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A BRIEF REVIEW ON HERBAL FACE MASK AND ITS RECENT APPROACHES TOWARDS PATENTING TRENDS ALONGSIDE ADVANCEMENTS: GLIMPSE

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ABSTRACT

Herbal face masks have gained significant attention as a natural and eco-friendly alternative to conventional skincare products, offering benefits such as deep cleansing, hydration, and nourishment. This review explores the evolution of herbal face masks, focusing on their formulation, key bioactive ingredients, and therapeutic properties. Additionally, it highlights recent advancements in the field, including the incorporation of nanotechnology, encapsulation techniques, and novel delivery systems to enhance efficacy and stability. A critical analysis of patenting trends reveals the growing interest in innovative formulations and the global effort to protect intellectual property in this domain. This glimpse into the current landscape provides insights into the synergy between traditional herbal remedies and modern technological approaches, paving the way for future developments in herbal skincare.

KEYWORD: Herbal face masks, Traditional herbal remedies, novel delivery system, modern technological approaches.

INTRODUCTION

Herbal cosmetics are beauty products that offer desirable physiological benefits, such as healing, soothing, enhancing skin glow, and conditioning, due to their herbal ingredients. These products are known to repair, revitalize, and protect the skin. Skin issues like acne, blackheads, pimples, and dark circles are increasingly common among individuals aged 18–25, often affecting their confidence and self-esteem. Herbal plants are widely recognized for their medicinal and cosmetic properties.[1]

The skin is a sensitive and protective layer of the human body that is constantly exposed to environmental pollutants, making it essential to provide proper care. Facial skin, in particular, requires attention to address various issues, and one effective approach is the use of face masks. Peel-off masks are applied as a thin liquid film that spreads evenly on the face and dries to form a plasticized layer, which can be easily peeled off without leaving residue. These masks help repair, refresh, and tighten the skin while offering deep pore cleansing and removing debris.

In addition to their cleansing action, peel-off masks provide mild moisturization, enhance the occlusive effect, and improve blood circulation. They stimulate skin cell activity, remove dead skin cells, soften the skin, and deliver essential nutrients. The aim of this study was to develop and formulate a peel-off mask using Bael fruit and evaluate its properties through various tests, establishing it as a potential alternative for facial skin care.[2]

In Ayurveda, skin problems are often attributed to blood impurities caused by toxins from poor diet and lifestyle choices. Herbs like aloe vera, neem, and orange peel are valued for their blood-purifying properties. Ayurvedic treatments for acne, scars, and pigmentation often involve applying a herbal paste, known as "mukha lepa," to the face, a practice referred to as "mukha lepana." This therapy is used to rejuvenate, nourish, and improve skin health. A good herbal face pack should deliver essential nutrients and penetrate the skin's deeper layers to provide its benefits. Ayurveda also emphasizes customizing face packs to suit different skin types for optimal results.

Ayurvedic face packs are effective for addressing wrinkles, dark circles, acne, and blemishes, enhancing the skin's smoothness, radiance, and glow. They promote fairness, improve blood circulation, and boost overall skin health. For oily, acne-prone skin, herbal face packs

regulate sebum production and combat bacteria in acne lesions. Common ingredients like sandalwood, rose petals, and dried orange peels help treat blemishes and refine skin texture.

In recent years, herbal face packs have become popular due to their advantages over chemical-based products. They are non-toxic, hypoallergenic, preservative-free, and non-habit-forming, offering a safer, natural, and sustainable option for healthy, radiant skin. With a long shelf life and easy formulation, herbal face packs are a reliable choice for skincare.[3]

Antioxidant

The use of oral or topical antioxidants in dermatoses aims to neutralize free radicals, preserving redox balance and complementing treatments like photoprotection. Physiological doses are preferred to align with cellular function and minimize toxicity risks. While a rich diet remains essential, supplementation may be needed for specific groups with deficiencies. Long-term high-dose use requires medical supervision, as effects vary based on concentration, formulation, and administration route.[7]

Mechanism of action of antioxidant

OP contains antioxidants like vitamin C, flavonoids, and phenolic compounds that combat oxidative stress by neutralizing free radicals and chelating harmful metal ions. They also regulate oxidative stress-related gene expression, enhance antioxidant enzyme production, and support cellular defense mechanisms.[8] Carotenoids in OP prevent lipid peroxidation, preserving cell integrity, while phenolic compounds exhibit anti-inflammatory properties. Together, these antioxidants protect tissues, reduce inflammation, and promote overall health.[9]

Types Of Peel Off Face Mask

Peel off*:* Applied to the skin, allowed to dry for 30 minutes then peeled off as one continuous sheet. They are ideal to provide a purifying and renewing perception as well as action. They effectively remove the very outer layer of old dead skin cells when the polymeric network is removed to reveal fresher skin beneath.

Sheet: Sheet masks are the most versatile because they are effective serum formulations with actives added to achieve the product purpose e.g.: Anti-sebum, Whitening and Anti-aging. Whatever you desire based on the active chosen. The sheet of the mask helps stabilize the

formulation and give it the required structure, so little in the way of stabilizing and structuring ingredients are needed.

Charcoal/clay: These types of masks are essential cream cleansers with the charcoal or clay added. This also helps build the viscosity. While charcoal and clay materials should be purchased suitably treated, they can act as fantastic food sources for micro-organisms. So,good preservation for this product is essential.

Leave-on: These types of masks are ultra-hydrating crème-gel or cream forms, applied to the skin and left on for 15-30 minutes (or overnight) with the remainder rubbed in after that time. They contain more lipid and humectant content than standard day creams as they are intended to provide more moisture and emollience than standard creams.[10]

Ideal Properties of Face Packs

- ✓ It should be non- irritating and non-toxic.
- ✓ It should be stable both physically and chemically.
- ✓ It should be free from gritty particles.
- ✓ It should have pleasant odour.
- ✓ They should be capable of producing significant cleansing of the skin.
- ✓ They should produce a sensation of tightening of the skin after application.
- ✓ They should form a smooth paste.[11,12]

Benefits of herbal face pack

- ✓ Nourishes the skin. Fruits face packs supply essential nutrients to the skin.
- ✓ Helps to reduce acne, pimples, scars and marks depending on its herbal ingredients.
- ✓ These face packs provide a soothing and relaxing effects on skin.
- ✓ Regular use of natural face masks bring glow to skin, improve skin texture and complexion.
- ✓ They help to restore the lost shine and glow of skin in short span of time.
- ✓ The harmful effects of pollution and harsh climates can be effectively combated with judicial use of face packs.
- ✓ They help to prevents premature aging of skin.
- ✓ Formation of wrinkles, fine lines and sagging of skin can be effectively controlled by using natural face packs.
- ✓ Natural face packs make the skin look young and healthy.[13,14,15]

Advantage of herbal face pack

- ✓ Herbal products don't have negative side effects.
- ✓ It aids in eliminating our skin's dead cells.
- ✓ Herbal products are inexpensive.
- ✓ Products made from herbs are widely accessible.
- ✓ It is utilized to make our skin sparkle.[13]

Disadvantage of herbal face pack

- ✓ Sometimes our skin displays signs of irritability and redness.
- ✓ Inflammation has taken place.
- ✓ The effects of the face pack will develop gradually.[13]

Precautions to be Taken While Applying Face Packs

- ✓ Select the face packs according your skin type.
- ✓ The face pack should not be left on face or than 15-20 minutes.
- ✓ Keeping for very long times may result in formation of wrinkles, sagging of skin and enlargement of open pores.
- ✓ Avoid applying face pack near "eye zone".
- ✓ The skin around eye is very delicate.
- ✓ Applying face pack in a week. Don't try to peel or straiten the dried face packs.
- ✓ This may harm underlying skin.
- ✓ Spray water on face before removing dried face pack.
- ✓ After removing the mask roll an ice cube on facial skin which helps to use open pores and tightens skin.[17]

Musa Paradisiaca

Musa paradisiaca Linn. is a monoherbacious plant, belonging to family *Musaceae*, generally known as plantain. Plantain refers in India to a coarse banana (as shown in the fig.1). *Musa* species are having a lot of significant pharmacological actions such as ulcer protecting activity, antibacterial activity, wound healing activity, antioxidant activity, antimenorrhagic activity, antilithiatic, hair growth promoting, hypocholesterolaemic, hepatoprotective, anti-snake venom, antifungal, and mutagenesis effect. Pharmacological investigations showed that banana fruits, stem juice are screened for wound healing activity. The various elements of the plant are widely used to cure various illness in humans like diabetes, diarrhoea, dysentery, hypertension, hysteria, epilepsy, leprosy, haemorrhages, renal calculi, and ulcers.[18]

Figure 1: Banana Peel.

Monographs of the *Musa paradisiaca*:

The following table consist of the monographs of the *musa paradisiaca*,

Languages	**Common Names**
English	Banana
Hindi	Kelaa,kelaa kaa phuul
Tamil	Vazhei
Telugu	Artipandu
Kannada	Balayhanu
Malayalam	Pisang
Gujarati	Kel phool
French	Banane
Thailand	Kluai

Taxonomy of *Musa paradisiaca*:

The following table covers the taxonomy of *musa paradisiaca*,

Kingdom	**Plantae**
Subkingdom	Tracheobionta
Super division	Spermatophyta
Division	Magnoliophyta
Class	Liliopsida
Subclass	Zingiberidae
Order	Zingiberales
Family	*Musaceae*
Genus	*Musa*
Species	*Paradisiaca*

Phytoconstituents

The major phytoconstituents responsible for wound healing activity in *Musa paradisiaca* are often identified through various studies. Typically, these constituents include:

Flavonoids - Known for their antioxidant properties which help in reducing oxidative stress and inflammation at the wound site.

Tannins - Possess astringent properties that promote wound contraction and closure.

Saponins - Have antimicrobial properties that prevent infections.

Alkaloids - Contribute to the healing process through anti-inflammatory and analgesic effects.

Phenolic Compounds - Aid in reducing inflammation and promoting tissue regeneration.

Vitamins - Particularly Vitamin C and Vitamin E which are essential for collagen synthesis and protection against oxidative damage.[18]

Phytochemical Constituents present in stem extract of *Musa paradisiaca Linn:*

- ✓ Flavonoids like Quercetin
- ✓ Steroids like β-Sitosterol
- ✓ Starch
- ✓ Anthraquinones
- ✓ Flavanols
- ✓ Triterpenoids
- ✓ Reducing Sugar
- ✓ Tannins
- ✓ Phenolic compounds
- ✓ Proanthocyanidins
- ✓ Glycosides
- ✓ Fat
- ✓ Alkaloids

Bioactive Components Present in stem extract of *Musa paradisiaca*

- ✓ Methyl ophiogonone A
- ✓ Eclalba saponin
- ✓ Undulatoside A
- ✓ Ginsenoside
- ✓ Baicalein
- ✓ 26-deoxyactein Rad
- ✓ Deanosid
- ✓ Oleanolic acid

- ✓ 7-o-Glucuronide
- ✓ Ruscogenin.

Citrus sinensis

Oranges (*citrus sinensis*) (as shown in the fig. 2) are an excellent source of essential nutrients, including vitamin C, potassium, folate, and fiber. Orange is rich in vitamin C, which helps protect the skin from damage caused by free radical and promotes collagen production.it is use for soothe acne, reduce redness, and calm irritated skin, brighten the skin, reduce the appearance of dark spots.[17]

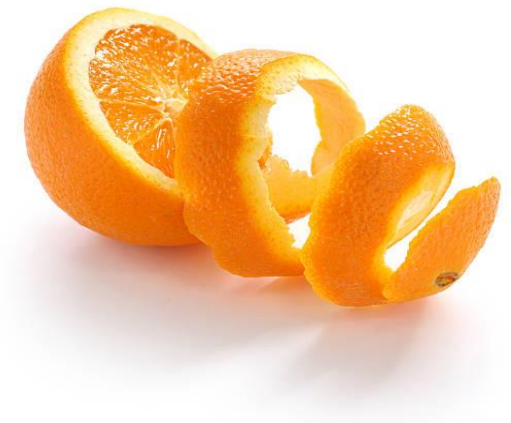

Figure 2: Orange Peel.

Scientific name: *citrus sinensis*

Synonyms: Orange, Santra, Nimma

Family: Rutaceae

Vernacular name for *citrus sinensis:*

Vernacular name of *citrus sinensis* are including the following table;

Languages	Common Names
Tamil	Arainju
Telugu	Nimma
Spanish	Naranja
French	Orange
German	Orange
English	Orange
Italian	Arancia
Hindi	Santra

Chemical constitute

- ✓ Limonene (90%)
- ✓ Citral(4%)

- ✓ Vitamin C
- ✓ Pectin
- ✓ Hesperidine
- ✓ Aurantimarin Aurantimaric acid
- ✓ Octanol (39%)
- ✓ Decanal (42%)
- ✓ Monoterpene (91%) & contains no less than 2.5% volatile oil.[17]

Phytoconstituents

Carotenoids

- ✓ **Beta-carotene:** converted to vitamin A in the body is essential for vision, immune function and skin health.
- ✓ **Lycopene:** A powerful antioxidant reduces the risk of certain cancers and heart disease.
- ✓ **Alpha-carotene:** antioxidant properties helps to protect against cancer and age- related diseases.

Flavonoids

- ✓ **Naringenin:** Antioxidant, Anti -inflammatory and Anti -cancer properties.
- ✓ **Hesperidin:** Antioxidant, Anti -inflammatory and cardiovascular protective effect.
- ✓ **Eriocitrin:** Antioxidant, Anti-inflammatory and anti -cancer properties.

Limonoids

- ✓ **Limonin:** Antioxidant, Anti -inflammatory and Anti -cancer properties.
- ✓ **Nomilin:** Antioxidant, Anti -inflammatory and Anti -cancer properties.

Phenolic acids

- ✓ **Ferulic acid:** Antioxidant, Anti -inflammatory and Anti -cancer properties.
- ✓ **Sinapic acid:** Antioxidant, Anti -inflammatory and Anti -cancer properties.

Vitamins and minerals:

- ✓ **Vitamin C:** Essential for the immune function, collagen production and Iron absorption.
- ✓ **Potassium:** Important for the heart health, blood pressure regulation and muscle function.
- ✓ **Folate:** Crucial for the fetal development during pregnancy also involved in red blood cell production.

Uses

- ✓ Lighten and brighten skin.
- ✓ Cells build up around the pores enhancers the shadows and make the pores appear larger.
- ✓ Hydrates Dehydrates skin.[19]
- ✓ Promotes healthy skin glow. It prevents the skin from free radical damage, skin hydration and oxidative stress. Also, it has instant glow property prevent acne, blemishes, wrinkles and aging.[20]

TERMINALIA CHEBULA

Terminalia chebula native to southeast asia is highly regarded in both Tibetan and Ayurvedic medicine. *Terminalia chebula* (as shown in the fig.3) is a medium to large sized tree that belongs to the combretaceae family known as *chebulae fructus* its dried fruit extensively used in China, Nepal, India, Myanmar, Sri Lanka, Thailand and Bangladesh among others in recent years the therapeutic and nutritional values widespread attention, prompting extensive and significant scholarly research. phytochemical studies have yielded over 149 identified compounds in various parts of the distinctive essence and healing properties attributed compounds to its volatile components, such as monoterpenes and sesquiterpenes pharmacological studies have reved that CF isolated the components broad spectrum terminalia chebula consulted the Chinese pharmacopoeia ancient.[21] According to the ancient reference there are approximately 500 plants that have potential therapeutic uses and about 800 plants are being exercised in domestic medicinal practices. The Indian subcontinent is a massive depository of healthy plants utilised as conventional medicines.[22] The Combretaceae is a large family that covers herbs, shrubs and trees in globally distributed 20 genera and 600species and has been extensively gone through scientific studies.[23] Terminalia chebula Retzius (T. chebula Retz) is a medium to large-sized tree that belongs to the Combretaceae family and is widely distributed Terminalia chebula is routinely used as traditional medicine in the name of ‘Kadukkaai’ by tribal of Tamil Nadu in India to cure several ailments such as fever, cough, diarrhea, gastroenteritis, skin diseases, candidiasis, urinary tract infection and wound infections16. Antibacterial activity of Terminalia chebula extracts against several bacterial strains have been reported17. Extracts from different parts of diverse species of plants like root, flower, leaves, seeds, etc. exhibit antibacterial properties were applied on cotton material for wound, healthcare care application18. It is a well known fact that the demand for the herbal drug treatment of various ailments is increasing and plant

drugs from the ayurvedic system are being explored more, not only in India but also globally.[24,25]

Figure 3: Terminalia Chebula Seed.

Vernacular Name of the *Terminalia Chebula*

Vernacular name of the terminalia chebula as discussed in the below table [26,27]

Languages	Common name
English	Terminalia chebula
Tamil	Kadukkai
Telungu	Karakkaya haritaki
Hindi	Harad
Sanskrit	Haritaki
Malayalam	Pulicakku

Taxonomy Of Terminalia Chebula

The following table consist of taxonomy of terminalia chebula[22]

Kingdom	Plantae
Kingdom	Tracheobionta
Super division	Spermatophyta or seed plants
Division	Magnoliophyta or flowering plants
Class	Magnoliopsida or dicotyledons
Subclass	Rosidae
Order	Myrtales
Family	Combretaceae
Genes	Terminalia
Species	Terminalia chebula

Traditional uses

- Prevent ageing
- Reduces cholesterol
- Improve appetite
- Enhances the immune system[22]

Phytochemical

- Quercetin
- Ellagic acid
- Rutin[22]

Pharmacological activity

- Improve depression
- Anti-oxidant effect
- Anti- inflammatory
- Repair nerve damage[22]

Phytoconstituents

Tannin

Polyphenolic compound classified into hydrolysable and condensed type and it contain gallic acid and glucose total 83 tannin compounds.[22]

Phenolic acid

It has a variety of bio pharmacological activity such as anti – inflammatory, anti- viral, immunomodulatory effects, etc.., and it has excellent anti- oxidantant such as peroxyl radical and hydroxyl radical it affects membrane of biological tissue through the structural and functional units.[22]

Triterpenoids

It is the pentacyclic triterpenes and glycoside compounds and it contains the biological activity such as hypoglycaemic, anti- tumour, anti–oxidant, hepatoprotective, anti-bacterial, renal and immune system regulating effects.[22]

Flavonoid

It is containing the hydroxyl group and it contain the neuroprotective effect and 129 compounds.[21]

Volatile

It consists the fatty acid and it contain the 16 volatile compound and gas mass spectrometry to analyse the volatile compound.[22]

Phytochemical constituents present in terminalia chebula

- Polyphenolic compound
- Chebulagic acid
- Anti-oxidant
- Tetra decanoic acid
- Palmitic acid
- Linolic acid
- Oleic acid
- Octadecadienoic acid[21]

Bioactive constituents present in terminalia chebula

- 3- Methoxy quercetin
- 3,4 – dimethoxy quercetin
- Isoquercetin
- Rutin
- Methyl salicylate
- Ethyl cinnamate
- Furfural
- Benzaldehyde[21]

Patents

1.Hydrophilized surface-treated powder and cosmetics containing same.

US8105691b2

United states

By coating the surface of a powder comprising a silicone resin and/or an organic powder with a specific hydrophilizing agent, such powder is hydrophilized. Such coated (treated) powder has extremely great dispersibility (ease of dispersion) and very good dispersion stability (long-term dispersion stability with lapse of time) in aqueous dispersion media, particularly under acidic and alkaline conditions, specifically at pH 3 through 13. Using the surface-treated powder, additionally, a dispersion with good dispersibility (ease of dispersion) and great dispersion stability, preferably for cosmetics can be provided. The use of the surface-treated powder, or the use of the dispersion can provide further a cosmetic excellent in dispersibility and dispersion stability and further in re-dispersibility and dispersion stability

with lapse of time and smooth feeling as compared to the related art when selecting aqueous cosmetic as an agent form.

2. Skin care composition

US11033480B2

United states

A personal care composition for cosmetic treatment of skin that provides an improved moisturization signal to a user and exhibits good feel properties. The composition includes a dimethicone fluid or a blend of dimethicone fluids with a viscosity of greater than 1000 centistokes (cSt). The dimethicone fluid(s) are configured to provide the composition with a Time Weighted Force Area of between 5×104 and 12×104 and a Mean Break Time of between

0.30 and 0.75.

3. Pigmented skin-care compositions

RU2641965C2

Russian

Invention represents a skin care composition containing a dermatologically acceptable medium, a plurality of interfering pigments, where the total number of all interfering pigments in the composition, having a particle size of 2 mcm to 75 mcm, is 3% or less of the total composition weight; and where the composition has a redness reducing index less than 11.5, where the composition has a healthy skin colour change degree (HSCCD) less than 3, and where many pigments contain at least first and second interfering pigments, the first interfering pigment having a hue (h°) in the range 185-215°, and where the second interfering pigment has a hue (h°) in the range.it reduced visibility of skin irregularities.

4. Cosmetic composition containing fullerene

CN110769800B

China

The invention provides a cosmetic composition which can easily disperse fullerene in water. Also disclosed is a composition for cosmetic materials, which is prepared using such a composition and has a transparent appearance and excellent dispersion stability in an aqueous dispersion containing fullerene. A cosmetic composition containing the following components (A) to (E) was used. Preferably the composition has a bicontinuous structure. (A)

An oil solution in which 0.001 to 0.3% of fullerene is dissolved; (B) a nonionic surfactant; (C) a polyol; (D) an oil agent; (E) and (3) water.

5. Cosmetic applicator useful for skin moisturizing

US4559157A

United states

The present invention relates to cosmetic applicators comprising absorbent sheets impregnated with an oil-in-water emulsion incorporating various emollients which are particularly adapted for moisturizing wet skin surfaces.

6. A kind of natural plant extracts composition and its application in cosmetics.

CN105748343B

China

The present invention relates to cosmetic technical fields, and in particular to a kind of natural plant extracts composition and its application in cosmetics, the natural plant extracts composition prepares raw material including following parts by weight：0.1 10 parts of plant stem cell, 2 10 parts of grapefruit extract, 1 10 parts of lucid asparagus extracting solution, 1 10 parts of biloba extract object, 5 10 parts of lucidum extracting liquid, 15 parts of burdock extracting solution. Natural plant extracts composition provided by the invention also with anti-acne, adjusts fat secretion and the anti-inflammatory effect releived, available for preparing moisturizing anti-aging or acne-eliminating cosmetic in addition to significant moisturizing anti-aging effects.

Method of preparation:

All the powdered ingredients were passed through sieve (as shown in the fig 5), with 22 mesh size separately in order to get uniformed sized particles followed by weighing them accurately (as shown in the fig 4). Further all powder ingredients were mixed geometrically to insure uniform and even mixing (as shown in the fig 6). Quantity of each ingredient is represented in table. The prepared face pack was stored in an airtight container and evaluated by various evaluation parameters.

Mixing: All these fine ingredients were mixed thoroughly by mixer to form a homogenous fine powder.

Figure 4: Weighting.

Figure 5: Sieving.

Figure 6: Mixing

Method for Application

Take 5 grams of the powder mixture containing banana peel powder and orange peel powder. Add 3-4 ml of rose water or normal water to get a smooth paste. Apply this paste all over face and allow it to dry for 10-15 minutes. Once the powder dries genteelly scrub and remove the pack from skin and wash it off using water. The face pack also serves as scrub when rubbed on skin in gentle motion for few minutes.[23]

Evaluation

Prepared face pack was evaluated using following parameters to ensure supremacy of prepared face pack:

Organoleptic Evaluation: The prepared face pack was evaluated for various organoleptic parameters such as; colour, odour, appearance, texture and consistency. Colour, odour and texture were evaluated visually by touch and sensation respectively.[24,25,26]

Rheological Evaluation:

It involved evaluation of powder characteristics. The sample was subjected for evaluation by various physical parameters like angle of repose, bulk density, tapped density and hausner's ratio.[27]

Angle of Repose: The required amount of sample was allowed to drop down from the funnel mounted at the height of 6 cm, the height and radius of the heap was recorded for further calculations. Angle of repose (θ) (as shown in fig.7) can be calculated by using following formula: [27,28]

Angle of repose (θ) = tan (h/r)

Where,

θ - Angle of repose

h - Height of the heap

r - Radius of the base

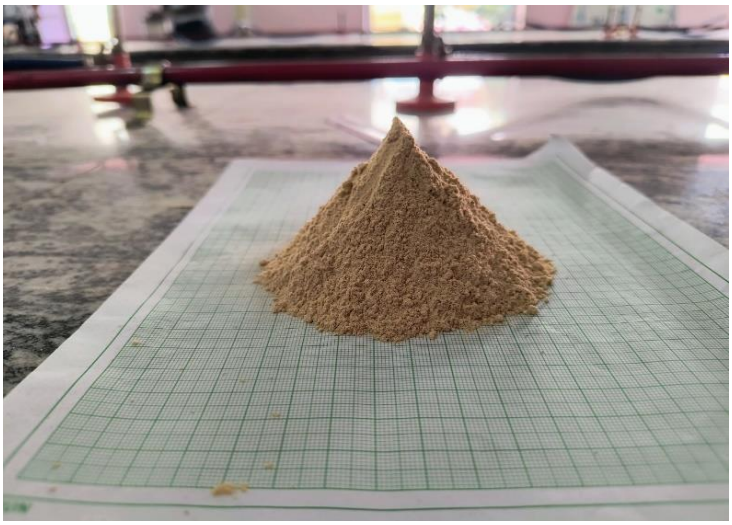

Figure 7: Angle of Repose.

Bulk Density: It is calculated by the ratio of given mass of powder and its bulk volume.(as shown in fig. 8) Determined by transferring 25 gm of accurately weighed amount of powder sample to the graduated cylinder.[27,28]

Bulk density = Mass of sample /volume of sample

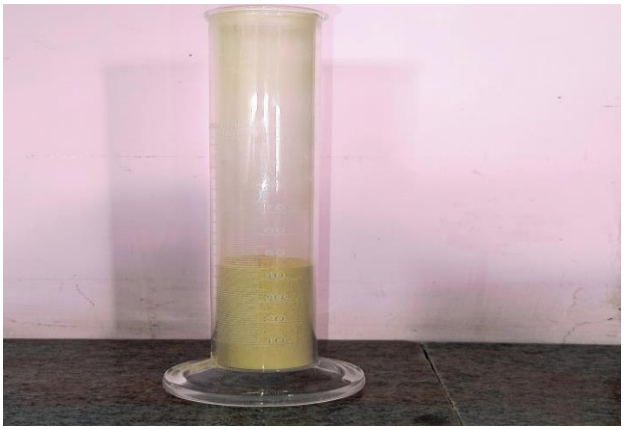

Figure 8: Bulk density

Tapped density: It is measured by transferring a known quantity (10 gm) of powder sample into a graduated cylinder. The initial volume of sample in measuring cylinder was recorded and it was placed on tapped density determining apparatus to give subsequent tapping to the measuring cylinder containing sample continuously for a period of 10-15 min. Tapped density was determined as ratio of mass of powder and tapped volume which is calculated by following formula:[29,30]

Tapped density =Mass of sample/Tapped volume of sample

Housner's ratio: The flowability of powders can be determined by housners ratio. It basically the ratio of tapped density to the bulk density of the powder.[29,30]

Housner's ratio = Tapped density/Bulk density

Particle size: Particle size was performed by microscopic method as per standard procedure. Particle size analysis is an important parameter, which directly affect various properties of powder namely; spreadability, grittiness, etc.[27,30]

Physicochemical Evaluation

Physicochemical evaluation included parameters like moisture content, pH and ash values.

pH

The pH of the preparation was determined by using digital pH meter. The pH meter was initially calibrated at different pH using suitable buffer solution. A 10 % (w/v) dispersion of the preparation was prepared in distilled water and pH was determined directly without any further dilutions.[31]

Moisture content

Determination of Moisture Content Weigh about 2 gm of powdered face pack into a weighed flat and thin porcelain dish. Dry it in Hot Air Oven at 100 °C-105 °C, until two consecutive weighing do not differ by more than 0.5 mg. Cool in dessicator and weigh the loss in weigh is usually recorded as moisture(as shown in fig.9).[32]

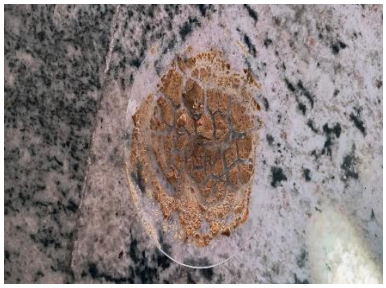

Figure 9: Moisture content.

Ash value

Ash value is generally the residues remaining after complete incineration of the powdered sample. It is used identity or purity of the drug. Principally a very high ash value is representative of adulteration, contamination, substitution during preparation of the product. Ash values can be determined as follows:(as shown in fig.10)[33]

Figure 10: Ash.

Total Ash value

Total Ash value is used for determining low grade, exhausted products and also important for identifying excess of sandy, earthy matter with drug. About 2-4 gm the powdered sample was placed in a previously ignited and tarred crucible. The material was evenly spread on the crucible and ignited by gradually increasing the heat until it a white powder i.e. free from carbon was obtained. Followed by cooling the sample in desiccator and weight of sample was recorded. Percentage total ash was calculated with reference to the air-dried sample.[33]

Acid insoluble Ash value

It is used to determine the earthy matter. Add 25 ml of hydrochloric acid to the crucible containing total ash and covered it with watch glass. The mixture was boiled gently for 5 minutes. Further watch glass was rinsed with 5 ml of hot water and added into the crucible. The insoluble matter was collected on an ash-less filter paper and washed with hot water until it became neutral. The filter paper containing the insoluble matter was transferred to the original crucible, dried on a hot plate and ignited to constant weight and subjected for cooling in desiccator for 30 minutes followed by weighing the sample. Percentage of acid insoluble ash was calculated in reference to air-dried sample.[33]

Water soluble ash value

It is the difference in weight between total ash and residue after treatment of total ash with water. It is used to determine whether the material is exhausted by water or not. To the crucible containing total ash, 25 ml water was added and boiled for 5 minutes. The insoluble matter was collected on an ash-less filter paper. Followed by washing with hot water and subjected for ignition for 15 minutes at temperature not exceeding 450º C. the sample was cooled, weighed and percentage of water-soluble ash was calculated in reference to air dried sample.[33]

Chemical test

a. Shinoda test

Aqueous solution was added to a pinch of magnesium turnings and 1-2 drops of concentrated hydrochloric acid were added. Formation of pink color indicates the presence of Flavanoids.

b. Lead acetate test

Aqueous solution was taken and few drops of 10% lead acetate solution were added. Appearance of yellow color precipitate indicates the presence of flavonoids. (as shown in the fig.11 **)**[34]

Figure 11: Lead Acetate Test.

c. Salkowski test

Aqueous Solution (5 ml) was mixed with chloroform (2 ml), and concentrated sulphuric acid (3 ml) was carefully added to form a layer. A reddish-brown coloration of the interface was formed to show positive results for the presence of terpenoids. (as shown in the fig 12)[34]

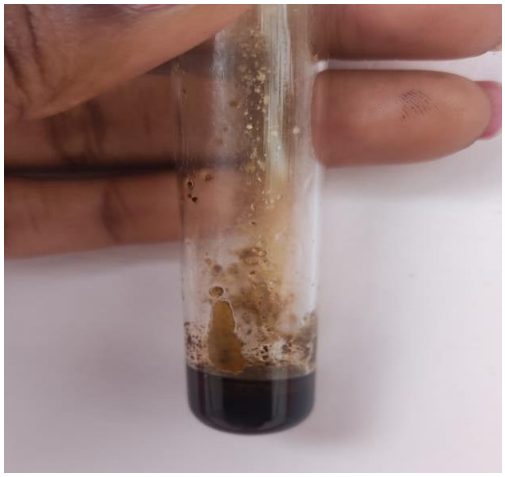

Figure 12: Salkowski Test.

Irritancy test

The prepared face pack was applied to the previously marked area of a 1 square cm was marked on the left-hand dorsal surface and time was recorded. Skin was then observed for irritancy, erythema and edema (if any), for regular intervals up to 24 hrs.[35,36]

Washability

Formulation was evaluated for its ability to get washed off. Face pack was applied on the skin and then ease and extent of washing with normal tap water were checked manually.[37]

Spreadability

Spreadability was determined by an apparatus suggested by fabricated in- house. The apparatus consist of a wooden block with a fixed glass slide and movable glass slide with one end tied to weight pan rolled on the pulley, which was in the horizontal level with fixed slide. The spreadability of the formulated gel was measured on the basis of 'Slip and Drag' characteristics of gel. An excess of gel (about 2g) under study was placed on this ground slide. The gel was then sandwiched between two slides. One kg weight was placed on the top of the two slides for 5 min to excel air and to provide a uniform film of the gel between the slides. Excess of the gel was scrapped off from the edges. The top plate was then subjected to pull off 50 gm. Mix with the help of string attached to the hook and the time (T, in seconds) required by the top slide to move a distance of 7.5 cm be noted. A shorter interval indicated better spreadability.[38,39]

Figure13: Spread Ability.

Microbial Assay

The antibacterial activities of different formulations were determined agar well diffusion method. In this method nutrient agar plates were seeded with 0.2 ml of 24 h broth culture of Escherichia coli and Pseudomonas aureginosa a causative organism for acne vulgaris. The agar plates were allowed to solidify. A sterile 8 mm borer was used to cut wells of equidistance in each of the plates. 0.5 ml of formulations herbal extracts were introduced into the wells at randomly. The plates were incubated at 37 °C for 24 hours. The antibacterial activities were evaluated the zones of inhibition.[40]

Stability study

By keeping the created formulation at various temperatures for a month, stability testing was done on it. The packed glass vials of formulation were tested for physical characteristics such as colour, odour, pH, consistency, and feel while being stored at different temperatures such as room temperature and 40°c.[41,42,43]

Recent innovation

Nanofiber Facial Masks with Herbal Extracts

Researchers have developed nanofiber facial masks incorporating dried ginger (*Zingiberis Rhizoma)* essential oil. By encapsulating the essential oil within β-cyclodextrin and integrating it into nanofibers via electrospinning, these masks offer controlled release of active compounds, improving skin absorption and therapeutic effects.

Powder-Based Herbal Face Masks

Brands like Khadi have introduced powder face masks that blend natural ingredients with Ayurvedic principles. These masks allow users to customize their application by mixing the powder with water, milk, or rose water to create a paste suitable for their skin type. This approach offers flexibility and freshness in skincare routines.

DIY Herbal Face Masks

The trend of do-it-yourself (DIY) herbal face masks has gained popularity, with individuals creating masks using simple, natural ingredients. For example, a two-ingredient mask using flaxseeds and water has been touted for its hydrating and skin-tightening effects, offering a natural alternative to commercial products.

CONCLUSION

The formulation and evaluation of a herbal face pack incorporating banana peel powder, orange peel powder, and *Terminalia chebula* powder demonstrate promising skincare benefits. The combination harnesses the antioxidant, anti-inflammatory, and exfoliating properties of these natural ingredients, promoting skin rejuvenation and overall health. Physicochemical evaluations confirm its stability, ideal texture, and safety for topical application. The synergy of these herbal extracts offers a sustainable and effective alternative to synthetic skincare products. Further research and clinical validation can enhance its efficacy, paving the way for commercialization in the growing herbal cosmetics market.

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