

Formulation and Evaluation of Herbal Face Pack

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Abstract- The increasing preference for natural and plant-based cosmetic products has accelerated research into herbal formulations for skincare applications. Herbal face packs have emerged as effective alternatives to synthetic cosmetics because of their therapeutic potential, biocompatibility, affordability, and reduced risk of adverse effects. The present study was undertaken to formulate and evaluate a polyherbal face pack containing naturally derived ingredients with cleansing, moisturizing, antimicrobial, antioxidant, and skin-enhancing properties.

Three formulations designated as F1, F2, and F3 were prepared by varying the proportions of selected ingredients. The ingredients were sieved, accurately weighed, and blended using geometric dilution to ensure uniformity. The prepared formulations were evaluated for organoleptic characteristics, powder flow properties, physicochemical parameters, stability, antimicrobial activity, and skin compatibility. Parameters such as bulk density, tapped density, angle of repose, Carr's index, Hausner's ratio, washability, grittiness, pH, drying time, and irritancy were assessed.

The results demonstrated satisfactory physical properties, good flow characteristics, acceptable pH, ease of application, and stability. No signs of erythema, edema, or skin irritation were observed during patch testing. Antimicrobial studies indicated activity against common bacterial strains. Among the prepared formulations, F2 exhibited the most balanced performance, providing effective cleansing, hydration, oil control, complexion enhancement, and acne management.

Keywords: Herbal face pack, polyherbal formulation, herbal cosmetics, skincare, multani mitti, neem, turmeric, cosmetic evaluation.

I. INTRODUCTION

Skin is the largest organ of the human body and serves as the primary interface between the body and the external environment. It provides protection against

physical, chemical, and microbial insults while maintaining hydration, regulating temperature, and facilitating sensory perception. The appearance and condition of the skin significantly influence an individual's confidence, well-being, and quality of life.

Modern lifestyles, environmental pollution, excessive ultraviolet radiation, stress, poor nutrition, and hormonal imbalances have contributed to a rise in dermatological concerns such as acne, pigmentation, blackheads, dryness, premature aging, and uneven skin tone. These conditions often require long-term management, prompting increased interest in safe and sustainable skincare approaches.

Traditional medicinal systems have long emphasized the use of natural ingredients for maintaining skin health. Ayurveda describes numerous herbal preparations designed to improve complexion and support healthy skin function. Among these, facial applications known as Mukhalepa have been used for centuries to address acne, blemishes, pigmentation, and other skin-related concerns. Such preparations are typically composed of powdered herbs, clays, and botanical extracts possessing cleansing, soothing, and rejuvenating properties.

The growing demand for natural cosmetics has stimulated research into herbal formulations that combine traditional knowledge with modern scientific evaluation. Unlike synthetic products that may contain harsh chemicals, herbal formulations are generally regarded as safer, environmentally friendly, and more compatible with the skin.

Herbal face packs represent one of the most widely used cosmetic preparations because they provide multiple benefits including cleansing, exfoliation, hydration, oil control, and enhancement of skin texture. The present study was therefore designed to

formulate and evaluate a polyherbal face pack containing selected botanical ingredients known for their cosmetic and therapeutic benefits.

II. AIM AND OBJECTIVE:

2.1 AIM: Formulation and Evaluation of Herbal Face Pack

2.2 OBJECTIVE:

1. To prepare herbal face pack formulations using selected medicinal plant materials.
2. To evaluate the physicochemical properties of the formulations.
3. To assess flow characteristics of the prepared powders.
4. To determine skin compatibility through irritancy studies.
5. To evaluate antimicrobial activity against selected microorganisms.
6. To identify the most effective formulation based on overall performance.

III. MATERIALS AND METHODS

3.1 Materials

The formulation was prepared using the following ingredients:

- Sandalwood powder
- Orange peel powder
- Green tea powder
- Raktachandan powder
- Aloe vera powder
- Turmeric powder
- Fenugreek powder
- Multani mitti
- Milk powder
- Rice flour
- Neem powder
- Saffron

All ingredients were procured from reliable local sources and stored under suitable conditions.

3.2 Preparation of Formulations

Each ingredient was cleaned and passed through a suitable sieve to obtain uniform particle size. The required quantities were accurately weighed and blended using geometric dilution. Three formulations

designated F1, F2, and F3 were prepared with varying ingredient concentrations.

The blended powders were stored in airtight containers protected from moisture and light until evaluation.

IV. ROLE OF INGREDIENTS

Sandalwood Powder

Provides cooling, soothing, and anti-inflammatory effects. It helps reduce skin irritation and promotes an even complexion.

Orange Peel Powder

Acts as a natural exfoliant and brightening agent. The presence of vitamin C supports skin rejuvenation.

Green Tea Powder

Functions as a potent antioxidant that protects skin from free radical damage and premature aging.

Raktachandan

Possesses soothing and complexion-enhancing properties and helps reduce skin inflammation.

Aloe Vera Powder

Provides hydration and improves skin softness while supporting tissue repair.

Turmeric

Exhibits antimicrobial, antiseptic, and anti-inflammatory activities beneficial in acne management.

Fenugreek Powder

Contributes nourishment and supports healthy skin texture.

Multani Mitti

Acts as a natural absorbent that removes excess sebum, dirt, and impurities.

Milk Powder

Provides moisturization and nourishment, improving skin smoothness.

Rice Flour

Functions as a gentle exfoliating and polishing agent.

Neem Powder

Offers antibacterial and anti-acne properties useful in controlling skin infections.

Saffron

Enhances complexion and contributes to skin radiance.

V. EVALUATION OF FORMULATIONS

Organoleptic Evaluation

The formulations were evaluated for color, odor, texture, appearance, and overall acceptability.

Powder Flow Properties

The following parameters were assessed:

- Angle of repose
- Bulk density
- Tapped density
- Carr's index
- Hausner's ratio

Physicochemical Evaluation

The formulations were evaluated for:

- pH
- Washability
- Grittiness
- Drying time
- Spreadability

Skin Irritation Study

Patch testing was conducted to evaluate:

- Erythema
- Edema
- Irritation

Antimicrobial Evaluation

Antimicrobial activity was assessed against selected bacterial strains to determine the protective potential of the formulation.

VI. RESULTS AND DISCUSSION

The prepared formulations exhibited acceptable physical characteristics and were aesthetically suitable for cosmetic application.

Powder Characteristics

The angle of repose values indicated satisfactory flow properties. Bulk density and tapped density measurements demonstrated adequate packing behavior. Carr's index and Hausner's ratio values suggested good flowability and compressibility characteristics.

Washability and Texture

All formulations were easily washable and left the skin feeling soft and clean after removal. No grittiness was observed, indicating proper particle size distribution.

Skin Compatibility

Patch testing demonstrated excellent skin compatibility. No irritation, redness, swelling, or discomfort was observed following application, confirming the safety of the formulations for topical use.

Antimicrobial Activity

The formulations demonstrated inhibitory activity against bacterial strains tested during microbial evaluation. This suggests potential usefulness in reducing microbial growth associated with acne and skin infections.

Comparative Performance of Formulations

Formulation F1

F1 exhibited strong oil absorption and cleansing performance because of its higher multani mitti content. It was particularly suitable for oily and acne-prone skin.

Formulation F2

F2 provided balanced skincare benefits, including cleansing, hydration, oil control, complexion enhancement, and acne management. The combination of moisturizing and antimicrobial ingredients contributed to its superior overall performance.

Formulation F3

F3 demonstrated excellent nourishing and moisturizing properties. It was particularly suitable for dry and sensitive skin due to its lower concentration of absorbent ingredients.

Best Formulation

Based on the collective evaluation parameters, F2 was identified as the optimum formulation. The balanced composition ensured effective cleansing while maintaining hydration and skin comfort.

VII. FUTURE SCOPE

Future investigations may focus on:

- Clinical evaluation involving larger populations.
- Long-term stability studies.
- Quantitative antioxidant analysis.
- Development of commercial-scale formulations.

- Incorporation of standardized herbal extracts.
- Comparative studies with marketed products.

VIII. CONCLUSION

The present study successfully developed and evaluated a polyherbal face pack using ingredients with established cosmetic and therapeutic benefits. The formulations exhibited satisfactory physicochemical properties, acceptable flow behavior, good stability, ease of application, and excellent skin compatibility. The absence of irritation and favorable antimicrobial activity further supported their suitability for cosmetic use.

Among the developed formulations, F2 demonstrated the most balanced performance and provided multiple skincare benefits including cleansing, hydration, oil control, complexion enhancement, and acne management. The findings indicate that herbal face packs formulated from carefully selected natural ingredients can serve as safe, effective, and economical alternatives to synthetic cosmetic products. Continued research and clinical validation may further establish their role in modern skincare and cosmetic science.

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