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Review Paper

Herbal Extract- Based Peel-Off Face Mask Gels for Skin Rejuvenation and Anti-Ageing: A Review

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ABSTRACT

The increasing demand for plant-based skincare products has promoted the development of herbal peel-off face mask gels with multifunctional cosmetic benefits. This review focuses on the anti-ageing and skin-rejuvenating potential of commonly used herbal ingredients and functional excipients in peel-off formulations. Polyvinyl alcohol (PVA) provides excellent film-forming properties for efficient removal of dead skin cells and impurities, while hydroxypropyl methylcellulose (HPMC) enhances gel consistency, spreadability, and stability. Glycerin acts as a humectant, maintaining skin hydration and improving elasticity, whereas phenoxyethanol ensures product safety by preventing microbial contamination. Lavender essential oil contributes antioxidant, antimicrobial, and soothing properties that help protect and calm the skin. Shankhpushpi (*Convolvulus prostratus*) is rich in flavonoids and phenolic compounds that neutralize free radicals, reduce oxidative stress, stimulate skin repair, and delay wrinkle formation. Bael (*Aegle marmelos*) possesses antioxidant, anti-inflammatory, and antimicrobial phytochemicals that protect collagen, and support healthy youthful skin. Butterfly Pea (*Clitoria ternatea*) contains anthocyanins that preserve collagen integrity, improve skin firmness, and minimize photoaging. Flaxseed (*Linum usitatissimum*) is abundant in omega-3 fatty acids and lignans that enhance skin barrier function, promote collagen synthesis, improve elasticity, and reduce fine lines. Orange Peel (*Citrus sinensis*) provides vitamin C and flavonoids that stimulate collagen production, brighten the complexion, reduce pigmentation, and promote skin renewal. The synergistic combination of these natural ingredients offers antioxidant, moisturizing, anti-inflammatory, collagen-protective, and rejuvenating effects, making herbal peel-off face mask gels a promising, safe, and eco-friendly approach for anti-ageing skincare and future cosmeceutical applications.

INTRODUCTION

The word "cosmetics" originates from the ancient Greek term *kosmētikos*, pearance of the skin, hair,

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nails, and other external parts of the body. which means "skilled in adornment" or "having the ability to arrange and beautify." It is derived from the verb *kosmein*, meaning "to adorn" or "to arrange," and the noun *kosmos*, meaning "order," "harmony," or "ornament." This origin reflects the historical purpose of cosmetics in enhancing personal appearance, maintaining beauty, and promoting aesthetic harmony. Over time, the term has come to encompass a broad range of products used for cleansing, protecting, and improving the appearance of the skin, hair, nails, and other external parts of the body.¹

Herbal cosmetics are cosmetic preparations that incorporate natural ingredients derived from plants to enhance appearance while also supporting skin and hair health. These products may provide moisturizing, soothing, nourishing, and protective effects due to the presence of biologically active compounds found in medicinal plants. Herbal cosmetics are widely used for maintaining healthy skin, improving complexion, and managing common skin conditions such as acne. Their growing popularity is largely attributed to their natural origin, perceived safety, and reduced likelihood of causing adverse effects compared to some synthetic products. The long-standing use of medicinal plants in traditional healthcare systems has further contributed to the development of modern herbal cosmetic formulations.²

Herbal cosmetics are cosmetic formulations prepared using plant-derived ingredients such as extracts, essential oils, fixed oils, gums, waxes, and other natural substances. These products are designed to enhance appearance while simultaneously improving skin and hair health through the biological activities of medicinal plants. Herbal cosmetics are increasingly preferred because they are considered safer than many synthetic products and are generally associated with fewer adverse effects when used appropriately.³

Physiology of Skin

The skin is the largest organ of the human body and serves as the first line of defense against external environmental factors. In adults, it covers an approximate surface area of **1.5–2.0 m²**, with thickness varying according to the anatomical location. On average, the skin is about **1.3 mm thick in males** and **1.26 mm in females**. Besides providing physical protection, the skin plays a vital role in maintaining homeostasis by regulating body temperature, preventing excessive water loss, and performing sensory and metabolic functions. It has a slightly acidic surface pH ranging from **4.5 to 6.0**, commonly known as the acid mantle, which helps preserve the skin barrier and inhibits the growth of pathogenic microorganisms.

Layers of the Skin

A. Epidermis

The epidermis is the outermost layer of the skin and functions as the primary protective barrier against physical injury, harmful chemicals, microorganisms, and ultraviolet (UV) radiation. This layer is **avascular**, receiving nutrients and oxygen through diffusion from the underlying dermis. It is mainly composed of **keratinocytes**, along with **melanocytes**, **Langerhans cells**, and **Merkel cells**, each contributing to skin protection and sensory functions.

The epidermis consists of five distinct layers:

a. Stratum Corneum:

The stratum corneum is the outermost layer composed of flattened, dead keratinized cells embedded in lipids. It forms a strong protective barrier that minimizes water loss while preventing the entry of harmful microorganisms and chemicals.



b. Stratum Lucidum:

This thin, transparent layer is present only in thick skin, such as the palms and soles. It provides additional protection against mechanical stress and friction.

c. Stratum Granulosum:

Cells in this layer contain keratohyalin granules that promote keratin formation and contribute to the development of the skin's waterproof barrier.

d. Stratum Spinosum:

Known as the prickle-cell layer, the stratum spinosum consists of polygonal keratinocytes connected by desmosomes, providing structural integrity and mechanical strength to the epidermis.

e. Stratum Basale (Stratum Germinativum):

The deepest epidermal layer contains actively dividing basal cells responsible for continuous epidermal renewal. It also houses melanocytes, which synthesize melanin to protect the skin from ultraviolet radiation, and Merkel cells involved in tactile sensation.

B. Dermis

The dermis lies immediately beneath the epidermis and is composed primarily of connective tissue rich in collagen and elastin fibers. It provides structural support, elasticity, and nourishment to the epidermis through an extensive network of blood vessels. The dermis also contains hair follicles, sebaceous glands, sweat glands, sensory nerve endings, lymphatic vessels, and blood vessels that collectively contribute to skin function and repair.

C. Hypodermis (Subcutaneous Tissue)

The hypodermis, also known as the subcutaneous layer, is situated beneath the dermis and, although not considered a true part of the skin, plays an important supportive role. It consists mainly of

adipose tissue and loose connective tissue containing fibroblasts, macrophages, and adipocytes. This layer provides thermal insulation, mechanical cushioning, energy storage, and anchors the skin to the underlying muscles and bones.

Types of Skin and Their Characteristics

Normal Skin

- Possesses a balanced level of oil and moisture.
- Appears smooth, soft, and evenly toned with fine pores.
- Generally free from excessive dryness, oiliness, or sensitivity.

Dry Skin

- Produces insufficient sebum, resulting in roughness, tightness, and flaking.
- May appear dull and is more susceptible to irritation and sensitivity.

Oily Skin

- Characterized by excessive sebum production, giving the skin a shiny appearance.
- Enlarged pores are common, along with an increased tendency for acne and blackheads.

Combination Skin

- Exhibits both oily and dry characteristics.
- The T-zone (forehead, nose, and chin) is typically oily, whereas the cheeks remain normal or dry.

Functions of the Skin

1. Serves as a protective barrier against physical injury, microorganisms, chemicals, and ultraviolet radiation.
2. Helps regulate body temperature through sweating and changes in blood circulation.



3. Provides sensory perception by detecting touch, pressure, pain, heat, and cold through specialized nerve endings.
4. Prevents excessive loss of body water, thereby maintaining hydration and electrolyte balance.
5. Facilitates the absorption of certain topical medications and cosmetic preparations.
6. Acts as a waterproof barrier that protects underlying tissues and internal organs from environmental damage.
7. Participates in the synthesis of **vitamin D** when exposed to sunlight, contributing to calcium metabolism.
8. Supports immune defense through the presence of specialized immune cells that recognize and combat invading pathogens.⁴

1.5 Peel-Off Face Masks

Peel-off face masks are topical skincare formulations that are applied as a thin layer to the skin and allowed to dry, forming a flexible film that can be removed by peeling. These masks are widely used for facial cleansing and cosmetic care because they effectively eliminate accumulated dirt, excess sebum, dead skin cells, and other surface impurities. The film-forming property of peel-off masks enables close contact with the skin, facilitating the removal of debris while leaving the skin smooth, clean, and refreshed.

In addition to their cleansing action, peel-off masks help improve skin texture, enhance hydration, and provide a temporary tightening effect that promotes a healthy and radiant appearance. The occlusive film formed during application increases the contact time of active ingredients with the skin, allowing better penetration and improved efficacy. Herbal peel-off masks are particularly popular because they incorporate natural plant extracts possessing antioxidant, anti-inflammatory, antimicrobial, and skin-conditioning properties.

Exposure to ultraviolet (UV) radiation and environmental pollutants generates reactive oxygen species (ROS) and free radicals, which accelerate oxidative stress and contribute to premature skin aging, pigmentation, erythema, and loss of skin elasticity. Peel-off masks containing antioxidant-rich herbal ingredients help neutralize these free radicals, thereby protecting the skin from oxidative damage and supporting overall skin health. Owing to their convenience, ease of application, and ability to deliver multifunctional benefits, peel-off masks have become an important category of modern cosmetic and cosmeceutical products.^{5,6}

Types of Peel-Off Face Masks

a. Peel-Off Masks

Peel-off masks are applied uniformly over the face and allowed to dry until they form a continuous film. Once dried, the film is gently removed in a single layer, carrying away dead skin cells, excess oil, and impurities from the skin surface. These masks provide deep cleansing and leave the skin feeling smoother and revitalized.

b. Sheet Masks

Sheet masks consist of fabric, hydrogel, or bio-cellulose sheets impregnated with concentrated serums. They are designed to deliver moisturizing, soothing, brightening, or anti-aging ingredients directly to the skin while minimizing evaporation and enhancing ingredient absorption.

c. Charcoal and Clay Masks

Charcoal- and clay-based masks are formulated to absorb excess sebum, remove impurities, and unclog pores. Activated charcoal and natural clays possess excellent adsorptive properties that help detoxify the skin and improve complexion,



making these masks particularly suitable for oily and acne-prone skin.

d. Leave-On Masks

Leave-on masks are moisturizing formulations that remain on the skin for an extended period, ranging from 15–30 minutes to overnight. They are enriched with humectants, emollients, and nourishing ingredients that provide prolonged hydration and improve skin softness without requiring immediate removal.⁷

Benefits of Peel-Off Face Masks

1. Effectively remove dead skin cells, excess oil, and surface impurities, promoting cleaner skin.
2. Help unclog pores and reduce the formation of blackheads and whiteheads.
3. Improve skin smoothness, softness, and overall texture.
4. Enhance skin hydration and provide a refreshed, healthy-looking complexion.
5. Support skin tightening and improve the appearance of fine lines and wrinkles.
6. Increase the contact time of active ingredients with the skin, improving their effectiveness.
7. Provide antioxidant protection when formulated with herbal extracts, helping to reduce oxidative stress and premature skin aging.
8. Offer a convenient, non-invasive, and easy-to-use skincare treatment suitable for regular cosmetic care.⁸

Precautions Before Using a Herbal Peel-Off Face Mask

- Perform a patch test before the first application to check for possible allergic or hypersensitivity reactions.
- Avoid applying the mask near the eyes, lips, eyebrows, and other sensitive areas.

- Do not use the product on broken, inflamed, infected, or sunburned skin.
- Discontinue use immediately if irritation, burning, itching, or redness develops.
- Apply a thin and uniform layer to ensure proper drying and easy removal.
- Use the mask only one to two times per week unless otherwise recommended.
- Store the formulation in a cool, dry place away from direct sunlight and excessive heat.
- Keep the product tightly closed and out of the reach of children.

COMMON INGREDIENTS USED IN THE PREPARATION

1. Polyvinyl Alcohol (PVA):

Polyvinyl alcohol (PVA) is a synthetic, water-soluble polymer widely used in peel-off cosmetic formulations because of its excellent film-forming ability. It forms a smooth, flexible, and transparent film on the skin that dries uniformly and can be peeled off easily after application. This property helps remove surface impurities, excess sebum, and dead skin cells, leaving the skin feeling clean and refreshed. PVA also functions as a binder and viscosity-enhancing agent, improving the texture, consistency, spreadability, and stability of the formulation. Owing to its good compatibility with the skin and reliable performance, PVA is commonly incorporated into peel-off masks. In the present formulation, PVA was used primarily as a film-forming agent to provide the characteristic peel-off effect and ensure easy removal of the mask after drying.^[8,9]

2. Hydroxypropyl Methylcellulose (HPMC):

Hydroxypropyl methylcellulose (HPMC) is a semi-synthetic, water-soluble cellulose derivative widely used in pharmaceutical and cosmetic



formulations. It appears as a white to off-white, odorless, and tasteless powder that readily hydrates in water to produce a clear, viscous solution. HPMC is valued for its excellent thickening, stabilizing, and gel-forming properties, which improve the consistency and uniformity of formulations. In topical preparations, it provides a smooth texture, enhances the spreadability of the product, and helps maintain the even distribution of active ingredients. Due to its non-irritant and biocompatible nature, HPMC is considered safe for use on all skin types. In the present formulation, HPMC was incorporated as a gelling agent to impart the desired gel consistency, improve the stability of the formulation, and facilitate uniform application on the skin.^[10]

3. Shankpushpi (*Convolvulus prostratus*):

Shankpushpi (*Convolvulus prostratus*) is a well-known medicinal herb with significant potential in herbal skincare formulations due to its rich phytochemical composition. It contains bioactive constituents such as flavonoids, alkaloids, phenolic compounds, tannins, glycosides, saponins, terpenoids, and steroids, which are responsible for its diverse pharmacological activities. These phytochemicals exhibit potent antioxidant, anti-inflammatory, antimicrobial, and wound-healing properties that help protect the skin from oxidative damage, reduce inflammation, prevent microbial infections, and promote tissue repair. The strong antioxidant activity of Shankpushpi helps neutralize free radicals, thereby minimizing oxidative stress, delaying premature skin ageing, and improving skin elasticity and texture. In addition, the herb provides soothing and moisturizing effects, supports skin regeneration, and enhances the overall appearance of the skin, making it beneficial for dry, sensitive, acne-prone, and ageing skin. In the present formulation, Shankpushpi extract was

incorporated as the primary herbal active ingredient to provide antioxidant, anti-ageing, antimicrobial, anti-inflammatory, and skin-rejuvenating effects, thereby improving the therapeutic and cosmetic efficacy of the herbal face gel.^[11,12]

4. Bael (*Aegle marmelos*):

Aegle marmelos (Bael) is a medicinal plant widely used in traditional medicine and is increasingly incorporated into herbal cosmetic formulations because of its skin-beneficial properties. The leaves are rich in bioactive compounds such as flavonoids, tannins, alkaloids, phenolic compounds, coumarins, and essential oils, which contribute to their therapeutic activity. These phytochemicals exhibit strong antioxidant, antimicrobial, and anti-inflammatory properties that help protect the skin from oxidative stress, inhibit the growth of harmful microorganisms, and reduce inflammation. The antioxidant activity of Bael helps neutralize free radicals, thereby preventing premature skin ageing and maintaining healthy skin. The antimicrobial effect supports the management of acne-causing microorganisms, while the anti-inflammatory action helps soothe irritated skin and reduce redness. In the present formulation, *Aegle marmelos* leaf extract was incorporated as the principal herbal ingredient to provide antioxidant, antimicrobial, anti-inflammatory, and anti-ageing benefits, thereby enhancing the protective and rejuvenating effects of the herbal face gel.¹³

5. Butterfly Pea (*Clitoria ternatea*)

Butterfly pea (*Clitoria ternatea* L.) is valued in cosmetic formulations as a **natural blue colorant** due to its anthocyanin pigments, known as **ternatins**, which provide a stable blue to purple color depending on pH. The flowers are also rich in anthocyanins, flavonoids, and phenolic



compounds that exhibit strong **antioxidant activity** by scavenging reactive oxygen species (ROS). These antioxidants help protect skin cells from oxidative stress, support collagen preservation, and may reduce premature skin aging. Owing to its dual role as a natural colorant and antioxidant, butterfly pea is a promising ingredient for herbal skincare products such as peel-off masks.¹⁴

6. flaxseed Gel (*Linum usitatissimum*)

flaxseed gel is a rich source of omega-3 fatty acids, lignans, antioxidants, and other bioactive compounds that provide significant skin benefits. The gel exhibits potent antioxidant and anti-inflammatory properties, helping to protect the skin from oxidative stress and inflammation. It promotes collagen synthesis, improves skin elasticity, reduces wrinkles and fine lines, and delays premature skin aging. In addition, flaxseed gel acts as an excellent natural moisturizer by maintaining the skin's moisture barrier, resulting in soft and smooth skin. It also helps reduce acne, dark spots, and skin irritation while supporting the regeneration of healthy skin cells, making it a promising natural ingredient for anti-aging and skincare formulations.⁽¹⁵⁾

7. Orange peel powder (*Citrus sinensis*)

Orange peel is a rich source of vitamin C, flavonoids, phenolic compounds, and natural acids that exhibit potent antioxidant activity. It helps brighten the skin by reducing hyperpigmentation, promotes collagen synthesis through its high vitamin C content, and provides mild exfoliation by removing dead skin cells, resulting in smoother and more radiant skin. These properties make orange peel powder a valuable natural ingredient in cosmetic and anti-aging formulations.⁽¹⁶⁾

8. Glycerin

Glycerin is widely used in topical and cosmetic formulations as a **humectant** and **plasticizer**. As a humectant, it attracts and retains water in the stratum corneum, thereby improving skin hydration, softness, and elasticity. As a plasticizer, glycerin enhances the flexibility of polymeric films, reduces brittleness, and improves the spreadability and peelability of peel-off mask formulations. These properties contribute to better film formation, user comfort, and overall product performance.⁽¹⁷⁾

9. Phenoxyethanol (Preservative)

Phenoxyethanol is a widely used **preservative** in cosmetic and topical formulations because of its broad-spectrum antimicrobial activity against bacteria, yeasts, and fungi. It helps prevent microbial contamination, thereby extending the shelf life and ensuring the safety and stability of cosmetic products. phenoxyethanol is considered safe and well tolerated for use in cosmetic formulations.⁽¹⁸⁾

10. Lavender Essential Oil

Lavender essential oil (*Lavandula angustifolia*) is commonly incorporated into cosmetic formulations for its **pleasant fragrance**, **antioxidant**, **antimicrobial**, and **anti-inflammatory** properties. It contains bioactive constituents such as **linalool** and **linalyl acetate**, which help protect the skin against oxidative stress, inhibit the growth of microorganisms, and soothe minor skin irritation. These properties make lavender essential oil a valuable natural ingredient in skincare and herbal cosmetic formulations. ⁽¹⁹⁾

METHOD OF PREPARATION

(i) Procedure involved in the Preparation:



- All the ingredients were prepared, weighed and measured to prepare peel off mask gel at different varying concentrations.

The formulation is prepared by gently heating a measured amount of water-based solvent in a clean container.

- A film-forming agent is slowly added with constant stirring to ensure a smooth and lump free mixture.
- After the solution cools to room temperature, herbal extracts and natural actives ingredients are added one by one, mixing well after each addition.
- A plasticizer is included to improve the flexibility and ease of application of the mask.
- Humectants and emollients are blended in to enhance skin hydration and provide a soft texture.
- Finally, a preservative is mixed in evenly. The formulations are then checked for clarity and consistency, filled into containers, labeled, and set aside for further evaluation.

(ii) Procedure of Peel off Face mask Application:

- Cleanse the face thoroughly to remove makeup, dirt, and excess oil. Ensure the skin is clean and completely dry before application.
- Take an adequate amount of the gel using clean fingertips or a cosmetic applicator.
- Spread a thin, uniform layer evenly over the face, avoiding the eye area, eyebrows, lips, and hairline.
- Leave the mask undisturbed until it dries completely, which generally takes **15–20 minutes**, depending on the thickness of the applied layer and environmental conditions.
- After the mask has fully dried and formed a firm film, gently peel it off, beginning from the outer edges and moving upward.
- Wash away any remaining residue with lukewarm water and pat the skin dry using a soft, clean towel[8].

EVALUATION PARAMETERS

1. Organoleptic Evaluation

The prepared herbal peel-off mask was examined for its organoleptic properties to assess its physical quality, aesthetic characteristics, and suitability for topical application.

- **Color:** The color of the formulation was visually examined by placing a small quantity of the mask on a white surface to evaluate its shade, intensity, and uniformity.
- **Appearance:** The formulation was inspected for its overall visual quality, ensuring a homogeneous, smooth appearance without the presence of lumps, phase separation, or other visible imperfections.
- **Consistency:** The consistency of the peel-off mask was assessed by applying a thin layer onto the skin and observing its ease of application, spreadability, and uniform film formation.
- **Texture:** The texture was evaluated by gently rubbing a small amount of the formulation between the fingertips to determine its smoothness and to confirm the absence of coarse or gritty particles.
- **Odor:** The fragrance of the formulation was assessed by smelling a small quantity of the product to determine whether the odor was pleasant, characteristic, and acceptable for cosmetic use[20].

2. Physicochemical Evaluation

pH Measurement Test:

The pH of the prepared herbal peel-off mask was determined using pH indicator strips to evaluate its suitability for topical application. A small quantity of the formulation was mixed with distilled water to obtain a uniform dispersion, after which a pH strip was dipped into the sample. The color developed on the strip was compared with the



standard pH chart to determine the pH value. Maintaining a pH close to that of normal skin helps ensure compatibility, reduces the likelihood of irritation, and supports safe and regular use of the formulation[21].

Spreadability Test:

The spread ability of the herbal peel-off mask was evaluated by placing 1 g of the formulation onto a clean sheet of butter paper. A glass Petri dish or watch glass was carefully positioned over the sample, followed by a 5 g weight to apply uniform pressure. The assembly was left undisturbed for 2 minutes to allow the formulation to spread evenly. After removing the weight and glass, the diameter of the spread sample was measured. The extent of spreading was used to determine the ease with which the formulation could be applied to the skin[22,23].

Calculation of Spread ability:

The spreadability of the formulation was determined from the diameter of the sample after compression. It was calculated using the following equation:

$$\text{Spreadability } (S) = \pi d^2/4$$

Where:

- S = Spreadability (cm²)
- D = Diameter of the spread formulation after compression (cm)
- $\pi = 3.14$ (approximate value)

A larger spread area indicates better spreadability, suggesting that the formulation can be applied more easily and uniformly over the skin.

Drying Time Test:

The drying time of the herbal peel-off mask was determined by applying a uniform layer of the formulation to the skin and measuring the time required for it to dry completely. Drying time is an important quality parameter that influences user

convenience, film formation, and peelability. Depending on the formulation composition and the thickness of the applied layer, the drying time generally ranged from 10 to 30 minutes. Formulations that dried more quickly were considered more convenient for regular use, while those with longer drying times may contain higher concentrations of moisturizing or film-forming ingredients. A drying time of approximately 15 minutes was considered optimal, as it provided a suitable balance between ease of application, effective film formation, and comfortable removal of the mask[23].

Stability Testing :

Stability testing was carried out by storing the herbal peel-off mask at different temperatures to evaluate how well it maintains its quality under varying conditions. The formulation was exposed to a range of temperatures including 20°C, 40°C and 60°C, and was visually inspected for any changes in appearance, texture, or consistency. The results showed that the product remained stable, maintaining its original characteristics, up to 40°C. However, at higher temperatures of 60°C, noticeable changes were observed, indicating the formulation began to degrade or lose its effectiveness. This suggests that the mask is best stored in cool to moderate conditions to ensure its longevity and maintain its intended performance[23].

• Folding Endurance Test :

The folding endurance of the dried herbal peel-off mask was evaluated to determine its flexibility and mechanical strength. A strip of the dried film was repeatedly folded at the same point until it showed signs of cracking or broke completely. The number of folds sustained before breaking was recorded as the folding endurance value. The tested formulations exhibited folding endurance values



ranging from 20 to 50 folds, depending on the composition of the formulation and the concentration of film-forming polymers. Higher folding endurance indicates greater flexibility and resistance to cracking, allowing the film to be removed easily in a single piece without tearing. This parameter is important for assessing the durability, handling characteristics, and overall performance of the peel-off mask[23].

Peelability Test:

The peelability of the herbal peel-off mask was evaluated by applying a uniform layer of the formulation to the back of the hand and allowing it to dry completely. The drying time varied between 10 and 30 minutes depending on the formulation and the thickness of the applied layer. Once fully dried, the film was gently lifted from one edge and carefully peeled off. The ease of removal and the condition of the peeled film were observed. An ideal formulation produced a continuous, flexible film that could be removed in a single piece without tearing or leaving significant residue on the skin. This test was used to assess the film-forming ability, cohesiveness, and ease of removal of the peel-off mask, which are essential factors influencing its overall performance and user acceptability[24].

3. Washability Test:

The washability of the herbal peel-off mask was evaluated to determine how easily any remaining formulation could be removed from the skin after use. A thin, uniform layer of the mask was applied to the skin and allowed to dry completely. After peeling off the film, the treated area was gently rinsed with plain water to check for any residual material, stickiness, or oily sensation. The ease of cleaning and the condition of the skin after washing were observed. The formulation was found to be easily washable, leaving no noticeable

residue or causing skin dryness or irritation. Good washability indicates that the product can be conveniently incorporated into a regular skincare routine and enhances overall user acceptability[20].

Skin Irritation Test (Patch Test):

The skin compatibility of the herbal peel-off mask was assessed by performing a patch test to evaluate its potential to cause irritation or allergic reactions. A small quantity of the formulation was applied to sensitive areas of the skin, such as the inner forearm and the area behind the ear. The formulation was left in contact with the skin for a specified period and then removed. The test sites were carefully examined for any signs of erythema (redness), itching, swelling, burning sensation, or other adverse skin reactions. The absence of visible irritation or allergic responses indicated that the formulation was well tolerated and considered safe for topical application. This test is essential for confirming the dermatological safety and suitability of the peel-off mask for regular use on different skin types[20].

CONCLUSION

Herbal peel-off face mask gels have emerged as promising skincare formulations that combine the cleansing properties of peel-off systems with the therapeutic benefits of medicinal plants. The selection of appropriate ingredients plays a vital role in determining the quality, stability, safety, and effectiveness of herbal peel-off face mask gels. Film-forming agents such as **polyvinyl alcohol (PVA)** provide the characteristic peel-off property, while **hydroxypropyl methylcellulose (HPMC)** improves gel consistency and stability. Functional excipients including **glycerin**, **phenoxyethanol**, and **lavender essential oil** contribute to skin hydration, product preservation, and enhanced user acceptability. Herbal



ingredients such as **Shankpushpi (Convolvulus prostratus)**, **Bael (Aegle marmelos)**, **Butterfly pea (Clitoria ternatea)**, **flaxseed gel**, and **orange peel powder** are rich in bioactive phytochemicals, including flavonoids, phenolic compounds, anthocyanins, tannins, and vitamin C, which provide antioxidant, antimicrobial, anti-inflammatory, moisturizing, skin-rejuvenating, and anti-ageing benefits. The synergistic combination of these natural actives with suitable formulation excipients offers a promising approach for developing effective herbal peel-off face mask gels that support skin cleansing, nourishment, and protection. Herbal peel-off face mask gels represent a promising natural alternative to conventional synthetic skincare products by providing multifunctional cosmetic benefits while minimizing the risk of adverse effects. Overall, these ingredients provide a strong scientific basis for the development of safe, multifunctional, and eco-friendly cosmeceutical products, encouraging further research into standardized formulations and clinical validation.

Conflict of interest :- No conflict of interest

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