



An overview on Formulation and Development

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Abstract:

The utilization of natural herbs and their derivatives for their aromatic properties in formulating various products has sparked a growing interest among consumers, particularly in the development of herbal creams. These creams, designed for external application with friction, serve both medicinal and cosmetic purposes. Herbal cosmetics, aimed at enhancing one's appearance, have seen increased demand, leading to a focus on natural products and extracts. This research endeavors to create a herbal cream with moisturizing, nourishing, whitening, and skin disease-treating properties. Key ingredients include Turmeric powder, Papaya, Aloe-vera leaves, Neem leaves, and Talsi leaves.

I. Introduction:

In the realm of herbal products, the term "herbal cream" refers to formulations incorporating permissible pharmaceutical ingredients as a base, with one or more herbal components delivering specific benefits—a concept termed as Herbal Formulation [1]. These creams harness the pharmaceutically valuable aspects of natural herbs and their derivatives, meeting the demand for such products in cosmetic preparations [2]. Creams, characterized as semisolid preparations for external friction-based application, have gained significance due to their use of natural ingredients.

Ayurveda, an ancient medicinal system, relies on plant extracts for treating various diseases and infections. The rising popularity of herbal cosmetics has fuelled an increased demand for cosmetics, with herbal formulations gaining prominence for their high-quality properties and minimal side effects. Herbal creams, essentially water-in-oil emulsions, play a crucial role in

providing the skin with essential nutrients and moisture.

The chosen natural ingredients for these herbal creams—turmeric, papaya, aloe-Vera, tulsi, and neem—are selected based on their unique properties. Aloe-Vera, known for its moisturizing and anti-acne properties, contributes to the cream's formulation. Turmeric, an Asian cosmetic ingredient, imparts a golden radiance to the complexion while offering anti-inflammatory and antiseptic benefits.

The Ayurvedic literature, particularly Charak Sahita, highlights a multitude of medicinal plants in Varnya Kashaya, including Chandan, haldi, khas, nagkeshara, manjistha, and yastimadhu, recognized for promoting a glowing complexion. Additionally, herbs like arusa, amala, bavchi, guduchi, and chakmard are acknowledged for their role in addressing skin disorders [1-2]. Notably, herbs such as amalaki, haridra, abhaya, khadira, vidyanga, jati saptaparna, and karavira, categorized under Khshthagna and Mahakashiya, are deemed effective in managing skin issues. Charak and other sages, including Sushruit, advocate the use of Eladi Gana—comprising ela, tagar, kusstha, jatamani, tvak, dhmamaka, potra harenuka, shutki, stouneyaka, choraka, guggol sarjarasa, agar, devedaru, and padmakesher—to eliminate toxins, enhance complexion, and protect against kushtha and boils [3].

This review aims to consolidate scientific data, transitioning from the traditional cosmetic significance of herbs in Ayurveda to their recognition in the modern scientific system.

Age of Synthetic Cosmetics:

During the 20th century's leisure era, the rise of synthetic chemistry revolutionized cosmetic production, introducing surfactants that replaced



homemade alternatives. This shift alleviated the burden of crafting cosmetics at home, appealing to a large population seeking instant effects. Synthetic ingredients offered advantages such as time efficiency, easy application, aesthetic appeal, convenient storage, and portability. However, they came with drawbacks, including occasional deterioration, undesired after-effects, skin allergies, and concerns about cost-effectiveness.

Modern Age of Herbal Cosmetics:

In the contemporary era, herbal cosmetics have gained widespread popularity, utilizing botanical extracts known for supporting skin and hair health. These extracts, derived from plant materials with a rich history of traditional use, are now commonly referred to as "cosmeceuticals." Scientific literature consistently backs the efficacy and safety of these cosmetic applications. Popular natural ingredients, including antioxidants, have been scientifically proven to enhance skin texture, appearance, and tone. While traditional cultures used plant materials in crushed or powdered forms, incorporating them into modern cosmetic formulations poses unique challenges, requiring a delicate balance of art and science. Plant extracts have become favoured cosmetic ingredients, particularly as an alternative to animal-derived extracts. Historically, plants were the primary source of cosmetic ingredients until synthetic methods emerged. Natural molecules from plant extracts are now integral to many commercial cosmetic products and hold promise for ongoing research. In the modern age, herbal cosmetics successfully maintain colour, odour, elegance, and efficacy, offering various benefits.

- Minimal harm to the skin or other body parts due to its natural composition.
- Considered safer in comparison.
- Enhanced placebo effect for consumers, rooted in traditions and cultural practices.
- Formulation flexibility is a key advantage.
- Historical evidence supports its effectiveness across populations.
- Widely accessible.
- Economically viable.

Present Status:

As per market surveys, the cosmetics and toiletries global market reached nearly \$150 billion in 2004, experiencing over a 4% increase from 2003, primarily driven by significant growth in emerging markets. The herbal sector has particularly flourished due to rising demand for natural alternative medicines, witnessing a 10% - 15%

annual growth in global demand for herbal products. In India, the trade related to medicinal plants alone is approximately Rs. 5.5 billion. The World Health Organization (WHO) projects that the herbal products market could be valued at \$5 trillion by 2050. Anticipated global sales of herbal products are set to reach \$26.2 billion in 2007, with Europe and the United States holding major market shares at 41% and 20%, respectively. The World Bank suggests that the global market for medicinal plants and related products, encompassing pharmaceuticals, nutraceuticals, and cosmeceuticals, is estimated to be worth US\$ 62 billion, offering significant opportunities for Indian pharmaceutical and cosmetic companies.

Cosmeceutical:

In ancient Greece and Rome, various ointments and tonics were recommended for hair and skin beautification, along with remedies for scalp and skin diseases. The distinction between medicinal therapies for diseases and cosmetic agents for beautification was first made by Henry de Mandeville. However, the modern separation of cosmetics and pharmaceuticals has become more intricate with the evolution of cosmeceuticals, which are cosmetic-pharmaceutical hybrids containing physiologically active ingredients. These products, applied topically like cosmetics, aim to enhance beauty while providing additional health-related functions. Cosmeceuticals act as a bridge between personal care items, pharmaceuticals, and Phyto-materials.

Large and small manufacturers in cosmetics, pharmaceuticals, biotechnology, and natural extracts now use cosmeceutically active ingredients in their formulations. Advances in cosmetics, skin biology, and pharmacology have facilitated the development of cosmetics incorporating novel active and natural compounds. Cosmeceuticals are valued for their efficacy, safety, formulation stability, novelty, easy skin metabolism, and cost-effectiveness, contributing to the increased demand for herbal cosmetics.

Natural extracts from plant, animal, and mineral origins have long served as active ingredients in cosmetics. Ingredients like oils, butters, honey, beeswax, lead, lemon juice, and aloe gel were commonly used in beauty recipes. A variety of plant extracts continues to be utilized in skin cosmetics and toiletry preparations.

Some of the ingredients used for herbal cream:

Several herbal ingredients contribute to the formulation of herbal cream. Aloe Vera serves as a moisturizer and anti-acne agent (Christaki EV and



Florou-Paneri PC, 2010). Turmeric, an Asian cosmetic, imparts a golden radiance to the complexion while offering anti-inflammatory and antiseptic properties. Neem is effective against various skin conditions, including eczema, psoriasis, and dry skin (Bhowmik D, et al., 2010). Tulsi adds a glow to the skin and aids in wound healing, recommended for conditions like anxiety, cough, and skin diseases (Sah AK, et al., 2018). Papaya contributes to anti-wrinkle effects, enzymatic action, and anti-inflammatory properties (Figure 5). The overarching goal is to develop a multipurpose herbal cream addressing moisturization, acne reduction, skin irritation, dry skin, wrinkles, rashes, and more. Cosmetics encompass products applied to the body.

Image

Face creams serve the dual purpose of softening and cleansing as cosmetics. The Ayurvedic system of medicine, relying on herbal plants and extracts, has been crucial in managing various diseases (Viswanathan MV, et al., 2003). An emulsion, a system where one fluid is dispersed in another, prevents macroscopic phase separation with the addition of a suitable surfactant. Water-in-oil emulsions find widespread use, especially in treating dry skin and as emollients (Mohamed MI, 2004). Adding active ingredients with specific cosmetic effects, particularly antioxidants, enhances the value of these formulations (Bleckmann A, et al., 2021).

Skin creams aim to protect against environmental conditions and provide a soothing effect on the skin. Various types of creams, including cleansing, cold, foundation, vanishing, night, massage, hand, and body creams, cater to different needs. Polyherbal cosmetic formulations are gaining global recognition for offering a heightened sense of purity, protection, and effectiveness. While many creams on the market use synthetic polymers, emulsifiers, perfuming agents, pigments, surfactants, and thickeners, there is a growing demand to substitute these potentially toxic synthetic agents with natural alternatives.

Benefits of Turmeric In Health:

Turmeric offers a range of health benefits, including:

- Acts as a natural anti-inflammatory compound.
- Enhances heart health and provides protection against Alzheimer's and cancer.
- Possesses powerful antioxidant properties.
- Aids in the treatment and prevention of diabetes.
- Improves skin health and effectively treats acne.

- Addresses issues related to depression.
- Reduces dark circles and may assist in managing conditions like psoriasis and eczema.
- Clears the skin and promotes wound healing.
- Supports weight loss efforts.
- Guards the body against the impact of free radicals.
- Exhibits anti-microbial properties.

Benefits of Aloe Vera for Face:

- Aloe Vera offers numerous benefits for facial care, including its anti-inflammatory properties that alleviate pain and swelling from wounds.
- With a soothing effect on rashes and sunburns, it promotes collagen production for a healthy, radiant complexion. Its moisturizing richness removes dead cells, preventing wrinkles and dark spots, while also combating acne and blemishes.
- Aloe Vera hydrates and relieves dry, irritated skin, diminishes signs of aging, and addresses issues like eczema and psoriasis.
- Bringing a natural glow, it effectively treats sunburn and minimizes stretch marks, contributing to overall skin health and vitality.

Benefits of Neem Leaf Powder:

- Neem leaf powder presents a range of benefits for both skin and hair care. It serves as a protective barrier against dandruff, contributing to smooth and shiny hair with its treatment for dry scalp.
- The powder enhances radiance, promoting a youthful appearance and increased blood circulation.
- Beyond cosmetic benefits, it aids in ulcer treatment and maintains healthy, glowing skin.
- Neem's anti-bacterial properties combat pimples and fade acne scars, while its anti-inflammatory nature, rich in fatty acids and glycosides, soothes conditions like eczema.
- The antioxidant and vitamin E content in neem work together to reduce wrinkles, nourish the skin, prevent infections, and promote an even skin tone, providing comprehensive anti-aging advantages.

Benefits of Tulsi Leaf Powder:

- Tulsi leaf powder offers a multitude of benefits, acting as a natural immunity booster and stress reducer, thereby aiding in lowering blood pressure. Its positive impact extends to skin health, combating acne, supporting healthy aging, and soothing conditions like eczema.



- With properties beneficial for healing various skin problems, it serves as an excellent source of vitamin K.
- Tulsi leaf powder's advantages also include controlling blood glucose levels, preventing kidney stones, and contributing to anti-aging efforts.
- The herb's holistic properties make it a valuable addition for overall well-being.

Benefits Of Papaya For Skin:

- Papaya offers a spectrum of skin benefits, aiding in wrinkle reduction through its enzyme action and anti-inflammatory properties.
- It effectively controls acne, removes dead skin cells, and enhances skin tone. The fruit's hydrating properties soothe irritated and dry skin, promoting overall skin health. Beyond skincare, papaya contributes to weight loss, boosts immunity, and protects eyesight with its rich antioxidants, vitamins, and minerals.
- Additionally, it aids in treating hypertension, possesses anti-aging properties, cures skin infections, prevents wrinkles, and even addresses morning sickness, making it a versatile and valuable addition to your health and skincare regimen.

Natural Extractives:

Natural extracts, derived from various sources such as animals (enzymes, proteins, peptides, vitamins), botanicals, and minerals (betonies, titanium dioxides, clays, and mud), have served as active cosmetic ingredients since ancient times. Botanical extracts, as a subset of these natural ingredients, boast diverse chemical structures with proven efficacy. Obtained through extraction and purification without synthetic processes, these botanical cosmetic ingredients offer versatility. They can be utilized in different forms, including total extracts, selective extracts, and extracts derived through biotechnology methods. This natural approach aligns with historical practices, emphasizing the purity and effectiveness of these extractives in cosmetic formulations. In cosmetic formulations, total extracts derived from natural sources are widely employed, drawing inspiration from traditional extraction methods practiced in diverse regions like China, India, Africa, Europe, and America. The composition of these total extracts varies based on factors such as temperature, plant-solvent ratio, contact time, plant part used, species, and seasonal collection. To ensure efficacy, these extracts undergo concentration and isolation through selective techniques like chromatography, UV spectrophotometry, and electrophoresis.

The choice of solvent for herbal extraction is crucial, considering its compatibility not only for extracting active constituents but also for harmonizing with the final formulation. Mixtures of water, glycol, and ethanol prove effective for extraction at both room and elevated temperatures. Ethanol, in particular, is favoured for its ability to maintain stability, preservation, and compatibility with formulation ingredients. Historical applications of herbal extracts for skin and hair treatments align with modern scientific studies, highlighting potential functional actions such as anti-inflammatory, antioxidant, antimicrobial, antihyaluronidase, ant tyrosinase, and ant melanogenesis properties in cosmetics.

Functional active agents:

Functional active agent plays a crucial role in altering skin physiology and advancing cosmetic science. As our understanding of skin physiology has grown, we now recognize substances that can influence skin function and the tactile sense of skin or hair. For instance, water, typically considered innocuous, can release pro-inflammatory substances like interleukins when sealed against human skin, leading to adverse clinical events after prolonged exposure.

Traditional substances like petrolatum, once viewed as inert to skin physiology, have been shown in studies to promote wound healing and prevent ultraviolet-induced tumours, demonstrating medicinal effects that impact skin structure and function. These examples challenge the classification of many cosmetic articles as drugs under a strict interpretation of the "structure and function" provision of the 1938 FDC Act.

The definition of cosmetics varies across regions. In India, the Drug and Cosmetic Act of 1940 defines cosmetics as articles intended for cleansing, beautifying, promoting attractiveness, or altering appearance without affecting structure or function. Notably, cosmetics, as per this definition, are not allowed to have any activity.

The term "cosmeceuticals," though of recent origin, finds historical use in ancient civilizations. These products, like natural antioxidants combating free radicals, are integral components of sunscreen and anti-aging formulations, showcasing the fusion of cosmetic and therapeutic properties in skincare.

Anti-aging:

Natural anti-aging skincare is dedicated to mitigating or reversing the visible signs of aging through ingredients sourced from natural extracts



with a longstanding tradition of use. Aging, whether externally evident or induced by internal oxidative stress, triggers alterations in skin contour. The skin contends with external and internal oxidative challenges, including reactive oxygen species (ROS) and free radicals generated during cellular metabolism.

To counteract ROS's harmful effects, the skin relies on antioxidant systems, ensuring a delicate balance between pro oxidants and antioxidants. In the pursuit of skin advancement, a comprehensive antioxidant network has evolved, encompassing primary (preventive vitamin C) and secondary (interceptive vitamin E) antioxidant mechanisms. Natural ingredients actively engage in biochemical reactions during cellular aging, specifically targeting inflammatory processes that contribute to the formation of wrinkles and blemishes.

Inflammatory mediators like leukotrienes, prostaglandins, cytokines, and growth factors can influence melanin synthesis and impact skin tone. Anti-aging formulations strategically incorporate natural anti-inflammatory agents to provide soothing, healing, and protective effects for the skin. Natural oils, enriched with tocopherols and phytosterol components, contribute antioxidant and bioactive properties to skincare formulations.

Products designed to deter signs of aging, such as eye wrinkle creams, often feature ingredients like wheat germ oil, corn oil, aquiline, and carrot extract. Eye firming fluids may include aloe from seaweed, supporting the maintenance of skin elasticity. This holistic approach, utilizing natural components, underscores the integration of preventive and interceptive strategies in anti-aging skincare.

Natural Antioxidant:

Plants and their derivatives have been utilized as medicines since ancient times, with ongoing studies exploring their properties and mechanisms in skincare. Natural antioxidants, crucial components of anti-aging formulations, play a key role in protecting tissues from damage caused by environmental factors and other agents.

Antioxidants act at various levels of oxidative processes, including scavenging free radicals, lipid peroxyl radicals, binding with metal ions, and removing oxidatively damaged biomolecules. An imbalance between prooxidants and antioxidants can lead to oxidative stress, causing damage to biomolecules such as lipids, proteins, and DNA.

Natural antioxidants, including minor lipids, hold particular importance in cosmetics and skincare formulations, providing protection against both intrinsic and extrinsic aging. Common natural oils such as rapeseed, sunflower, and soybean oil, rich in polyunsaturated fatty acids, offer cosmetic value and act as emollients for skincare. However, the drawback lies in their susceptibility to oxidation and limited shelf life.

Certain natural oils like Bergamot, Lavender, Rose, Marjoram, and Chamomile contribute to skincare through activities like ant tyrosinase, ant elastase, and antioxidant properties. Micronutrients such as vitamins, enzymes, proteins, and antioxidants directly scavenge lipophilic and hydrophilic pro-oxidants, contributing to antioxidant defence mechanisms and potentially retarding endogenous aging.

Vitamin C, a potent in vivo antioxidant, serves as a logical candidate for topical photoprotection, controlling sunburn, cell formation, and tumour formation. Other natural antioxidants studied for photoprotective efficacy include polyphenolic compounds, carotene, and enzymes like SOD, which regenerate vitamins E, C, and glutathione. These agents alter the physical and chemical properties of the skin, inhibiting the penetration of UV wavelengths and counteracting oxidative reactions.

The application of various plant extracts, particularly flavonoids like Apigenin, Catechin, Epicatechin, Alfa-glycosylrutin, and Silymarin, has been found to diminish acute and chronic skin damages, showcasing their antioxidant capacity due to free phenolic groups.

Vitamins:

Dietary ascorbate is swiftly absorbed and distributed throughout the body, with its significance in cosmetics stemming from its reducing potential essential for numerous hydroxylation reactions. Ascorbate serves as a crucial reductant for hydroxylases involved in collagen synthesis, particularly vital for skin health. In human skin, the epidermis contains approximately five times higher levels of vitamin C than the dermis, emphasizing its dependence on dietary intake.

The primary lipophilic antioxidant, vitamin E, encompasses eight naturally occurring molecules (four tocopherols and four tocotrienols) with antioxidant activity. In human skin, α -tocopherol stands as the most abundant vitamin E analogue, followed by γ -tocopherol. Vitamin E acts as an antioxidant by scavenging free radicals, directly or



indirectly thwarting lipid chain reactions initiated or propagated by radicals such as (HO* and O*2) or lipid peroxy radicals. Tocopherols play a vital role in protecting polyunsaturated fatty acids against oxidation in both food and skincare formulations.

Dietary vitamin A is available in pro-vitamin A compounds like α , β -carotene, and cryptoxanthin. Vitamin A encompasses retinol, retinal, and retinoic acid. In cosmeceuticals, retinoids, particularly retinol, have been utilized for their perceived role in countering photo-aging, often referred to as the 'foundation of youth.' Retinol is a necessary dietary nutrient crucial for growth, bone development, and skin keratinization. The use of retinoids in skincare formulations focuses on their potential to reverse the effects of photo-aging, contributing to overall skin health and appearance.

Emollients:

Emollients work to soften the skin, while moisturizers add moisture, addressing issues like dryness, scaling, fine lines, wrinkles, and mild irritant contact dermatitis. The terms 'moisturizer' and 'emollient' are often used interchangeably to describe the diverse effects of these agents on the skin. They essentially have two actions:

1. **Occlusive:** These create a protective layer of oil on the skin's surface, slowing water loss and increasing the moisture content of the stratum corneum.
2. **Humectants:** Substances introduced into the stratum corneum to enhance its water-holding capacity. Some formulations incorporate both occlusive and humectants.

Cosmeceutical preparations, containing monounsaturated jojoba esters, utilize ingredients like black cohosh, soy extract, and vitamins A and E for their beneficial effects on the skin. Nourishing complexes, featuring hyaluronic acid and revival complexes containing green tea extract and glutathione, are available for skin nourishment.

Natural phospholipids derived from lecithin act as excellent humectants, attracting water from the surrounding air and increasing hydration levels in the skin without causing occlusion. Recent studies have highlighted the value of topically applied phospholipids in skincare, revealing that environmental factors and certain cleansers can deplete the natural phospholipid content in the skin's top layer. This loss contributes to a rough feel and a pitted appearance under a microscope. Notably, the phospholipids in the uppermost skin layers cannot be naturally replenished, as these cells no longer undergo metabolic processes; they solely serve as a protective barrier.

Skin lightening Active:

Skin colour is influenced by various chromophores in the skin, including oxyhemoglobin (bright red), reduced haemoglobin (bluish red), and bilirubin (yellow), present in the small blood vessels of the dermis. Numerous skin-lightening formulations leverage natural extracts that directly or indirectly impact the melanisation process. The initial and crucial step in melanin formation is mediated by tyrosinase, catalysing the hydroxylation of tyrosine into 3,4-dihydroxyphenylalanin (DOPA) and subsequently converting DOPA to DOPA quinone.

Pharmacological inhibitors of tyrosinase or agents targeting the melanogenesis pathway serve as topical inhibitors, contributing to skin-lightening effects. Commercially available skin-lightening formulations incorporate various combinations of natural extractives like Arbutin (*Uvae Ursifilium*), Azelaic acid (*Malassezia*), Kojic acid (*Aspergillus Spp.*), α and β -hydroxyl acids from citrus fruits, Resveratrol (*Morus Alba*), and Licorice (*G. Glabra*). The synergistic action of these extracts, whether used individually or in combination, can enhance the efficacy of skin-whitening cosmetic formulations.

Additionally, skin peeling agents like trichloroacetic acid are employed to destroy and remove skin tissues loaded with melanin. It is crucial to note that sun protection measures are strongly recommended in conjunction with the use of skin-lightening formulations to ensure comprehensive skin care.

Antimicrobial:

Natural antimicrobials, such as rosemary extract, sage extract, olive leaf extract, certain mushroom extracts, essential oils from spices, and probiotics, also exhibit effective deodorizing properties. In cosmetics, antimicrobials serve to combat skin, hair, and nail infections while enhancing the shelf life of formulations. In personal care products targeting skin conditions like acne, there is a growing demand for cost-effective active ingredients with fewer side effects and a well-established history of topical use.

Given the rise in antibiotic-resistant microbial strains and increasing awareness of adverse effects associated with prolonged antibiotic use, natural ingredients such as essential oils, probiotics, and botanical extracts emerge as appealing alternatives for topical antimicrobials. Extracts from *C. Longa*, *C. Zeylanicum*, *C. Tora*, *C. Asiatica*, *P. Corlifolia*, and long-chain alcohols,



along with natural phenolic compounds inhibiting microbial growth or possessing bactericidal/fungicidal properties, stand out as potential options to replace synthetic preservatives.

Anti-inflammatory Agents :

Inhibiting inflammation proves to be an effective strategy in slowing or reversing the signs of aging. Olibanum, derived from the *Boswellia Serrata* species, has a rich historical use as incense and is currently employed as a fixative in various cosmetic products like perfumes, soaps, creams, lotions, and detergents. In the Ayurvedic system of medicine in India, the gum resin exudates of *Boswellia Serrata*, known as Salai Guggul, have been utilized as potent anti-inflammatory agents. Boswellin, extracted from this resin, seamlessly integrates into conventional cosmetics, boasting a pleasing aroma that complements formulations.

Herbs like Liquorice (*G. Glabra*), Marigold (*C. Officinale*), and Varuna (*C. Nurvala*) are recognized for their robust anti-inflammatory properties and find extensive use in addressing inflammatory mediators such as thromboxane's, leukotrienes, and prostaglandins. Coriander (*C. Sativum*) contains Petroselinum acid triglyceride, a potent inhibitor of the enzyme topoisomerase, showing promise in conditions like psoriasis. Umbelliferon, another component with anti-inflammatory properties, can be seamlessly incorporated into cosmetic formulations without causing irritation or sensitization.

Studies have demonstrated the inhibitory effect of methanol extracts from herbs like *Eucommia Ulmoides*, *Evodia Officinale*, and *Pleuropterus Multifloras* on the production of matrix metalloproteinase-1 (MMP-1) in UV-B irradiated human fibroblasts, showcasing their potential in preventing photoaging. These herbs, acting as cosmeceuticals, are incorporated into sunscreen formulations due to their anti-inflammatory activity, directly addressing the mechanisms of inflammation during or after sun exposure reactions within the skin.

Anti-irritant:

Moisturizers typically incorporate emollients to smooth the skin surface, working into the non-living outer layers of the skin, filling spaces between the layers, and providing lubrication. They also include humectants to assist skin cells in absorbing and retaining moisture within these layers.

Plant extracts serve a dual purpose by acting as anti-irritants, contributing to the

maintenance of skin texture and tone. Topical applications of essential fatty acids have demonstrated improvements in hydration and elasticity, acting not only as antimicrobial agents but also enhancing skin penetration. Recent research underscores the potential of long-chain fatty acids as anti-aging agents.

Essential fatty acids, such as Petroselinum acid, have been found to counteract the overproduction of arachidonic acid, providing additional evidence of their protective role. Other functional ingredients, including butcher's broom, chamomile, vitamin E, antioxidants like Vitamin A, C, and E, green tea, Tiare Flower, Ginkgo Biloba, cucumber, calendula, and alpha bisabolol, contribute to the anti-irritant properties. Chamomile, for instance, contains active constituents used to calm irritated skin.

In products like eye lifting moisture cream, key ingredients like aosain (an algae extract) play a crucial role in treating puffiness, protecting against future skin damage, and helping to plump up wrinkles.

Scope And Challenges:

As previously mentioned, India, being the origin of indigenous medicinal systems like Siddha, Ayurveda, and Unani, boasts a rich botanical diversity. Plants have been integral to ancient remedies, gaining popularity for their simplicity. Traditional medicine practitioners across India have historically harnessed local flora for cosmetics, emphasizing skin maintenance, texture improvement, and beauty.

The criteria for selecting herbal cosmetics include:

- Approximately 80% of the world's population still relies on natural products.
- Alignment with nature, ensuring minimal hazardous reactions.
- Substantiation through scientific and traditional evidence, drawing from experimental data on animals and ethno-botanical surveys.
- Ease of selection based on recognized natural cosmetic systems, referencing well-established and validated books on natural medicine and cosmetics. These sources provide time-tested insights into safety and efficacy.

Benefits:

- Facilitates gentle and effective cleansing and beautification of the body without adverse side effects.
- Normalizes bodily functions.



- Boasts exceptional nutritional value, featuring high levels of vitamins and minerals.
- Elevates the body's energy levels.
- Stimulates the immune system without disrupting the natural balance of the body.
- Offers a diverse range of phytoconstituents that can be incorporated.

Formulation Challenges:

- Limited availability of robust scientific justifications at present.
- Proneness to microbial and inorganic contamination poses challenges.
- Identification of the substantial identity of herbs can be challenging.
- Evaluating multiple phytoconstituents poses difficulties.
- Organoleptic properties may be suboptimal.
- Extract immiscibility with other ingredients is a notable challenge.
- Maintaining appropriate values for fundamental pharmaceutical parameters, such as pH values, acid values, and complexation of natural Phyto-ingredients, may impact formulation efficacy.

II. Conclusion

In conclusion, this study emphasizes the potential of herbal extracts in cream formulations, highlighting their increased utilization in both cosmetic and medicinal contexts. The incorporation of bioactive ingredients in topical formulations plays a crucial role in influencing the biological functions of the skin, delivering essential nutrients for skin health. Natural herbs offer diverse uses in cream preparations. The findings of this study underscore the safety of herbal creams, demonstrating their absence of toxic and adverse reactions in comparison to commercially available semi-solid products.

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