

Formulation and Evaluation of Herbal Face Pack Powder

Sakshi Sudhakar Bagmare¹, Rakshda R. Dhudakekar², Dr. Swati P. Deshmukh³

¹Student, Shraddha Institute of Pharmacy, Kondala Zambre, Washim

²Assistant Professor, Department of Pharmaceutical Chemistry, Shraddha Institute of Pharmacy, Washim

³Principal, Department of Pharmacology, Shraddha Institute of Pharmacy, Washim

sakshibagmare307@gmail.com

Abstract: *The present study focuses on the formulation and evaluation of a herbal face pack powder using natural ingredients known for their beneficial effects on the skin. The increasing demand for herbal cosmetics is mainly due to their safety, effectiveness, affordability, and minimal side effects compared to synthetic products. In this study, a herbal face pack was prepared using ingredients such as neem powder, orange peel powder, sandalwood powder, red lentil powder, and multani mitti, which possess antimicrobial, anti-inflammatory, antioxidant, and cleansing properties.*

The formulation process involved drying, grinding, sieving, and mixing the herbal ingredients in appropriate proportions to obtain a uniform and smooth powder. The prepared formulation was evaluated for various parameters including physical characteristics (color, texture, odour), flow properties (angle of repose, bulk density, tapped density, Carr's index, Hausner's ratio), pH, spreadability, washability, and irritancy.

The results showed that the herbal face pack had a smooth texture, pleasant odour, and acceptable color. The flow properties indicated good powder flowability, and the pH (6.90) was found to be suitable for skin application. The formulation exhibited good spreadability, easy washability, and no signs of irritation, indicating its safety and compatibility with the skin.

Keywords: Herbal face pack, Natural cosmetics, Skin care, Neem, Orange peel, Sandalwood, Red lentil, Multani mitti, Formulation, Evaluation, Antioxidant, Anti-inflammatory, Antimicrobial

I. INTRODUCTION

The skin is considered the body's largest organ. Skin is made up of multiple layers that protect the body from germs and other environmental toxins. Skin has many purposes including temperature regulation and insulation. A film called the "acid mantle" covers healthy skin and acts as a barrier. Skin also contains naturally occurring oil called "sebum" that protects and lubricates.

Skin can develop many problems. Symptoms of poor skin health include sores, spots, cracks, oiliness, dryness, scaling, itching, chapping, pimples, and rash. Causes are varied and may include stress, caffeine overload, allergies, high copper levels, poor digestion, constipation, poor circulation, lack of exercise, sun damage, irritating cosmetics, liver malfunction, air pollution, dehydration, and drug or alcohol abuse. Traditional medicinal resources, especially plants, have been found to play a major role in managing dermatological conditions. The demand for herbal medicines is increasing rapidly due to their lack of side effects, availability and less cost. Many herbs (which are packed with minerals, antioxidants, and bioflavonoids) are great for the skin. Herbs can cleanse, hydrate, heal, and balance the skin.

Skin anatomy :

Skin is the biggest organ of the human frame. It gathers sensory records from the surroundings and features as a shielding barrier to the body organs. It also allows in maintaining the right temperature of the frame. Skin consists of many specialized cells and structures. The pores and skin is the most important organ in the frame, covering



approximately 20 rectangular toes in total floor area. Our epidermis lets in us to feel touch, heat, and bloodless, as well as shields us from microbes and the surroundings. It also aids in regulating one's frame temperature.

II. SKIN LAYERS

The skin is made up of three main layers. The outermost layer, called the epidermis, serves as a protective barrier and is responsible for determining skin color. Beneath it lies the dermis, which contains sweat glands, hair follicles, and tough connective tissue. The deepest layer, known as the hypodermis or subcutaneous layer, consists mostly of fat and connective tissue that helps insulate the body and cushion internal structures.[3]

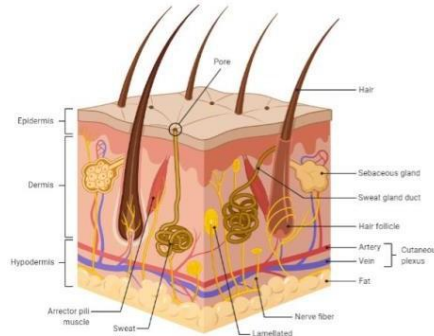


Fig no. 1: Skin Layers

1) Epidermis

The epidermis is the outermost layer of the skin. Its thickness varies depending on the body part — it's very thin on areas like the eyelids and much thicker on areas exposed to pressure and friction, such as the soles of the feet.

2) Dermis (Middle Layer of Skin)

The dermis is the layer right under the epidermis, and it does many important jobs.

Makes sweat: The dermis has tiny sweat glands that make sweat. Sweat comes out through small openings called pores. This helps cool your body and removes waste.

Grows hair: Every small hair on your body starts in the dermis. The hair grows from a root inside a tiny pocket called a hair follicle.

3) Hypodermis (Subcutaneous Layer):

The hypodermis is the bottom layer of your skin, found under the dermis.

Connects skin to muscles and bones: This layer has special tissues that link your skin to the muscles and bones underneath, helping hold everything together.

Supports blood vessels and nerves: Blood vessels and nerves grow in this layer and spread throughout the body, helping deliver oxygen and send signals.[3]

Herbal Face Pack Powder

Cosmetics are defined as the products used for the Purposes of cleansing, beautifying, promoting Attractiveness or alternating the appearance. From the Ancient time, different herbs are used for cleaning, Beautifying and to manage them. Face skin is the major Part of the body, which indicates the health of an Individual. In ayurveda, the herbal paste is called as "Mukha Lepa" used for as a facial therapy. This herbal Paste smeared on face to treat acne, pimple, scars, Marks and pigments. Mukha-Lepa" is the name of the herbal concoction to the skin is referred to as "Mukha Lepana". This Famous beauty treatment is used as a facial, and the "Face Pack" Smooth powder is used for facial Applications. Different herbal face packs are required for various skin kinds. Ayurveda is in high Demand in the cosmetology in industry due to its distinctive conception of beauty and effective, Affordable, and long-lasting beauty therapies that are



free of adverse effects. Face packs are helpful for Preventive, promotive, and curative of any skin issue. Face pack is the smooth powder Which is used for facial application. These preparations Are applied on the face in the form of liquid or pastes and allowed to dry and set to form film giving tightening, Strengthening and cleansing effect to the skin. Present Research article deals with the formulation and Evaluation of herbal face pack for glowing skin at home by using natural materials i.e., multani mitti, Neem, sandalwood, orange peel, red lentils etc

• Ideal properties of face pack:

- a) It should be non-irritating and non-toxic.
- b) It should be stable both physically and chemically.
- c) It should be free from gritty particles.
- d) It should have pleasant odour.
- e) They should be capable of producing significant cleaning of the skin.

• Benefits of Herbal Face Pack:

- a) Herbal face packs provide essential nutrients to the skin, helping to rejuvenate and revitalize it.
- b) It gives nourishing, soothing effect and helping with various skin issues like acne and scars.
- c) It relies on its natural ingredients and helps with skin inflammation, acne, and scarring.
- d) Herbal face packs can help open pores, remove dirt and dead cells.
- e) It improves blood circulation.
- f) They help to restore the lost shine and glow of skin in short span of time.
- g) Regular use of natural face masks bring glow to skin, improve skin texture and complexion.
- h) The harmful effects of pollution and harsh climates can be effectively combated with judicious use of face packs.
- i) They help to prevent premature aging of skin
- j) Formation of wrinkles, fine lines and sagging of skin can be effectively controlled by using natural face packs.
- k) Natural face packs make the skin look young and healthy.[3,4]

• Advantages

- a) It nourishes the facial epidermis .
- b) Preserve the skins suppleness .
- c) Eliminate debris that has become stuck
- d) It provides the epidermis with essential nutrition .
- f) Depending on the herbal ingredients , face packs can help reduce acne , pimples , scars , and Other blemishes .
- g) Face pack generally help to remove dead skin cells , which can lead to a brighter and smoother Complexion.[5]

• Disadvantages

- a) Some individuals may experience irritation, redness, or allergic reactions to specific herbs or Ingredients within the face pack
- b) Some ingredients can cause burning, itching, and inflammation.
- c) Such as turmeric can cause contact dermatitis in some people, leading to burning, itching,Inflammation.
- d) Allergies to specific ingredients can cause a range of reactions, including skin rash, itching,and hives.[5].

• Herbal Drugs :

What are herbal drugs?

Herbal drugs are organized from an expansion of plants which might be known or thought to have therapeutic qualities, including roots, stems, leaves, bark, fruit, seeds, and flowers.

Additionally, a lot of traditional medications come from plant life.

Herbal plants use in formulation of herbal face pack powder

- a) Multani mitti
- b) Sandalwood powder
- c) Orange peel powder
- d) Red lentils powder



e) Neem powder

Materials

- a) Multani mitti: Multani Mitti can help reduce blemishes, improve skin tone, and even tackle tanning. It also helps to remove dead skin cells, leaving the skin feeling soft and smooth.
- b) Sandalwood powders: Sandalwood’s natural exfoliating properties can help remove dead skin cells and promote a more Even skin tone. Sandalwood’s anti-inflammatory properties help to reduce redness and inflammation associated with acne, eczema, psoriasis, and Sunburn.
- c) Orange peel powder: Orange peel powder’s citric acid content can help lighten and brighten the skin, reducing the appearance of dark spots, pigmentation, and uneven skin tone. The antioxidants in orange peel help protect the skin from free radical damage and Premature aging
- d) Red lentil powder: Red lentils are rich in vitamins (like B complex) and minerals (like iron and potassium), Which can help brighten the skin and reduce the appearance of dark spots and blemishes. The antioxidants in red lentils, along with vitamin C and flavonoids, can help combat free Radicals and reduce the signs of premature aging.
- e) Neem powder: Neem’s antiseptic properties make it useful for healing minor cuts and wounds. Neem’s anti-inflammatory properties can help relieve pain and inflammation. Neem’s antibacterial properties help fight acne-causing bacteria and can improve acneprone Skin.

III. METHODOLOGY

1. Multani mitti and sandalwood powder were procured from the local market.
 2. All materials were carefully examined to ensure they were clean, fresh, and suitable for use.
 3. Orange peel powder, neem powder, and red lentil powder were prepared freshly using a drying and grinding process.
 4. The orange peels and neem leaves were dried using a hot air oven to remove moisture content.
 5. The dried materials were then finely powdered using a grinder to obtain a uniform particle size.
- Method of preparation
 1. All the required herbal ingredients were accurately weighed individually using a digital balance.
 2. Red lentil powder, orange peel powder, and neem powder were transferred into a mortar and pestle and triturated to obtain a fine mixture.
 3. Multani mitti and sandalwood powder were separately triturated in another mortar and pestle to achieve a uniform fine consistency.
 4. All the prepared powders were then combined in appropriate proportions as per the formulation.
 5. The combined mixture was thoroughly triturated to ensure uniform blending and homogeneity of the face pack powder.
 6. The final mixture was passed through sieve no. 44 to obtain uniform particle size and smooth texture.
 7. The prepared powder was allowed to dry at room temperature for one hour and then stored in a tightly closed container to prevent moisture contamination.

Sr . No.	Ingredients	Quantity	Uses
1)	Neem powder	5g	It show anti-microbial, antiseptic properties.
2)	Orange peel powder	4g	It show antioxidant properties.
3)	Sandalwood powder	4g	It show anti-inflammatory properties.
4)	Red lentil powder	5g	It act as natural exfoliating agent.
5)	Multani mitti	12g	It helps to remove dead skin cells, act as a cleansing



IV. EVALUATION STUDY

1) Physical characteristics

The Physical characteristic of the formulated powder was evaluated based on three key sensory attributes: colour, texture and Odour. These parameters provide initial insights into the aesthetic and consumer acceptability of the product.

- a) Color : The color of herbal face pack powder was found to be uniform pale yellow brown color
- b) Odour : odour was slightly woody or floral.
- c) Texture : It was smooth texture.

2) Flow properties

a) Angle of Repose

• Testing Procedure:

- i. Fix the funnel at a specified height above the flat surface.
 - ii. Carefully pour the sample powder through the funnel until
 - iii. the heap of powder forms a cone Allow the powder to flow freely until no further movement is observed
- Measurement Measure the height (h) and the radius R of the powder cone.
- iv. Calculate the angle of repose (θ) using the formula
 - v. Angle of repose powder = $\tan^{-1} (h/r)$.



Fig no. 2 : Angle Of Repose

b) Bulk Density:

- i. A known mass of powder was poured into a graduated cylinder without tapping.
- ii. Bulk density was calculated using the formula:
Bulk Density (g/mL) = Mass of Powders (g) / Bulk Volume (ml)

c) Tapped Density

- i. The same sample used in bulk density was then tapped mechanically/manually until the volume became constant.
- ii. Tapped density was calculated as following: Tapped Density (g/mL) = Mass of Powder (g) / Tapped Volume (mL)

d) Carr's Index

- i. Carr's Index indicates powder flowability and compressibility.
- ii. Calculated using the formula: Carr's Index (%) = (Tapped Density-Bulk Density) / Tapped Density \times 100

e) Hauser's Ratio

- i. Another indicator of flow properties.
- ii. Calculated using the formula: Hausner's ratio = Tapped Density /Bulk Density
- iii. A lower ratio (<1.25) suggests good flowability



3) pH test

The off of the powder formulation, when dispersed in water, was evaluated to assess its compatibility with skin and to ensure it falls within the dermally acceptable range.

• Procedure :

- i. An aqueous dispersion was prepared by mixing gram of the powder in 10 mL of distilled water (1:10 w/v).
- ii. The mixture was stirred well to ensure uniform suspension.
- iii. The pH was measured using pH paper Or pH meter.
- iv. The pH was compared against the typical skin pH range (5.5 – 7.0) to ensure skin



Fig no. 3 :Digital pH meter

4) Irritancy Test (Patch Test) :

The patch test was conducted to evaluate the potential of the formulation to cause irritation or allergic reactions upon skin contact.

• Procedure:

- i. A small quantity of the powder was applied to a clean, dry area on the inner forearm of a healthy volunteer.
- ii. The application site was covered with a sterile patch or gauze and left undisturbed for 24 hours.
- iii. After 24 hours, the site was inspected for any signs of irritation such as redness, itching. Swelling or rash.

5) Spreadability test

A Small quantity of sample was placed on a glass slide and another slide was placed above them; 100 G of weight was placed on the slide. The amount of time it took the get to spread out on the slide was measured and determined to be 3 cm in 40 seconds. It was calculated by using following

Formula: $S = \frac{m \times l}{t}$ Whereas

S-Spreadability

M-Weight placed on slide.

L-Length of glass.

T-Time taken in seconds.



Fig no. 5 : Spreadability



6) Washability test

This test was carried out directly on the skin. After applying On preparation and rinsing the skin with ordinary water, the skin was found to be clear and clean. Finally, washability was evaluated by applying the exfoliant on the skin at rinsing off with.

V. RESULT AND DISCUSSION

Physical characteristics

Sr. No.	Parameters	Result
1)	Color	Uniform pale yellowish brown color appearance
2)	Texture	Smooth texture appearance
3)	Odour	Slightly woody or floral

Flow properties :

Sr. No	Parameters	Result
1)	Angle of repose	26°
2)	Bulk density	0.50 g/ml
3)	Tapped density	0.60 g/ml
4)	Carr's index	16.7%
5)	Hauser ratio	1.20

Other parameters

Sr. No	Parameters	Result
1)	pH Test	6.90
2)	Irritability test	No irritation cause
3)	Spreadability test	7g cm/sec
4)	Washability test	Easily washable

VI. CONCLUSION

The herbal face pack powder was successfully formulated using natural ingredients such as neem powder, red lentil powder, orange peel powder, multani mitti, and sandalwood powder, all of which are known for their beneficial effects on the skin. The formulation process was simple, economical, and free from harmful chemicals, making it safe for regular use.

The evaluation parameters indicated that the prepared face pack powder possessed satisfactory physicochemical properties. The powder showed good flowability, acceptable bulk and tapped density, and a suitable Hausner ratio and Carr's index, indicating proper packing and handling characteristics. The pH of the formulation was found to be within the skin-friendly range, ensuring it does not cause irritation. Additionally, the spreadability and appearance of the face pack were found to be uniform and smooth, enhancing its applicability on the skin.



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