

**RESEARCH ON FORMULATION AND IN VITRO EVALUATION  
OF POLYHERBAL FACE PACK HAVING ANTI-AGING  
ACTIVITY**

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**ABSTRACT**

*Because natural medicines are thought to be safer and have less adverse effects than synthetic ones, they are more widely accepted. The demand for herbal formulations is rising on the global market. Formulating and assessing a polyherbal face pack composed of herbal substances is the aim of this effort. Aloe vera powder, turmeric powder, neem powder, orange peel powder, kiwi powder, and Multani mitti. The powder was purchased in dried, powdered form from the nearby market, put through a sieve (number 80), combined well, made, and examined for its organoleptic, physico-chemical, and microscopical characteristics. For a face pack, the combined dried powder's flow properties were acceptable. Face masks or packs made of herbs are used to promote blood circulation and rejuvenation. The purpose of this study is to create and assess a herbal face pack that uses natural herbal components to promote bright skin. The dried powder form of natural herbal components, like aloe vera and turmeric, was bought from a nearby market. To ensure a homogeneous formulation, all powdered natural substances were weighed precisely, sieved using 80 mesh, combined geometrically, and tested for irritancy, organoleptic, physicochemical, physical, and phytochemical properties. For a face pack, the combined dried powder's flow properties were acceptable. Herbal face packs or masks are used to increase blood flow, tone muscles, preserve skin elasticity, and clear impurities from pores on the skin. In this study concludes that all face pack formulations were found to have good physical parameters and to be free of skin irritations; therefore, we found good properties for the face packs. However, more optimization studies are needed to determine the practical benefits of face packs for use as cosmetic products on humans.*

**Keywords:** *Face Pack, Skin, Herbal, Formulation, Evaluation, Glowing, Natural, Anti-aging, Cosmetics.*

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## INTRODUCTION

Nowadays, a lot of people employ herbs as therapeutic agents since they are inexpensive, readily available, and nontoxic. As a result, people trust these natural therapies. Humans have traditionally utilized herbs for hygienic, medicinal, and decorative purposes. Cosmetics are beauty items that have a desired physiological action, such as those that condition, smooth, heal, or improve skin. These days, acne sufferers and young people are more likely to have dark circles under their eyes, black heads, and pimples. The majority of skin issues are said to be brought on by blood impurities per Ayurveda. Many skin illnesses are mostly brought on by toxins that have accumulated in the blood as a result of bad lifestyle and nutritional choices. Women used to be self-conscious about their appearance, especially in regards to their skin tone. Skin types require different types of skin packs. For dry, normal, and oily skin types, there are numerous kinds of masks available today. The purpose of a facial mask is to make the skin smoother and whiter. <sup>[1]</sup>

Ayurvedic face packs are beneficial for ladies in reducing wrinkles, dark circles, acne, and pimples. Herbal face masks improve skin's smoothness and fairness. The best way to get the most out of herbal face packs is to use them for our particular skin type. These face masks are the greatest ayurvedic remedy for improving fairness and enhancing skin radiance. One of the most elegant and traditional ways to cleanse skin is with face packs. Ayurveda describes a number of face packs with nourishing, healing, cleansing, astringent, and antibacterial qualities. We can make a face pack at home using staples from the kitchen and the house. Herbal face packs are a less expensive and safe option for naturally achieving fair skin. People have been employing herbs for cleaning, beautifying, and managing them since ancient times. Products used to cleanse, beautify, promote attractiveness, or change one's appearance are referred to as cosmetics. Skin that is smooth, vibrant, and silky can be achieved with homemade natural face packs and masks. <sup>[2]</sup>

### **Advantage of herbal face pack:**

1. There are no unfavourable side effects from herbal products.
2. It helps get rid of dead skin cells.
3. The cost of herbal products is low.
4. Herb-based products are easily obtainable.
5. It's used to give our skin a glisten. <sup>[3]</sup>

### **Disadvantage of herbal face pack:**

1. Our skin can occasionally show indications of redness and irritation.
2. There is an inflammatory response.
3. The face pack's effects will appear gradually. <sup>[4]</sup>

## MATERIALS AND METHODS:

### **Kiwi Powder:**

Kiwi fruits are superior to other common fruits in terms of taste, nutritional content, and health advantages. It is rich in many different kinds of nutrients, including minerals, vitamins, and phytoconstituents. Phytochemicals such as triterpenoids, saponins, amino acids, carotenoids, carbohydrates, and sugars are abundant in kiwis. Additionally, it contains phenolic components such coumarins, anthraquinones, polyphenols, and flavonoids. These substances have a wide range of potential pharmacological actions. Elevated amounts of vitamin C could lead to a potential cure for heart disease and cancer, two dreadful diseases.

Hepatoprotective, anti-platelet, constipation-reducing, anti-cancer, anti-bacterial, anti-diabetic, anti-diabetic illness, anti-hypertensive, anti-thrombin, anti-aging, and anti-asthma are some of its qualities. The powdered kiwi obtained from the local market place.<sup>[5]</sup>



**Figure No. 1: Kiwi Powder**

#### **Orange peel powder:**

Citrus sinensis orange peels Oranges are citrus fruits that are rich in several nutrients, including calcium, magnesium, potassium, and vitamin C. It prevents the skin from oxidative stress, free radical damage, and dehydration. Additionally, it prevents wrinkles, blemishes, acne, and aging. It also provides an instant shine. Dried orange peels are ground into a fine powder to create orange peel powder. It's good for skincare because it's high in vitamin C, antioxidants, and natural oils. Because of its cleaning, brightening, and anti-inflammatory qualities, it can be used in homemade facial masks, scrubs, and hair treatments. It can also aid in promoting a healthy shine and exfoliating dead skin cells. Use a patch test first before applying externally as some people may experience skin irritation. the powdered orange peel that was purchased at the nearby market.<sup>[6]</sup>



**Figure No. 2: Orange peel powder**

**Uses:** It helps to the skin's natural lightening and brightness.

It can nourish and moisturize your skin. It helps clean your skin. It aids with skin tone.

It delays the appearance of aging signs by preventing oxidative stress on your skin cells.<sup>[7]</sup>

**Sandalwood powder:**

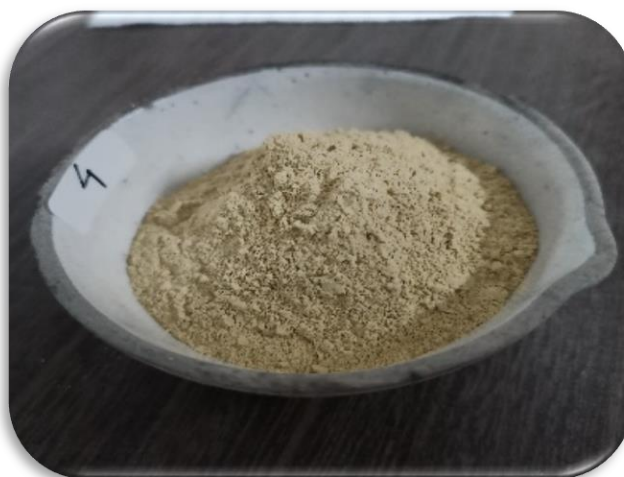
Powdered sandalwood (*Santalum alba*) It is used to remove black spots from greasy skin. The anti-aging and anti-tanning properties of sandalwood. Additionally, it has numerous benefits for skin, including toning, emollient, antibacterial, cooling, astringent, relaxing, and healing qualities. The red sandalwood tree's heartwood is used to make red sandalwood powder, commonly referred to as Rakta Chandan. Its crimson color sets it apart from ordinary sandalwood powder. Red sandalwood powder is prized for its therapeutic and aesthetic qualities. Because of its astringent, anti-inflammatory, and antibacterial qualities, it is frequently utilized in cosmetics formulations. It is also a natural color and is utilized in ceremonies of religion. It is said to help with respiratory, digestive, and skin disorders in conventional medicine. The powdered sandalwood that was purchased from the nearby market.<sup>[8]</sup>



**Figure No. 3: Sandalwood powder.**

**Multani Mitti:**

Fullers earth / bentonite calcium Several benefits of Multani mitti for skin include reduced pore sizes, elimination of blackheads and whiteheads, fading freckles, relief from sunburns, skin cleansing, improved blood circulation, improved complexion, reduction of acne and blemishes, and a radiant appearance due to their healthy nutrient content. The abundant magnesium chloride found in Multani Mitti. The Multani mitti was purchased from the neighborhood store.<sup>[9]</sup>



**Figure No. 4: Multani mitti.**

## Uses

1.Fuller's earth, also known as Multani mitti, is used as a natural astringent and cleanser.  
2.Eliminating sweat, pollutants, and dead skin cells. 3.Removing whiteheads and blackheads. 4.Reducing the overproduction of oil. 5.Reduces the visibility of pores and cools the skin.<sup>[10]</sup>

### **Aloe vera powder:**

Aloe (*Barbadensis aloe*) Aloe vera is an excellent skin moisturizer. Aloe vera moisturizes, regenerates, and maintains the youthful appearance of the skin layer. Because of its antimicrobial properties, aloe vera is a great remedy for acne and pimples. A variety of nutrients, including sorbitol, sodium palmate, sodium carbonate, sodium palm kemelate, and glycerin, are present in aloe vera powder. The powdered alovera was purchased from the local market.<sup>[11]</sup>



**Figure No. 5: Aloe vera powder**

### **Neem powder:**

Crushed neem (*Azadirachta indica*) powder Neem is an excellent remedy for sticky and acne-prone skin since it is antibacterial and anti-inflammatory. The antimicrobial, anti-inflammatory, and anti-oxidant properties of many chemical ingredients have an anti-acne effects. the powdered neem obtained from the nearby market.<sup>[12]</sup>



**Figure No 6: Neem powder**



**Turmeric powder:**

Powdered turmeric (*Curcuma longa*) The primary application of turmeric is skin rejuvenation. In addition to having antibacterial, antiseptic, and anti-inflammatory qualities, it also delays the appearance of wrinkles and other markers of aging. It is the best source of purifying blood. Because of its antiseptic and antibacterial qualities, which treat blemishes and pimples and give your skin a youthful look, it is beneficial in treating acne. Additionally, it decreases the sebaceous glands' output of oil. The turmeric powder procured from the local market.<sup>[13]</sup>



**Figure No .7: Turmeric powder**

**FORMULATION TABLE: (QUANTITY TAKEN FOR 50 GRAMS)**

Sr. No	Ingredients (Common Name)	F1 (in grams)	F2 (in grams)
1.	Kiwi Powder	11 w/v	12 w/v
2.	Orange peel powder	9 w/v	10 w/v
3.	Sandalwood powder	8 w/v	8 w/v
4.	Multani mitti	7 w/v	7 w/v
5.	Aloe vera powder	6 w/v	5 w/v
6.	Neem powder	5 w/v	4 w/v
7.	Turmeric powder	4 w/v	4 w/v

**Table No 1.: Formulation table of face pack**

**EXPERIMENTAL WORK:**

**Figure No.8: Ingredients to be used for formulation**

**Method of Preparation:**

In order to achieve a stable cosmetic formulation, the base must be prepared before adding the active components. The suitability of the active components determines the product's stability and efficacy. A variety of base formulations were made using the ingredients.<sup>[14]</sup>

Two different formulations were produced, each containing various amounts of the components marked as f1 through f2. Each ingredient's concentration was listed in the table. The exact quantities of ingredients were weighed, then they were triturated to create a homogenous mixture, which was then finely powdered using sieve #80. Next, for homogeneous mixing, all materials were combined practically using a series of d method. After that, the ready-made face pack was labelled, placed inside a self-sealing polyethylene bag, and utilized in further studies.<sup>[15]</sup>

**Procedure of Face Pack Application:**

In the first step take the prepared face pack powder in a bowl as per the requirement and add rose water to mix. In the second step Mix well and apply over the facial skin. Cover the acne and blemishes spots too. Keep the pack on face for complete drying for around 10 to 20 min. In the third step wash the face with cold water.<sup>[16]</sup>



**Figure no.9: Prepared face pack**



**Figure No.10: Prepared face pack (F1 & F2)**

**Precaution:**

Select the face pack that best suits your skin type. See a skin specialist or natural therapist before using a face pack.

The face pack should only be applied to the face for a maximum of 15 to 20 minutes. A prolonged period of time spent keeping may result in wrinkles, drooping skin, and an increase in open pores.

Apply a face pack once a week. Careful trying to remove or scratch the dry face pack. This could cause damage to the underlying skin.

Wash the skin with cool water before removing the dried face pack. After removing the mask, run some cold water over your face. This helps to tighten the skin and close open pores. It also relaxes and improves skin.

Steer clear of forceful face cleaning. This might lead to the appearance of dark spots and zits. Stay away from radiation after using a face pack.

Avoid placing your face mask in the "eye zone." The skin is incredibly thin around the eyes. The skin around your eyes could become damaged if you remove the face pack. <sup>[17]</sup>

**EVALUTION PARAMETERS:**

**1.Physical parameters:** such as appearance, texture, color, and smell were examined visually.

**2. pH:** A calibrated digital pH meter was used to test the pH of the formulation's 1% aqueous solution.

**3.Determination of the moisture content:**

Weigh out 1.5 grams of the herb in powder form and transfer it to a thin, flat porcelain dish. Dry in the oven at 100°C or 105°C until the difference between two successive weight readings. In the desiccators is not more differ than 0.5 mg. Usually, the weight loss is reported as moisture. <sup>[18]</sup>

**4. Particle size:** Using I.P. Standard sieves and mechanical shaking for ten minutes, the particle size was measured. Particle size is a parameter that affects several qualities, such as spread ability and roughness.

**5. Angle of repose:** It is defined as maximum angle between the powder pile's surface and the horizontal flow and is calculated by using following formula, <sup>[19]</sup>



$$\theta = \tan^{-1} h/r$$

Where,

$\theta$  = is the angle of repose

h = is the height in (cm)

r = is the radius in (cm)

**6. Bulk density:** The ratio of a powder's given mass to its bulk volume is known as its bulk density. The necessary amount of powder is dried and then added to a 50 ml measuring cylinder until it reaches the 50 ml mark. Subsequently, the cylinder is dropped at intervals of two seconds, from a height of one inch onto a hard wood surface. It is measured how much powder there is. The powder is then weighed. Repeating this yields average results. The formula provided below is used to calculate the bulk density.<sup>[20]</sup>

$$\text{Bulk Density} = \text{Volume} / \text{Mass}$$

**7. Tapped density:** The higher bulk density obtained by mechanically tapping a container containing the powder sample is known as tapped density. After observation of the initial powder volume or mass, the measuring cylinder or vessel is mechanically tapped for one minute, during which time readings of the volume or mass are taken until minimal changes in the volume or mass are noted. The unit of measurement was grams per cubic centimetre, or g/cm<sup>3</sup>.<sup>[21]</sup>

**8. Spreadability:** An in-house-fabricated device was used to determine spreadability. The device is made out of a wooden block with a fixed glass slide and a movable glass slide, one end of which is fastened to a weight pan that is rolled on a pulley and placed horizontally above the fixed slide. The "Slip & Drag" properties of the gel were used to determine how spreadable the formulation was. This ground slide had an excess of cream (about 2g) that was being studied on it. After that, the cream had been placed between two slides for five minutes, a one kg weight was set a top each of the two slides to force out air and create a consistent layer of cream between them. The extra cream was removed with a scraper from the edges. After that, 50 gm of pull off was applied to the top plate. Utilizing the string that is fastened to the hook, combine, and record the amount of time (T, measured in seconds) that the top slide needs to travel 7.5 cm. Better spreadability was indicated by a shorter interval.<sup>[22]</sup>

#### **9. Washability:**

This is the standard procedure for determining whether the formulation is washable. A quart of water was used to completely remove the formulation that had been applied to the skin after it had been applied, and the ease and extent of washing with water were carefully measured. This is the common method for checking the washability of the formulation. The formulation was applied on the skin and then ease and extent of washing with water were checked manually by using 1 liter of water is used to remove all content of the formulation were applied on the surface.<sup>[23]</sup>

**Organoleptic Evaluation:**

Sr. No	Parameters	Observation
1.	Nature	Powder
2.	Colour	Reddish Brown
3.	Odour	Pleasant
4.	Appearance	Smooth
5.	Texture	Fine

**Table No 2.: Organoleptic Evaluation of face pack****Physicochemical Evaluation:**

Sr. No	Parameters	Observation	
		F1	F2
1.	Ph	7.1	6.4
2.	Moisture content	2.2% w/w	1.6% w/w

**Table No 3.: Physicochemical Evaluation of face pack****General Powder Characters:**

Sr. No	Parameters	Observation	
		F1	F2
1.	Angle of repose	32	37
2.	Bulk density	0.65 w/v	0.75 w/v
3.	Tapped density	0.60 w/v	0.64 w/v
4.	Washability	Easily washable	Easily washable
5.	Spreadability	Easily spreadable	Easily spreadable

**Table No 4.: General powder characters of face pack**

## DISCUSSION:

The formulation no.2(F2) of an anti-aging face pack using Aloe vera powder, turmeric powder, neem powder, orange peel powder, kiwi powder, and Multani mitti shows promising results. These results indicate that the potential effectiveness and safety of the face pack for treating anti-aging. Formulation F2 was assessed in terms of certain physical parameters. Additionally, this formulation displayed good results and qualities along with acceptable rheological behavior.

## CONCLUSION:

Formulation F2 shows appropriate results according to its advantageous impacts on humans, the complete study is essential to support product claims. Because natural medicines are safer and less likely to have adverse effects than synthetic ones, their constituent parts are more widely available. On the international market, there is an increasing need for herbal formulations. Herbal face packs are applied topically to improve blood circulation, rejuvenate muscles, maintain skin softness, and unclog pores. We tried to make an herbal face pack with only organic herbal components.

The research produced herbal ingredients containing Aloe vera powder, turmeric powder, neem powder, orange peel powder, kiwi powder, and Multani mitti. We performed in -vitro study for anti-aging activity. The synergistic effect of the herbal combination enhanced the anti-aging activity, making it a promising natural alternative to synthetic anti-aging products. The face pack's good physical stability and acceptable pH ensure its safety for topical application. This research contributes to the development of natural, effective, and safe anti-aging products, offering a promising solution for the growing demand for natural skincare products. Further clinical studies are recommended to confirm the efficacy and safety of this polyherbal face pack in humans.

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