



Herbal formulation and evaluation of face pack using different herbs for healthy and gleaming skin

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Abstract

The herbal face pack was prepared with the aim to promote nourishment, to enhance the appearance and aesthetic feel of skin. We formulated herbal pack using powder of 5 plants *Azadirachta indica* leaves, *Rosa indica* petals, *Citrus sinensis* peel, *Beta vulgaris* and *Aloe vera pulp* with other ingredients include glycerine, rose water and multani mitti. The qualitative phytochemical analysis and thin layer chromatography (TLC) of plants used in the present study. The formulated face pack was evaluated for different parameters include physicochemical properties, flow properties, bulk density, tapped density, Carr's index, Hausner's Ratio and skin irritancy test. The Phytochemical analysis showed presence of tannins, quinones, terpenoids flavonoids and reducing sugar in all plants used. TLC determined Betalin, β – carotenoid in *B. vulgaris*, flavonoid in *R. indica*, Anthraquinone in *A. vera*, Terpenoids in *A. indica*, and Terpenoids in *Citrus sinensis* on the basis of Rf value. The results obtained from various evaluations indicated that the prepared face pack was smooth, fine texture, straw color, pleasant smell, pH 6.8 ± 0.02 , 9.8 % moisture content, good flow ability, Angle of repose 26.67° , 0.43 g/mL, 0.50 g/mL tapped density, 14 % Carr's index, and 1.16 Hausner's Ratio. Irritancy test did not show any signs of redness, rashes, and no erythema. Formulation can be easily washed off from skin with no signs of stains on skin and can be used as face scrub to remove dead and fleecy skin and safe to use on skin. The presence of natural agents in formulation does not directly alter the normal physiological properties of skin and yet tends to be effective.

Keywords: Herbal formulation, face pack, phytoconstituents and facial skin

Introduction

Herbal formulations are made from plants or their parts, whole extracts or active concentrates (usually does not include the isolated compounds), with or without excipients into safe, effective and uniform composition medicinal products. The scientific method by which the plant bioactive concentrates are processed into safe herbal products is called herbal formulation development. These are obtained by subjecting herbal substances to processes such as grinding, soaking, dripping, extraction (infusion, decoction, maceration, and percolation), distillation, expression, fractionation, purification, concentration, fermentation, boiling or other physical or biological processes (Ahmed *et al.*, 2026)^[1].

Chemical based cosmetics excessive and prolonged use effect skin with many side effects. Therefore, nowadays a shift herbal cosmetic is increasing with high demand. The plant contain secondary metabolites as phytoconstituents or phytochemicals have medicinal and protective properties. These are used since ancient time for medicine and skin products which nourishes skin with no side effects unlike synthetic products. The advantageous properties of these bioactive phytoconstituents used for manufacturing of topical preparations are likely to poses antioxidant, antiinflammatory, antimicrobial, antiaging, anticarcinogenic, UV protecting activity (Rodrigues *et al.*, 2018; Bijauliya *et al.*, 2017; Chauhan and Tyagi, 2018; Sujith, 2011)^[7, 9, 31, 40].

Facial skin is an important part of the body that indicates a person's health (Sanghi and Rakesh, 2016) which gets damaged due to environment pollution, stress, hormonal imbalance, unhealthy diet poor hygiene and microbial infections (Pandey, and Meshya, 2019)^[27]. These factors

leads to skin problems like acne, pigmentation, tanning, wrinkles, dryness and allergic reactions (Dureja *et al.*, 2005)^[11]. Such type of skin problem can be effectively overcome by using variety of skin care preparation like moisturizers, creams, lotions, face pack, face scrub, oils, serums etc (Mahajan *et al.*, 2020^[21]; Gavhane and Tambe, 2022; Bhutkar and Shah, 2019)^[6]. The synthetic has side effects, so to cure from these problems people use herbs in form of face packs for cleaning, strengthening or firming and beautifying skin since ancient times. The face pack is the soft powder used for face application. These preparations are applied to the face as a liquid or paste and left to dry and dry to form a film that gives the skin a firming, strengthening and cleansing effect, removes tans and pigmentation, control acne and pimples, enhance blood circulation, tighten and rejuvenates skin (Kumar *et al.*, 2018)^[19]. They usually remain on the skin for ten to twenty-five minutes to evaporate all the water and clean face (Martin, 2009)^[23]. Herbal face packs are widely used for improving skin complexion, reducing acne, controlling excess oil secretion, tightening skin, and promoting healthy and glowing skin. Ingredients such as neem, turmeric, sandalwood, *Aloe vera*, orange peel, rose petals, gram flour, beetroot powder, and Multani mitti were used. The use of various herbs in herbal face packs due to their medicinal and cosmetic properties. Neem (*Azadirachta indica*) possesses antibacterial, antifungal, anti-inflammatory, and antioxidant properties. It is highly effective in treating acne, pimples, and skin infections (Pandey, and Meshya, 2019)^[27]. *Aloe vera* contains vitamins, enzymes, minerals, and amino acids that moisturize and nourish the skin, improve skin elasticity and soothes irritated skin (Kumar *et al.*, 2018)^[19]. Orange Peel (*Citrus sinensis*) is rich in vitamin C and antioxidants

contributes to collagen synthesis and protection against oxidative damage. It helps remove dead skin cells, improve complexion, and reduce tanning (Kumar *et al.*, 2018) ^[19]. Rose Petals (*Rosa indica*) possess soothing, refreshing, and anti-inflammatory properties. They help maintain skin softness and improve skin tone. The vitamin C and antioxidant content of beetroot help in collagen synthesis and prevention of premature aging. Beetroot extracts also improves blood circulation and tissue oxygenation, thereby enhancing skin nourishment and natural glow (Clifford *et al.*, 2015) ^[10].

Multani mitti or Fuller's earth is a natural clay widely used in skincare preparations. It absorbs excess oil, removes impurities, and tightens skin & pores (Sharma, 2015, Mithal and Saha, 2000 ^[25, 36]; Yadav and Yadav, 2015). Rose water is widely used in herbal face pack formulations because of its soothing, cooling, moisturizing, and mild antiseptic properties. It acts as a natural toner and helps improve skin hydration while enhancing the texture and spreadability of herbal packs. In cosmetic and herbal preparations, it is commonly incorporated as a vehicle or base to improve the overall effectiveness and sensory appeal of the formulation (Mahesh *et al.*, 2026) ^[22].

The present study focuses on the formulation and evaluation of an herbal face pack using different herbs namely *Azadirachta indica* (Neem), *Beta vulgaris* (Beetroot), *Aloe vera* (Ghikuvar), *Citrus sinensis* (Orange), and *Rosa indica* (Rose) for maintaining healthy and glowing skin.

Materials and Methods

The present study was carried out to formulate and evaluate an herbal face pack using natural ingredients such as Beetroot powder, Neem leaves powder, *Aloe vera* gel, orange peel powder, Multani mitti, rose petals powder and rose water. The selected ingredients were chosen based on their antioxidant, antimicrobial, anti-inflammatory, moisturizing, exfoliating, and skin rejuvenating properties. The prepared formulation was evaluated for various physicochemical and organoleptic parameters to determine its suitability for cosmetic use.

Materials Required

The herbal ingredients used in the preparation of the face pack were collected from herbal garden, Jawaharlal Nehru Cancer Hospital and Research Centre, Bhopal. The other ingredients rose water, multani mitti and dried powder of beetroot were procured from local market. The plants were identified and authenticated based on their morphological characteristics. The neem leaves and rose petals collected, shade dried and powdered mechanically. Similarly, orange peel was also dried and powdered. The gel of *Aloe vera* was collected at the time of sanitizer preparation. The ingredients used for herbal pack preparation with their uses are given below in tabular form.

Table 1: Ingredients of Herbal face pack formulation

S. No.	Ingredients	Biological Source	Uses
1.	Beetroot Powder	<i>Beta vulgaris</i> (Amaranthaceae)	Natural coloring and antioxidant agent
2.	Neem leaves Powder	<i>Azadirachta indica</i> (Meliaceae)	Antibacterial and anti-acne agent
3.	<i>Aloe vera</i> gel	<i>Aloe barbadensis</i> Miller (Asphodelaceae)	Moisturizing and soothing agent
4.	Orange Peel Powder	<i>Citrus sinensis</i> (Rutaceae)	Exfoliating and skin brightening
5.	Rose petals powder	<i>Rosa indica</i> (Rosaceae)	brightens dull skin, calms irritation, and gently exfoliates
6.	Multani Mitti	Natural clay	Oil absorbing and cleansing agent
7.	Rose Water	<i>Rosa indica</i>	Skin refreshing and soothing agent

Phytochemical Analysis (Qualitative) of Plant Extract

The phytochemical analysis was carried out to determine the active ingredient of plant parts used in the present study. The qualitative estimation of phytochemical analysis has been estimated on the basis of color formation (Tiwari *et al.*, 2011; Mir *et al.*, 2013; Trease and Evan, 1983; Kokate *et al.*, 1997; Hegde and Joshi, 2010) ^[15, 17, 24, 43, 44].

Anthraquinones (Borntrager's test)

The plant powder was weighed 0.5 g and boiled with 10% hydrochloric acid (HCl) for few minutes in a water bath, filtered and cooled. To the filtrate equal volume of chloroform (CHCl₃) and few drops of 10% ammonia was added and allowed to heat. The presence of anthraquinones were indicated by appearance of pink rose color.

Test for Quinones (Sodium Hydroxide (NaOH) Test)

The solution of 1 ml NaOH (10% in alcohol) added to 1 ml of plant powder. The development of a red, blue-green, or reddish-blue color indicated the presence of quinones.

Test for Glycosides

The plant material was mixed in methanol, kept for 20 mins and filtered. To the filtrate 3 mL chloroform added mixed and shaken. The chloroform layer formed was separated and

to it 10 % Ammonia added. Appearance of pink color for positive result.

Test for Cardiac Glycosides (Keller-Kiliani Test)

The plant material was mixed with chloroform and kept for few minutes, filtered and mixed with glacial acetic acid containing 2% (FeCl₃). To it concentrated H₂SO₄ was added to form a layer. A brown ring at the interface and a bluish-green turning layer indicated cardiac glycosides.

Steroids (Salkowski Test)

The plant material was dissolved in methanol and to it 5 drops of concentrated Sulfuric acid (H₂SO₄) was added. The formation of red color indicated the presence of steroids.

Tannins (Ferric Chloride Test)

The plant material was weighed to 0.5 g and dissolved in 10 ml of distilled water. The solution was filtered and to it ferric chloride was added, the presence of tannin was indicated by blue black precipitate.

Terpenoids (Salkowski Test)

The plant material was weighed 0.2 g and mixed with 2 ml of chloroform and 3 ml of concentrated hydrochloric acid (HCl) carefully to form a layer. A reddish-brown coloration

of the interface formed indicated positive results for the presence of terpenoids.

Flavonoids

The plant material mixed with 10 ml of ethyl acetate heated over a steam bath for 3 min, filtered and mixed with 1 mL dilute ammonia solution to 4 mL filtrate. The formation of yellow color indicated the presence of flavonoids.

Reducing Sugar

The plant material was weighed 0.5 g in test tube and dissolved in 1 ml of distilled water and to it 2 to 8 drops of Fehling's solution was added and boiled for few minutes. The brick red precipitate indicated the presence of reducing sugar.

Phlobatannins

The plant sample was boiled with 1% aqueous hydrochloric acid (HCl) to observe the deposition of red precipitate for the presence of phlobatannins.

Thin Layer Chromatography (TLC) Analysis

Thin Layer Chromatography (TLC) was carried out for the preliminary identification and separation of phytoconstituents present in the plant parts used for herbal face pack formulation in the present study. The analysis was performed to confirm the presence of pigment-containing compounds and evaluate the chemical profile of the extracts. Silica gel powder taken and dissolved in distilled water mixed using mortar and pestle. The prepared gel poured on clean slides and slides kept for drying an activation for one hour at 110 ° C. Ten (10 µL) of 5% solution of the extract in 95% methanol was spotted on the plate and 10 µL was added to the plate. The plate was allowed to dry and develop in a mixture of chloroform and methanol (47:3 by volume) until the solvent front had ascended to 10 cm. The slides were then removed, dried in oven and the height of the solvent was marked using a pencil. The slides were developed using iodine crystals It was allowed to dry and the retention factors of the color spots were determined. The Retention factor (Rf) values for each spot was calculated. The Rf is defined as the distance traveled by the compound divided by the distance traveled by the solvent.

Rf value = $\frac{\text{distance travelled by compound}}{\text{distance travelled by solvent}}$

Formulation of Herbal Face Pack

The materials used for preparation of poly herbal face pack were formulated by using plants powder, multani mitti and rose water for making a viscous even solution for applying on face. The formulation include cleaning, drying and pulverization of required material in powdered form in suitable proportions. The details of materials used are given in tabular form and process elaborated below.

Method of Preparation

Step 1: Preparation of Dry Base

The dried powder of neem, rose petals and multani mitti were weighed. The powers are taken in clean petri plate. All the powders are mixed uniformly.

Step 2: Preparation of Gel Base

In another glass petri plate gel of *Aloe vera* mixed with glycerine and rose water slowly.

Step 3: Mixing of both dry base and gel base

Add dry powder mixture slowly into the gel base with continuous stirring. Mix properly until a uniform face pack is formed. The uniform face pack is prepared and applied on hands to see its effect. The evaluation parameters and skin irritability tests were also determined. The dry prepared herbal face pack was stored in an airtight container and evaluated by various evaluation parameters.

Table 2: Composition of Herbal Face Pack

S. No.	Ingredients	Quantity
1.	Beetroot Powder	5 gm
2.	Neem leaves Powder	5 gm
3.	Orange peel powder	5 gm
4.	Rose petals powder	5 gm
5.	<i>Aloe vera</i> gel	1 teaspoon
6.	Rose water	q.s. for paste preparation
7.	Multani mitti	13 gm
8.	Glycerin	0.1 mL

Evaluation of Face Pack

The prepared herbal face pack was evaluated for color, odor, appearance, texture, pH, spreadability, washability, irritancy, and stability.

Organoleptic and physicochemical Properties

The formulation was evaluated for nature, color, odor, texture, smoothness, pH and moisture content. The moisture content determined by Loss on drying method (LOD). The weight of herbal face pack taken in tared petri plate, heated in a hot air oven at 105°C for 1 hour until a constant weight is achieved, and weight loss percentage calculated (Akanksha *et al.*, 2026)^[2]. The weight of face pack powder taken was 3 – 5 gm. The percentage of moisture content calculated by the formula given below.

Moisture Content (% w/w) = $\frac{W_2 - W_3}{W_2 - W_1} \times 100$

Where:

- W₁ = Weight of the empty petri dish
- W₂ = Weight of the petri dish + sample before drying
- W₃ = Weight of the petri dish + sample after constant drying

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.

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. The angle of repose calculated online by angle of repose calculator (Sandanshiv *et al.*, 2023)^[33].

Angle of repose (θ) can be calculated by using following formula:

Angle of repose (θ) = $\tan^{-1} (h/r)$

Where, θ - Angle of repose

h - Height of the heap

r - Radius of the base

Table 3: Standard values of Angle of Repose

Flow properties	Angle of Repose
Excellent	25 – 30
Good	31 – 35
Fair	36 - 40
Passable	41 – 45
Poor	46 – 55
Very Poor	56 – 65
Poorest	More than 66

Bulk Density

It is calculated by the ratio of given mass of powder and its bulk volume. Determined by transferring 25 gm of accurately weighed amount of powder sample to the graduated cylinder (Sandanshiv *et al.*, 2023) ^[33].

Bulk density = $\frac{\text{Mass of sample}}{\text{Volume of sample}}$

Volume of sample

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 tapped mechanically to determine density and 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 given below (Sandanshiv *et al.*, 2023) ^[33].

Tapped density = $\frac{\text{Mass of sample}}{\text{Tapped volume of sample}}$

Tapped volume of sample

Housner's Ratio

The flow ability of powders can be determined by housner's ratio. It basically the ratio of tapped density to the bulk density of the powder (Sandanshiv *et al.*, 2023) ^[33].

Housner's ratio = $\frac{\text{Tapped Density}}{\text{Bulk Density}}$

Bulk Density

Table 4: Standard values of Hausner's Ratio

Flow chart	Hausner's Ratio
Excellent	1.00 – 1.11
Good	1.12 – 1.18
Fair	1.19 – 1.25
Passable	1.26 – 1.34
Poor	1.35 – 1.45
Very Poor	1.46 – 1.59

Carr's Index

The Percent Carr's index also known as compressibility of a powder. It is known as is also used for measuring the powder flow property. It is directly related to the relative flow rate of cohesiveness and particle size. Following equation is used to determine Carr's index (Alitha and Megha, 2025) ^[3].

Carr's index (%) = $\frac{\text{Tapped density} - \text{Bulk density}}{\text{Tapped density}} \times 100$

Table 5: Standard values of Hausner's Ratio

Flow chart	Carr's Index
Excellent	5 – 15
Good	12 – 16
Fair to Passable	18 – 21
Poor	2 – 35
Very Poor	33 – 38
Very Very Poor	>40

Irritancy Test

The prepared face pack was applied to the 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 (Sandanshiv *et al.*, 2023) ^[33]. Ethical approval taken before skin testing on humans with consent form.

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 (Sandanshiv *et al.*, 2023) ^[33].

Statistical analysis

All experiments were performed in triplicate and results are expressed as mean $\pm$ standard deviation (SD). The mean and standard deviation values were calculated in MS excel.

results and discussion
In the present study herbal face pack formulated. The phytoconstituents in plants selected in the present study were determined by qualitative phytochemical analysis and thin layer chromatography. The results of qualitative phytochemical analysis given below in the tabular form (Table 6). The results of thin layer chromatography and presence of compounds on the basis of Rf value were given in the table below (Table 7).

Herbal formulation and evaluation

The herbal face pack formulated using different herbs and other ingredients. The herbs and ingredients selected for the formulation due to the properties given in the table below (Table 8). The face pack efficacy, shelf life and usage evaluated by different parameters and the results are given in tabular form (Table 9). The herbs selected on the basis of medicinal properties and the results of parameters organoleptic, physicochemical and rheological were given in table (Table 10). The pH and moisture content were good for skin and have soothing effect for longer time and maintains moisture in skin. The rheological effect results were found good with flow ability, quality control found satisfactory, uniform texture and with excellent product compressibility.

Skin Irritancy and Washability Test

Twenty healthy volunteers applied on skin and reported no sign of irritation, redness, rashes, erythema and edema. The face pack can be easily washed off from skin with normal water (Figure 1). The ethical approval taken before study with ethical number 1131/JNCH/RES/08/04/2026, dated 08 April 2026 from Ethical Committee of Jawaharlal Nehru Cancer Hospital and Research Centre, Bhopal. The volunteers consent taken oral and written before testing.

Table 6: Qualitative Phytochemical analysis. The experiment was performed in triplicate

Tests for Phytoconstituents	Phytoconstituents	<i>Azadirachta indica</i>	<i>Rosa indica</i>	<i>Beta vulgaris</i>	<i>Aloe vera</i>	<i>Citrus sinensis</i>
Sodium Hydroxide (NaOH) Test	Quinones	++	+	+	+	-
Borntrager's Test	Anthraquinones	-	+	-	+	-
	Flavonoids	++	++	++	+	-
Hydrochloric Acid (HCl) Test	Phlobatannins	-	-	-	-	-
Chloroform Test	Glycosides	+	+	+	+	+
Keller-Kiliani Test	Cardiac Glycosides	+	+	+	-	+
Salkowski Test	Steroids	+	+	+	+	+
Ferric chloride (FeCl ₃) Test	Tannins	++	+	++	++	+
Salkowski Test	Terpenoids	++	+	+	++	++
Fehling's test	Reducing Sugar	++	++	++	+	+

Note: Positive result indicated by (+) and negative indicated by (-).

Table 7: Thin Layer Chromatography

Plant used	Total Distance travelled by solvent (cm)	Distance travelled by different compounds (cm)	Rf value	Name of Compounds separated
<i>B. vulgaris</i>	5.7 cm	2.3 cm	0.40	Betalain
	5.7	3.5 cm	0.61	β - carotenoid
<i>R. indica</i>	5.2 cm	3 cm	0.57	flavonoid
<i>A. vera</i>	3.5 cm	2.2 cm	0.62	Anthraquinone
<i>A. indica</i>	5.5 cm	3 cm	0.54	Terpenoids (Azadirachtin)
<i>C. sinensis</i>	5.4 cm	4.9 cm	0.90	Terpenoids

Note: Distance travelled by solvent and compounds in (cm) with Rf value. Compounds determined on the basis of Rf value.

Table 8: Herbal face pack formulation

Ingredient	Quantity	Function
Neem leaves powder	5 gm	Acts as clearing agent for acne, control excess oil, soothe inflamed skin
Rose petals powder	5 gm	For radiant and refreshed complexion, as well as brighten skin with tightening pores.
Beetroot powder	5 gm	Adds a natural rosy glow, fights dullness with vitamin C and antioxidants, helps reduce dark spots and tans, and supports firm skin by boosting collagen when used in a face pack
Orange peel powder	5 gm	Acts as a natural brightener, gentle exfoliator, and oil controller to help clear blemishes and revive dull skin
Multani mitti	13 gm	Absorb extra oil, deep cleaning pores, and reducing acne. It also helps clear dark spots, remove sun tan, and make skin glow
<i>Aloe vera</i> gel	1 teaspoon	Base and active booster
Rose water	q.s. for paste preparation	Cooling, soothing agent, mixing liquid, pH balance and fragrance

Table 9: Organoleptic and Physicochemical Properties

Evaluation Parameter	Observation
Color	Straw/Red
Odour	Pleasant
Texture	Fine
Appearance	Smooth, fine
Smoothness	Smooth
Consistency	Nor hard or thick
pH	6.8 $\pm$ 0.02
Moisture Content	9.8 %

Table 10: Rheological Evaluation

Evaluation Parameter	Observation	Inference
Angle of repose θ	26.67 °	Angle of repose between 25 – 30 ° is considered as excellent
Bulk Density	0.43 g/mL	Good flow ability
Tapped Density	0.50 g/mL	Good flow ability
Hausner's Ratio	1.16	Housner's ratio between 1.10 and 1.35 is considered as good
Carr's index (%)	14 %	% Carr's index between 11-15 is considered as good



Fig 1: Skin irritancy and washability test

Discussion

The qualitative phytochemicals analysis done by standard protocols include terpenoids, Steroids (Salkowski test), flavonoids (Alkaline reagent test), tannins (Braymer's test), saponins (Frothing test) and carbohydrates test (Fehling's test and Molisch's Benedict's test) (Raymond *et al.*, 2023) determined in plants used for herbal formulation showed presence of flavonoids, tannins, terpenoids and reducing sugar in all plants used. These phytoconstituents responsible for its antimicrobial, anti-inflammatory and wound healing properties (Surabhi *et al.*, 2026) ^[41]. The presence of tannin and saponin in Neem which gives promising result in herbal face pack with antibacterial activity (Shobiga *et al.*, 2021) ^[37]. The *Aloe vera* gel contains alkaloids and glycosides in high concentration which hydrating effect to face pack (Nalado and Abduljabbar, 2023; Sawalha *et al.*, 2025) ^[26, 35]. The presence of phenolic, flavonoid compound and ascorbic skin in *Rosa indica* rejuvenates skin and beautifies (Zahid *et al.*, 2018; (Rameeza, 2025) ^[29, 47]. The presence of alkaloids, tannins and terpenoids brightens skin (Gotmare and Gade, 2018 ^[13]; Gupta *et al.*, 2021) ^[14]. The presence of carotenoid betalains also detected by TLC and vitamin C in *B. vulgaris* act as a coloring agent and for collagen (Sidra *et al.*, 2021 ^[38]; Elizabeth *et al.*, 2025) ^[12]. The plants selected for herbal formulation due to presence of above phytoconstituents detected by qualitative phytochemical and TLC analysis. The TLC analysis may vary from previous studies depend on the solvent and geographical location of plant grown in different climatic conditions (Yalaka *et al.*, 2023; Aswarthagari and Sri, 2016) ^[4, 46]. Thus, in the present study polar solvent chloroform and methanol (47:3) selected which gave proper results but still some of the plants require other solvents for separation of compounds.

The formulation of an herbal face pack powder is designed to promote skin health, enhance complexion, and address common dermatological concerns using natural ingredients. Herbal face packs are used to stimulate blood circulation, rejuvenates the muscles and help to maintain the elasticity of the skin and remove dirt from skin pores. This study introduces a novel blend of neem powder, rose petals, orange peel, *Aloe vera* pulp, beetroot powder, rose water, and multani mitti powder each selected for their synergistic

therapeutic properties. Beetroot powder contains betalains and antioxidants beneficial for skin glow (Georgiev *et al.*, 2010). Neem possesses antibacterial properties effective against acne-causing microorganisms, also cures boils, acne marks, scars and other skin problems (Biswas *et al.*, 2002; Kumar and Komal, 2021 ^[8, 18]; Avhad *et al.*, 2022) ^[5]. *Beta vulgaris* contains Vitamin C that prevents skin pigmentation, thereby providing a fairer complexion and pinkish skin (Poonam *et al.*, 2024) ^[28].

Rose petals are rich in vitamin A, C, K which are beneficial for boosting collagen production in human body and helps to keep your skin supple, firmer and also lightens and brightens skin tone, fades scars, minimizes pores, and reduces hyperpigmentation (Khare, 2007) ^[16]. Rose water provides soothing and cooling effects to the skin (Sharma, 2015) ^[36]. *Aloe vera* pulp provides hydration, soothes irritation, and promotes wound healing due to its polysaccharides and enzymes (Surjushe *et al.*, 2008) ^[42]. The plant leaves store water and water dense leaves combined with special plant compounds called complex carbohydrates, make it an effective face moisturizer and pain reliever (Rohan *et al.*, 2024) ^[32]. The addition of orange peel powder in face pack act as a natural exfoliating agent and improves skin radiance due to its vitamin C content and other antioxidants (Kumar *et al.*, 2018) ^[19]. It also contains pectin, cellulose, and hemicelluloses which contribute towards skin cells strengthening and helps in skin hydration (Kumar and Komal, 2021 ^[18]; Somwanshi *et al.*, 2017) ^[39], other benefits of orange peel extract include unclogging pores, removing blackheads and treating acne. It contains citric acid, which exfoliates (Avhad *et al.*, 2022) ^[5].

Multani mitti powder, a natural clay, absorbs excess oil, cleanses pores, and improves skin elasticity. Rose water is aromatic aqueous distillate prepared from rose petals is used as a vehicle, cooling agent, toner, fragrance enhancer, soothing, hydrating and refreshing agents in cosmetic products (Poonam *et al.*, 2024) ^[28]. Rose water helps maintain skin pH and provides cooling effects on the skin (Sharma, 2015) ^[36]. The face pack is prepared by blending these ingredients in optimized proportions to ensure efficacy and safety.

This herbal formulation offers a sustainable, chemical-free alternative to commercial skincare products, suitable for

various skin types, and demonstrates potential in improving skin tone, reducing blemishes, and maintaining overall skin vitality. Further clinical studies are recommended to validate its long-term efficacy and dermatological benefits (Alitha and Megha, 2015). Similarly, a number of researchers had formulated herbal face pack using different herbs and multani mitti includes sandalwood, Hibiscus powder, Green Tea powder and Nutmeg powder (Alitha and Megha, 2015). Different evaluation techniques used to check efficacy. Organoleptic evaluation showed that the pack is smooth and pleasant-smelling powder. Rheological findings justified the flow properties of the pack as it was found to be free flowing and non-sticky in nature. Irritancy test showed its usage properties and effect on skin. Stability tests performed revealed the inert nature of the pack (Rashmi *et al.*, 2017) ^[30]. A powder based herbal face pack using natural ingredient like orange peel, neem, tulsi, sandalwood, rose oil, etc. Orange peel was used as core ingredient for its ability to reduce acne, wrinkle and also to control excessive secretion of oil is known as natural or herbal cosmetics (Sandanshiv *et al.*, 2023) ^[33]. The pH of 5.5 – 7.0 with 5% moisture content makes the herbal face pack suitable for skin by hydrating it with no irritation and itching (Rohan *et al.*, 2024) ^[32]. Herbal face pack containing natural active ingredients helps to reduce acne, redness, pimples, wrinkles, and dark circles. Such preparations may also help to increase fairness while promoting skin nourishing and soothing effects (Rohan *et al.*, 2024) ^[32]. The present face pack gave better tapped density due to optimum proportion of dense mineral clay multani mitti (Rashmi *et al.*, 2017) ^[30]. The herbal face pack Hausner ratio indicated good to fair flow ability due to fine particle friction (Alitha and Megha, 2025) ^[3].

Present research work aimed to formulate and evaluate poly herbal face pack to promote nourishment and glow of skin by using natural materials like multani mitti (Fullers Earth), orange peel, rose petal, beetroot and neem leaves. The face pack can also be used as scrub to remove dried, dead and flecky skin. This herbal face pack powder leverages the complementary actions of these ingredients to deliver a holistic skincare solution, aligning with the growing demand for natural, eco-friendly beauty products.

Conclusion

The face pack was prepared with the aim to promote nourishment, to enhance the appearance and aesthetic feel of skin. It was prepared by combining powders of various natural plants and herbs. Presence of natural agents in formulation does not directly alter the normal physiological properties of skin and yet tends to be effective. These agents also tend to cause minimal side effects unlike synthetic face pack containing chemical agents which may be harmful upon application. The prepared face pack can also be used as face scrub to remove dead and flecky skin. From the observation of all evaluation parameters it can be concluded that the prepared herbal face pack is safe to use on skin.

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