash our hands multiple times a day, removing moisture from them. Using cream keeps the skin looking youthful while protecting and softening it. We require oil to keep the skin on our hands and fingers supple and to keep it from chapping and cracking. Using hand creams that replenish a significant amount of oil is a sensible choice. More often than not, it is applied to the hands.

4.3 Advantages of topical drug delivery system:

i. It's the simplest approach to administer a medication.
ii. First-pass metabolism is avoided.
iii. Topical formulations are highly helpful for rectal and vaginal medication administration.
iv. No incisions are made.
v. A high degree of patient satisfaction is provided.
vi. It is simple to stop taking medication as needed.
vii. Preventing gastrointestinal incompatibility
viii. In comparison to a traditional method, it is a safe and efficient way to deliver medication molecules at lower dosage.

4.4 Disadvantages of topical drug delivery system:

i. The medication or its excipients may cause dermatitis or skin irritation.
ii. Because most medications are poorly fat soluble and have a large molecular weight, they cannot be absorbed through the skin or mucous membranes.
iii. Very sluggish absorption
iv. It is only appropriate for medications whose actions require a very low plasma concentration [14].

5. GENERAL INGREDIENTS USED IN SKIN CREAMS

The raw materials which are used in a manufacturing of skin creams include:

5.1 Water: In every cream recipe, this is the most significant and frequently utilised raw ingredient. These are the most accessible and affordable. Water is a solvent used in skin creams to dissolve other components. Creams are prepared with water, which is devoid of all pollutants, toxins, germs, and other contaminants. Depending on the amount of water used in the formulation, water can also create emulsions. These can be referred to as water-in-oil or oil-in-water emulsions, depending on the amounts of water and oil phase utilized.[15]

5.2 Oil, fats and waxes: A vital component of creams is made up of oil, fats, waxes, and their derivatives. In accordance with their respective functions, oils serve as preservatives, thickeners, emulsifiers, and perfumes. There are two types of oil: glyceride and mineral.

5.3 Mineral oil: Hydrocarbons obtained from petroleum oil make up mineral oil. Mineral oil is a highly refined, colourless, and transparent oil that is frequently used in cosmetics. In addition to seldom triggering adverse responses, mineral oil cannot solidify and block skin pores. It is affordable, lightweight, and helps to prevent the body from losing water while maintaining moisture levels. Cream formulation involves the use of several mineral oils. examples: Liquid petroleum, heavy liquid paraffin, and light liquid paraffin

5.4 Glyceride oil: Vegetable oils make up most glyceride oil. Almond oil, avocado oil, castor oil, coconut oil, olive oil, and so forth are glyceride oil examples.

5.5 Vegetable oil: create a barrier on the skin's surface, slowing down the loss of water and assisting in keeping the skin plump. Additionally, creams and other personal care products can have their lipid or oil part thickened with the application of vegetable oils. For instance, sunflower oil, avocado oil, germ oil, almond oil, etc. [16].

5.6 Waxes: which comprise spermaceti, ceresin, beeswax, and carnauba wax in the cream's composition. Because they prevent the separation of liquid and oil components in an emulsion, waxes are employed in cosmetic products. In addition to sticking to the skin's surface, these waxes thicken the lipid layer.

5.7 Fats: A variety of fats are utilised in the making of creams. These resources can come from plants, minerals, or animals. Vegetable or animal sources can be found in glyceride oils and fats. They are made up of glycerin and combinations of higher fatty acids. Depending on the technique, when saponified, they yield either soap or fatty acid and glycerin. The lauric, margaric, plamitic, stearic, and saturated groups of fatty acids are the most prevalent ones. Liquid oleic acid is the most widely used unsaturated fatty acid. More specifically, olive oil, almond oil, sesame oil, peanut oil, coca butter fat, mutton tallow, lard, and beef stearinE are the oils most frequently used in various cosmetics [17].

5.8 Lanolin: It comes from a sheep's wool fat. There are two forms of lanolin: the hydrous lanolin has a water content of 25% to 30%. The point of anhydrous lanolin is 38–42°C, and it has a faint smell. These substances lubricate the skin's surface, giving the illusion of smooth, soft skin. In cosmetic and personal care products, lanolin combines well with other ingredients and aids in the formation of emulsion.

5.9 Colours: Prior to the invention of contemporary technology, natural materials like indigo, saffron, turmeric, and others were the main sources of colour. Colours were created in laboratories after the 19th century and were discovered to be considerably more permanent and intensely coloured. They could also be made without utilising wild-harvested plants [18].

5.10 Emollients: Also called moisturisers, emollients are treatments that help condition and soothe dry or chapped skin. The majority of emollients, such lanolin, squalene, and mineral oil, are types of oil or grease. They function by enhancing the skin's capacity to retain water, lubricating the skin, and covering it with an oil coating to stop water loss [19].

5.11 Humectants: Found in the majority of skin care formulas, humectants are significant multifunctional components. Hydroscopic organic substances are known as humectants. These substances have the ability to take in and hold onto moisture. These are really beneficial, offering things like exfoliation and moisturization. Humectants include things like betaine, sodium PCA, glycerin, hydroxyethyl urea, sodium lactate, etc [20].

5.12 Perfumes: A perfume is a material that carries an aroma, such as a pleasant and sweet smell. Orange blossom, Rosy Dreams, and White Blossoms are a few examples of natural scents found in creams [21].

5.13 Vitamins: Vitamins are essential for preserving the skin's and body's overall physiological function. Generally, vitamins A, B, C, E, and so forth are used in the cream formulation.

5.14 Preservatives: Preservatives must be employed in cosmetic formulation, shipping, storage, and consumer usage to avoid microbial alterations and contamination. Antioxidants can also be utilised to guard against changes brought on by oxygen exposure. Low concentrations of synthetic preservatives efficiently preserve the items [22].

6. WOUND AND WOUND HEALING PROCESS

A loss or disruption of the cellular, anatomical, or functional continuity of the deep skin tissue or the living tissues is referred to as a wound. Physical, chemical, thermal, viral, microbial, aggressive, or immunological disturbance to the skin's surface can all result in wounds. In addition to having a physical and psychological impact on the patient, wounds can also be very expensive and leave scars that may last a lifetime. The term "wound" often refers to a physical damage that breaks and opens the skin. Mostly based on the method of occurrence and the causing agent, wounds can be categorised as follows:

1) Closed wound: contusion, closed fracture, etc.
2) Open wound
3) Sharp cut.
4) Laceration.
5) Abrasion.
6) Avulsion.
7) Crush wound.
8) Punctured wound.
9) Bite wound.
10) Burn wound.

The process of cell contraction, migration, and readhesion following skin trauma or injury is known as wound healing. Platelet aggregation, blood clotting, fibrin production, the inflammatory response to damage, changes in the ground substances, angiogenesis, and re-epithilization are all involved in wound healing. The creation of scars marks the end of the healing process, which is not accomplished until collagen has vigorously knitted the damaged area.The existence of free radicals can impair the healing process of wounds by causing harm to the surrounding skin tissues. Furthermore, a number of variables, including infections, diet, medications, hormones, the kind and location of the wound, and certain medical problems, might affect the healing process of wounds. Since ancient times, people in India have treated wounds with natural substances derived from plants and animals. This practise is known as Ayurveda and is a popular branch of Indian medicine. Natural products have been utilised for generations in many regions of the world; because to their relatively low side effects, natural products are starting to gain the same importance as alternative medicine. These factors motivate scientific research into complementary and alternative medicine in an effort to improve human health. For the treatment of chronic illnesses, they are utilised directly as drugs in their crude or raw form [23]

7. AYURVEDIC MEDICINES FOR WOUND HEALING

1. **One of the key herbs in Ayurveda is aloe vera (A. barbadensis).** It can be used for a variety of skin problems, including cold sores, psoriasis, and burns. It may also be used for inflammation, irritation, or fever.
2. **Peppermint (Mentha piperita):** A widely used plant with many applications. When used topically, peppermint oil gives the skin a cooling effect. It is a component of toothpaste, mouthwash, aromatherapy, bath preparations, and topical therapies. It is used to reduce inflammation and irritation, soothe pruritus, and speed up the healing of wounds.
3. **Turmeric (Curcuma longa):** This spice and colouring agent are both utilised in India. It has many therapeutic benefits, including wound healing, antiviral, anti-inflammatory, antidiabetic, antioxidant, and anti-cancer effects.
4. **Jatropacurcas:** It has a number of recognised medical benefits. It has antibacterial, anti-HIV, anti-cancer, anti-microbial, and wound-healing properties, among others.
5. **Honey:** Honey has been a traditional medicinal since ancient times. Antioxidant, anticancer, anti-inflammatory, antimicrobial, and cardiovascular potentiator properties are all present in honey. It is also employed as a wound healer and dressing. Infections following surgery in adults and newborns, burns, necrotizing fasciitis, infected and nonhealing wounds and ulcers, boils, pilonidal sinus, venous ulcers, and diabetic foot ulcers have all been treated with honey.
6. **Calendula officinalis, or marigold,** is a fragrant, short-lived perennial herbaceous plant. It is a flower or plant that has been used for generations as a decorative, cosmetic, and therapeutic item. One of the best herbs that is also quite potent in terms of antioxidant and antiviral properties is calendula, which may be taken orally. It has anti-inflammatory properties, reduces muscle spasms, treats wounds, haemorrhoids, and ulcers; it also helps with menstruation, has antibacterial and antiviral properties, and enhances dental health.
7. **Ghee:** The butter made from cow's milk is said to possess numerous medical qualities, including the ability to reduce fever, rejuvenate, impart lustre and attractiveness, improve memory and endurance, sharpen intelligence, and lengthen life. It possesses hepatoprotective, antioxidant, immune-stimulating, and antibacterial properties.Cow ghee promotes wound healing more quickly than antibiotics. Numerous saturated and unsaturated fatty acids included in cow ghee can participate in metabolic processes that aid in the healing of wounds.

8. ALTERNATIVE MEDICINES/CREAMS FOR WOUND HEALING

1. **Soframycin:** Framycetinsulphate is the primary ingredient in Soframycin skin creams, which are produced at 1% w/w per IP. Soframycin skin cream is used to treat a variety of conditions, including impetigo, otitis externa, scabies, sycosis barbae, cuts, burns, ulcers, furunculosis, and lice.
2. **Neosprine:** Neomycin sulphate, polymyxin B sulphate, and bacitracin zinc are the three antibiotics that make up this compound. Topical ointment can be used to heal wounds, minor cuts, and burns that have specific skin infections. By eradicating the bacterium that causes these diseases, these antibiotics function.
3. **Silver nitrate:** This prescription topical solution works as an antiseptic, caustic, and antiinfective agent on skin burns and wounds. The negative effects of silver nitrate are not well documented in the literature. It is possible to employ silver nitrate as a sclerosing or cauterising agent [23].

4. **Silver Sulphadiazine:** In patients with severe burns, this drug is used in addition to other therapies to help prevent and cure wound infections. In order for silver sulphadiazine to function, microorganisms that could infect an open wound must not proliferate. This lessens the possibility that the bacteria may infect nearby skin or blood, where it could result in a dangerous blood infection (sepsis). Silver sulphadiazine is a member of the sulfa antibiotic medication class. In patients with second- and third-degree burns, silver sulphadiazine cream is used to both prevent and cure wound infections. Due to the possibility of severe adverse effects, silver sulphadiazine should not be administered to premature babies or to newborns during the first two months of their lives.
5. **Cetrimide:** A combination of various quaternary ammonium compounds, including cetrimonium bromide, is an antimicrobial. ICI made the initial discovery, developed it, and released it under the Cetavlon brand. It is applied as a 1-3% solution on wounds from roadside accidents.
6. **Betadine:** Povidone Iodine USP 10% w/w (available iodine 1%) is the active component. Bacteriostatic against both gram-positive and gram-negative bacteria is povidone iodine. It is a broad-spectrum antiseptic used for mycotic and bacterial skin infections, minor surgical procedures, small area burns, and topical therapy or prevention of infection in minor cuts and abrasions.

9. RELEVANT METHODS OF PREPARATION OF CREAMS FOR WOUND-HEALING:

Making the o/w emulsion cream. In a single beaker, the emulsifier and the oil-soluble ingredients are melted in a water bath at 75°C. Preservatives and watersoluble ingredients are also taken and melted at 75°C in another beaker of water. Following heating, the water phase was gradually added to the oil phase in a mortar and pestle, and the mixture was triturated until a clicking sound was produced. Finally, preservatives and/or fragrances are applied when the temperature drops. There will be more water in this preparation than oil.

Making w/o emulsion creams In a single beaker, the emulsifier and the oil-soluble ingredients are melted at 75°C. Additionally, components that dissolve in water are taken and melted at 75°C in a different beaker. Following melting, the water phase is placed in a mortar and pestle, and the oil phase is gradually added and stirred until a clicking sound is produced. Additionally, the fragrance agent is applied once the cream has cooled down. There will be more oil phase and less water phase in this preparation [24].

10. EVALUATION PARAMETERS OF CREAMS:

1. Determination of pH: An appropriate amount of the formulation diluted with a suitable solvent in a suitable beaker can be used to determine the pH of the cream at room temperature using a standard digital pH metre.
2. Physical appearance: The colour, roughness, and grading of the cream's physical appearance can be observed.
3. Spreadability: A sufficient quantity of sample is divided between two glass slides, and for five minutes, a 100g weight is placed to the slides. Spreadability can be stated as follows:

$$S = m*l/t$$

Where m = weight applied to upper slide.

l = length moved on the glass slide.

t = time taken.

4. Saponification value: After refluxing 2 grammes of the material for 30 minutes with 25 millilitres of 0.5 N alcoholic KOH, 1 millilitre of phenolphthalein was added, and the mixture was quickly titrated with 0.5 N HCl. The reading indicates "a." Do the process again, leaving out the chemical under investigation. Take note that it reads "b."

$$\text{Value of saponification} = (b-a) *28.05/w$$

where w is the substance's weight in grammes.

5. Acid value: 1 millilitre of phenolphthalein is added to a 50-millilitre mixture of equal volumes of alcohol and solvent ether, which has been accurately weighed. The mixture is then titrated with 0.1N NaOH until a faint pink colour appears after 30 seconds of shaking. The flask is then connected to a reflux condenser and slowly heated until the sample is completely dissolved.

$$\text{Value of acid} = n*5.61/w$$

Were, n = the no. of ml of 0.1 N KOH solution.

w = the weight of substance in gram.

6. Viscosity: The Brookfield Viscometer can be used to measure the viscosity of cream formulations.
7. Homogeneity: Touch and visual appearance were used to verify the formulation's homogeneity.
8. Removal: Using tap water to wash the area where the creams were applied, the creams' ease of removal was assessed.
9. Dye test: A mixture of cream and scarlet dye is used. Under a microscope, observe a drop of cream that has been placed on a slide and covered with a cover slip. It is an o/w type if the dispersed globule appears red and the ground appears colourless; w/o type creams exhibit the opposite characteristic.
10. After feel: After applying a set quantity of cream, the amount of residue remaining, slipperiness, and emolliency were assessed.
11. Smear type: Following cream application, the kind of smear or film that developed on the skin was examined.
12. Irritancy study: Draw a 1 square centimetre area on the dorsal surface of the left hand. After applying the cream to the designated area, the time was recorded.

For a full day, irritability, erythema, and edoema were monitored and reported at regular intervals.

13. Accelerated Stability Study: In accordance with ICH recommendations, an accelerated stability study is carried out for formulation.

CONCLUSION:

In conclusion, the dynamic landscape of cosmeceuticals represents a frontier where pharmaceutical science and cosmetic artistry converge to redefine skin care. As explored in this review, the categorization of cosmeceuticals into skin, hair, and other products underscores their diverse applications in enhancing both health and aesthetics. The significance of creams in topical drug delivery is emphasized, acknowledging the advantages and potential drawbacks of this delivery system. Understanding the physiology of the skin becomes pivotal in deciphering the efficacy of cosmeceutical products, particularly in the context of ingredients like water, oils, waxes, and fats. Moreover, the exploration of alternative medicines for wound healing, drawing from Ayurveda and contemporary formulations, highlights the rich potential of natural remedies in promoting skin health. Ayurvedic herbs and modern formulations offer a promising synergy for advancing wound healing practices. The article concludes by shedding light on the preparation methods for creams, emphasizing the importance of emulsion types. Evaluation parameters further provide a lens through which the quality and efficacy of cosmeceutical formulations can be assessed. In essence, this review unveils the innovations propelling cosmeceuticals into a new era, where science and beauty harmonize to foster advanced skin care solutions.

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