

## **FORMULATION AND EVALUATION OF PAPAYA BASED HERBAL FACEPACK FOR GLOWING SKIN**

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### **ABSTRACT**

Acne and dull skin are two prevalent issues that affect many people. For this reason, the demand for herbal formulations is rising steadily. The purpose of this research is to create and assess an herbal face pack for dull skin and acne using herbal ingredients papaya powder, turmeric, sandalwood, saffron, milk powder, rice flour, Neem powder, were purchased from local market in the form of dried powder. All powdered natural ingredients were sieved using 120 mesh, weighed accurately and mixed geometrically for uniform formulation and then evaluated for parameters including morphological, physicochemical, physical, phytochemical, irritancy along with stability examination. Thus, in the current work, we formulated an herbal face pack which can be simply made with the easily obtainable ingredients. After evaluation, we found good properties for the face packs, free from skin irritation and maintained its consistency even after stability storage

conditions. Results of the study scientifically verified that herbal face pack having enough potential to give efficient glowing effect on skin. The whole study is valuable to substantiate product rights due its beneficial benefits on the human beings.<sup>[1]</sup>

**KEYWORDS:** Skin, Herbal face pack, Formulation, Evaluation.

### **INTRODUCTION**

In the world of cosmetics and skincare, "face" generally refers to the skin on a person's face. This area is a focal point for many skincare and beauty products and routines. Stress, poor diet, lack of sleep, and other lifestyle factors can impact your skin's condition. Using a face pack as part of a self-care routine can help mitigate some of these effects. Even if your face is

in good condition, using a face pack periodically can help maintain its health, prevent issues, and keep it looking its best. Herbal face packs have drawn the attention of people looking for a harmonic fusion of tradition and innovation in their pursuit of perfect, bright skin, from age old cures passed down through generations to contemporary formulas anchored in botanical science. In this investigation, we dive into the many factors that have led people to see herbal face packs as a crucial part of their skincare routine. Cosmetics are defined as products used for the purpose of cleansing, beautifying, promoting attractiveness or altering one's appearance. The natural face pack contains some vitamins which are essential for health and glow of skin. The herbal face pack act by improving blood circulation in the veins of skin but the consequence of facial face packs normally short-term, so for regular light it should be used 2-3 times a week. A face pack, in the context of skincare and beauty, is a cosmetic product typically used to improve the condition and appearance of facial skin. It is also well known as a face shield or facial mask. Face packs come in various forms, including creams, gels, clay masks, sheet masks, and peel-off masks Face packs are considered part of the cosmetics and skincare product category. They are specifically categorized as "topical skincare products" within the broader cosmetics class. These products are designed to be applied directly to the skin and are intended for various purposes, such as cleansing, exfoliating, moisturizing, and treating specific skincare concerns.

The humid fruit papaya, methodically known as *Carica papaya*. It is known for its numerous health benefits and skin precaution properties in this guide we are exploring preparation of herbal face pack by using papaya. Papaya is rich in essential nutrients and enzymes that make it an excellent ingredient for skincare. The natural exfoliating and skin nourishing characteristics of papaya have been prized for their ability to improve appearance for generations. The nutrient-rich papaya pulp is meticulously separated from the fruit in this extraction process, then put through a number of stages to dry, grind, and turn it into a fine powder. The resulting papaya powder is a versatile substance with numerous functional qualities, including antioxidant, antibacterial, and anti-inflammatory qualities. Papaya's have many benefits. The enzymes in papaya, especially papain, can help exfoliate dead skin cells, providing a smoother complexion. Papaya is a great source of vitamin C and other antioxidants that can brighten the complexion and lessen the visibility of dark spots and blemishes. The papaya's water content hydrates the skin, giving it a plumper, healthier appearance. Papaya's antioxidants can use combat free radicals, which can slow down aged and lessen the attendance of wrinkles. The vitamin A in papaya can help with wound healing

and encourage skin repair. Papaya has anti-inflammatory qualities, which some people use as a natural cure for acne. The main objective of this research work is to use the natural ingredient such as papaya powder for the formulation of face pack. The specific objectives can vary depending on the ingredients used and the targeted skin issues. When herbal face pack, it's essential to selected ingredients that align with the desired objectives and tailor the formulation to suit individual skin types and concerns. Proper formulation ensures that the right proportions of various herbal ingredients are used. This helps maximize the effectiveness of the face pack. Each herb may have specific properties that benefit the skin, and the right combination enhances these benefits.<sup>[2]</sup>

### Materials used in herbal face pack

#### 1. Papaya fruit powder



**Biological source:** It is dried and purified latex of the green fruits and leaves of *Carica papaya* L.

#### Properties

- Papaya fruit powder has anti-inflammatory properties that can help reduce swelling and redness.
- Papaya has antioxidant properties which protect the skin from aging and helps to brighten the skin.
- Papaya has antibacterial properties which control the acne breakouts, it can soothe irritated skin.

#### Benefits

- The high vitamin C content in papaya can help lighten dark spots and promote an overall brighter complexion.

- It acts as a natural cleanser, helping to remove impurities and unclog pores, which can be beneficial for acne-prone skin.
- Papaya fruit powder can be used in skincare products to add moisture and hydration to the skin. Papaya fruit powder contains natural enzymes like papain, which can gently exfoliate the skin by removing dead skin cells, leading to a smoother complexion.

## 2. Neem powder



### Biological source

Fresh or dried leaves and seed oil of *azadirachata indica*, *aza- dirachata* linn.

### Properties

- Neem powder has antibacterial property. It can be used to treat various skin infections and condition.
- Neem has anti-inflammatory property. Which reduce redness of the skin.
- Neem powder has antifungal properties which is used in the treatment in fungal skin infections. Neem is rich in antioxidants, which help protect the skin from oxidative stress and damage caused by free radicals.

### Benefits

- Neem powder's antibacterial and anti-inflammatory properties make it effective in treating acne. Neem can act as a gentle exfoliant, helping to remove dead skin cells and unclog pores, promoting a clearer complexion
- It helps regulate oil production in the skin, making it suitable for both oily and combination skin types. This can prevent excess oiliness and breakouts.
- Neem has detoxifying properties that can purify the skin and remove impurities, leaving it refreshed and rejuvenated.

### 3. Turmeric



#### Biological source

It is a product of *curcuma longa* rhizomatous herbaceous perennial plant.

#### Properties

- Turmeric is well-known for its therapeutic properties, mainly due to the active compound curcumin.
- Turmeric is a potent antioxidant, which means it can neutralize harmful free radicals that contribute to aging and various diseases.
- Curcumin, a compound in turmeric, has anti-inflammatory properties and may help reduce inflammation in the body.
- Turmeric has antibacterial properties and may help in treating acne by reducing the growth of acne causing bacteria.

#### Benefits

- Turmeric can help brighten the skin and reduce the appearance of dark spots or hyperpigmentation, giving your complexion a more even tone.
- Turmeric helps in managing acne by reducing redness, swelling, and bacteria on the skin.
- Turmeric can be used as a gentle exfoliant.
- Regular use of turmeric masks or treatments may give your skin a healthy, radiant glow.

### 4. Sandalwood powder



**Biological source**

Heartwood of the stem and roots of *Santalum album* linn.<sup>[7]</sup>

**Properties**

- Sandalwood has been used in traditional medicine for its potential health benefits, such as anti-inflammatory, antimicrobial, and calming properties.
- Sandalwood possesses antiseptic properties that can help prevent infections
- Sandalwood is a common ingredient in skincare products due to its soothing and astringent properties. Sandalwood actions as a natural astringent, helping to constrict and tone the skin.

**Benefits**

- Sandalwood is often used in skincare goods to deliver moisture to the skin. It can help battle dehydration and maintain skin's natural hydration.
- Due to its ability to soothe and rejuvenate the skin, sandalwood is also considered beneficial for reducing the signs of aging, such as fine lines and wrinkles.
- It may benefit decrease the growth of acne-causing bacteria and calm irritated skin.
- The aroma of sandalwood is known to have a calming effect, which can help reduce stress and promote relaxation. This relaxation can indirectly benefit the skin by reducing stress-related skin issues. Sandalwood possesses antiseptic properties that can help prevent infections and promote the healing of minor wounds or insect bites

**5. Saffron**

**Biological source:** Dried stigma and style tops of *crocus sativus* linn.

**Properties**

- Saffron is believed to have anti-inflammatory properties and has been used traditionally in herbal medicine for its potential to alleviate certain inflammatory conditions.

- Saffron contains compounds like crocin and crocetin, which have antioxidant properties.
- Saffron may use to fight acne due to its potential antibacterial properties and decrease scars.
- Saffron can be used as a mild exfoliant to help smoother skin and eliminate dead skin.

### Benefits

- Saffron hydrates the skin, maintaining moisture balance, and can be used for gentle exfoliation. Additionally, it may improve blood circulation.
- Protecting the skin from free radical damage, reducing signs of aging, and promoting a radiant complexion.
- Saffron help with conditions like acne and eczema. Its antibacterial properties make it effective against acne.
- Saffron may support brighten the skin and decrease the appearance of dark spots.

## 6. Milk powder



**Biological source:** It is natural food produced by mammals.

### Properties

- Milk powder can act as a gentle cleanser, removing dirt and impurities from the skin's surface.
- Milk powder contains fats that can help moisturize your skin.
- Milk powder contain skin brightening properties which promote brighter complexion.

### Benefits

- Milk powder in skincare can support lock in moisture, preventing dryness and flakiness.
- Milk powder masks can help with acne control. The exfoliating and soothing properties may reduce acne breakouts and inflammation.



- Milk powder to the skin can have a soothing effect, making it useful for calming irritated or sunburned skin. It can reduce redness and inflammation.
- Milk powder is rich in nutrients like calcium and protein, which can nourish the skin and promote overall skin health.
- Milk powder contains vitamins A and D, which are known for their anti-aging properties. These vitamins can help promote collagen production and reduce the appearance of fine lines and wrinkles.

## 7. Rice flour



**Biological source:** It is a seed of the grass species *oryza sativa*.

### Properties

- Rice flour may have anti-aging benefits due to its ability to improve skin texture and promote a youthful appearance.
- Rice flour contains anti-inflammatory properties that decrease redness and decrease the swelling.
- It has oil-absorbing properties, which can be helpful for people with oily or combination skin as it can reduce excess oil.<sup>[9]</sup>

### Benefits

- Rice flour comprises enzymes that can help lighten dark spots and improve overall skin tone. Regular use may lead to a brighter skin.
- Rice flour can act as a natural cleanser, helping to remove dirt and impurities from the skin's surface.
- Rice flour masks can help with acne. Its oil-absorbing and exfoliating properties may contribute to clearer skin.
- Rice flour can be beneficial to remove dead skin cells and promote smoother skin texture.



### Evaluation of herbal face pack

The formulated herbal face pack powder was subjected to organoleptic properties

#### 1. Organoleptic evaluation

- Colour: Detected by naked eyes.
- Odour: Detected with our senses.
- Taste: Tasted by tongue.
- Texture: Sense by our touch.<sup>[5]</sup>

#### 2. Phytopharmaceutical test

##### Determination of moisture content

The moisture content was measured defined by AACC method. Two-gram sample was placed in a preheated and weighed glass Petri plate and then dried in a hot air oven at 130 °C for 2hrs., after drying glass Petri plate was transferred to the desiccator to cool and then Petri plate was reweighed. The loss in weight was calculated as percentages of moisture content. 
$$\frac{W1 - W2}{W1} \times 100$$
 Moisture content (%) = ----- ×100 Weight of sample W1= Weight (gm) of sample before drying. W2=Weight (gm) of sample after drying.

#### 3. Physical evaluations of herbal face pack

In development of new dosage from preformulating study is the prior step in the possible drug development. It is the principal inquiry in the drug development to obtained information on the known properties of compound and their proposed development schedule. So, this preformulating study may merely confirm that there are no significant barriers to compound development.

Following pre-compressional factors were studied like angle of repose, bulk density, tapped density, Hausner's ratio.

##### 1. Angle of repose

The stable funnel method was employed to measure the angle of repose. A funnel was secured with its tip at a given height (h), above a graph paper that is placed on a flat horizontal surface. The blend was carefully pored through the funnel until the top of the conical pile just touches the tip of the funnel. The radius of the base of the conical pile was measured. The angle of repose ( $\Theta$ ) was determined using the following formula.

$$\tan \Theta = h/r$$

Where,  $\Theta$  = Angle of repose,

h = Height of the cone,

r = Radius of the cone base.

## 2. Bulk density

15 g powder blend introduced into a dry 100 ml cylinder, without compacting. The powder was carefully levelled without compacting and the unsettled apparent volume,  $V_o$ , was read.

The bulk density was calculated using the following formula

$$p_b = M / V_o$$

Where,  $p_b$  = Apparent bulk density,

M = weight of sample,

V = Apparent volume of powder.

## 3. Tapped density

After carrying out the procedure as given in the measurement of the bulk density, the cylinder containing the sample was tapped 10 min.  $V_f$  was measured, to the near advanced unit. The tapped density was determined, in gm per ml., using the following formula.

$$p_{tap} = M / V_f$$

Where  $p_{tap}$  = Tapped density,

M = Weight of sample,

$V_f$  = Tapped volume of powder.

## 4. Hausner's ratio

Hausner's ratio is an indirect index of ease of powder flow. It is calculated by following formula.

$$\text{Hausner's ratio} = \text{Tapped density (PT)} / \text{Bulk density (PB)}$$

Where, PT = Tapped density & PB = bulk density. Lower Hausner's ratio ( $< 1.25$ ) indicates better flow properties than higher ones, between 1.25 to 1.5 shows moderate flow properties & more than 1.5 poor flow.

## 5. Carr's index

The Compressibility index (carr's index) is a measure of the propensity of a powder to be compressed. It is determined from the bulk and tapped densities. In theory, the less compressible a material the extra flow able it is. As such, it is measure of the relative importance of interparticulate interactions. In free flowing powder, such interaction is generally less significant, and bulk and tapped densities will be closer in value. For poorer

flowing materials, there are frequently greater interparticle interaction, and a greater difference between the bulk and tapped densities will be observed. These difference are reflected in the carr's Index which is calculated using the following formulas:

$$\text{Compressibility index} = [(p_{\text{tap}} - p_{\text{b}})] / \times 100$$

Where,  $p_{\text{b}}$  = Bulk Density,  $p_{\text{tap}}$  = Tapped Density.

Compressibility	Index properties
$\leq 10$	Excellent
11-15	Good
16-20	Fair
21-25	Passable
26-31	Poor
32-37	Very poor
$> 38$	Very Very poor

Fig. Compressibility index value carr's Index.<sup>[10]</sup>

## CONCLUSION

Herbal face packs are used to increase blood flow, rejuvenates muscles, reserve the elasticity of the skin, and clean out skin pores. Since natural remedies are thought to be safer and to cause less side effects than synthetic ones, they are more widely accepted. Herbal compositions are highly sought after on the international market. Consequently, we made an effort to create an herbal face pack that complied with all the recommendations made in the literatures. Thus, in the present work, it is a very good attempt to formulate the herbal face pack containing naturally available ingredients like, Papaya powder, Turmeric, Sandalwood, Saffron, Milk powder, Rice Flour, Neem powder. The created formulation is said to have the properties of a typical cosmeceutical's formulation for skincare and to have been physiochemically stable.

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