



E-ISSN: 2278-4136

P-ISSN: 2349-8234

www.phytojournal.com

JPP 2024; 13(4): 434-439

Received: 14-06-2024

Accepted: 16-07-2024

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Formulation and evaluation of papaya herbal face pack for glowing skin

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DOI: <https://doi.org/10.22271/phyto.2024.v13.i4e.15037>

Abstract

The objective of this work is to formulation and evaluation of papaya herbal face pack for glowing skin. This formulation using natural ingredients. Formulations containing ingredients such as papaya peel, multani mitti, turmeric, sandal wood, neem (leave extract), Saffron, milk powder and rice flour. All prepared formulations were evaluated by different parameters like organoleptic properties and physico-chemical parameters and stability along with irritancy test etc. Cosmetics are the products used to clean, beautify and promote attractive appearance of skin.

Keywords: Skin, herbal face pack, preparation, natural product, formulation

Introduction

Products used for cleaning, beautifying, enhancing attractiveness, or changing appearances are referred to as cosmetics ^[1]. Cosmetics are readily available goods that are used to enhance the look of skin by purifying, enhancing, and enhancing beauty. Various plants have been utilized for management, cleaning, and aesthetic purposes since ancient times. The majority of the body that shows a person's health is their face skin. The purpose of this study is to create and assess an herbal face pack that uses natural herbal components to promote bright skin. The dried powder form of natural herbal ingredients including Multani Mitti, Turmeric, Sandalwood, Saffron, Milk Powder, Rice Flour, and Papaya Peel was bought at a nearby market ^[2]. Commercial shade drying was used to prepare the banana peel powder. All powdered natural ingredients were sieved through #85 mesh, precisely weighed, and mixed geometrically to ensure a uniform formulation. The powder was then assessed for morphological, physicochemical, physical, phytochemical, and irritancy factors in addition to stability testing. As a result, we created an easy-to-make herbal face pack in this work using readily available ingredients ^[3].

Herbal cosmetics have the advantage of being pure and having no negative effects on the body. People often have rough skin, and if they don't take proper care of it, they run the risk of having dark skin from excessive sun exposure, other pollutants, etc.

These packs come in a variety of shapes and sizes and can be broadly categorized into the following areas:

1. Plastic masks made of wax, latex, or vinyl.
2. Hydrocolloid masks: Pre-made gel masks.
3. Argillaceous masks: ready-to-use or dry powder based on clay or earth.

The current study examines the creation and assessment of a cosmetic herbal face pack employing natural ingredients such as rice powder, milk powder, papaya peel, turmeric, sandalwood, and multani mitti for radiant skin at home.

Objectives

1. To eliminate the shadowy area.
2. To get a radiant, healthy tan.
3. To lessen sunburn and get a suntan.
4. To hydrate your skin and get rid of extra oil.
5. To lessen the appearance of dark spots and imperfections.
6. To enhance the tone and texture of the skin.
7. To stop skin from aging too soon.
8. To create the toxicity of artificial clutter.
9. To give the skin the essential nutrition it needs.

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Materials and Methods

All the natural materials used in the present study i.e., Multani Mitti, Turmeric, Sandalwood, Papaya Peel, Neem Extraction and Turmeric were purchased from local in a form of dried powder.

Ingredients of formulations

1. Papaya Peel (vegetable pepsin, papayotin). The dried and refined latex of the green fruits and leaves of the carica papaya family is known as papaine. Caricaceae originally from southern Florida, southern Mexico, Central America, and northern South America Nowadays, most tropical nations grow papayas.

Chemical composition:

2. Papain contains a variety of enzymes, including peptidase I, a proteolytic enzyme that may break down proteins into dipeptides and polypeptides, rennin-like enzymes, pectase-like clotting enzymes, and enzymes with weaker effects on fats.

It functions well as a bleaching agent; according to specialists, papaya can aid in the removal of dead, worn-out skin cells and their replacement with new, healthy cells, lightening the color of our skin.

One of the recognized plants is Carica papaya, often known as the papaya, papaw, or pawpaw^[4].



Fig 1: Papaya Peel

Mitti Multani

Dead skin cells are one type of impurity that Multani Mitti helps to eliminate. Because it contains healthy nutrients, Multani Mitti benefits skin in a variety of ways, including minimizing pore sizes, eliminating blackheads and whiteheads, fading freckles, relieving sunburns, cleansing the skin, enhancing blood circulation, improving complexion, and minimizing acne and blemishes. It also leaves the skin looking radiant^[5].



Fig 2: Multani Mitti

3. Sandal wood

Also known as East Indian sandal wood, is extracted by distilling santalum alum heartwood. Moreover, family: Santalaceae located in Malaysia and India. An evergreen tree, the sandalwood tree is found in India in groups of 10-12.

1. The anti-aging and anti-tanning properties of sandalwood are useful.
2. It also has numerous other benefits for skin, including an emollient, antimicrobial, cooling, astringent, relaxing, and healing action^[6].



Fig 3: Sandal Wood

4. Saffron (hay saffron, kesar, and saffron) dried stigma of saffron and upper portions of *Crocus sativus* styles with family:- Iridaceae saffron is grown in Greece, Spain, France, and India (Kashmir). It contains crocin and crocetin, which give it its color; picrocrocin, which gives it its bitter taste; and safranal, which gives it its scent and odor.

Uses

1. It is rich in carotenoid glycosides, mainly containing terpenoids.
2. It lightens the skin tone and provides.
3. It is Coloring agent.
4. It is Anti-spasmodic^[7].



Fig 4: Saffron

5. Milk Powdered

It is particularly good for the skin since it keeps dry, rough skin nourished for a longer period of time. This helps to deeply hydrate the face, leaving the skin looking beautiful, young, and glossy. It lightens the skin to get rid of pigmentation, acne, and dark spots.

In addition, this pack naturally gets rid of whiteheads, blackheads, and other skin blemishes. This face mask aids in reducing sunburn^[8].

**Fig 5:** Milk powder

6. Rice flour

Applying rice flour can help treat various skin conditions. In the Indian subcontinent, practitioners of Ayurveda appropriately recommend rice water in its undigested state. The development of beneficial microorganisms that support regular bowel motions and a potent ointment that reduces inflammation on skin surfaces^[9].

**Fig 6:** Rice Flour

7. Neem (Leave extract) *Melia azadirachta*

It is made up of leaves and other aerial elements that belong to the family Azadirachta indica.-Meliaceae Coniferous with Azadirachtin is the most varied and significant component, followed by quercetin, sodium nimbinate, gedunin, scalinnin, and nimbolinin^[10].

Uses

1. Neem possesses anti-inflammatory, antibacterial, antifungal, and antiseptic properties.
2. Antimicrobials have an anti-acne impact.
3. The anti-oxidant properties of several chemical components.

**Fig 7:** Neem extract powder

Turmeric (*Curcuma longa*)

Curcuma longa Linn, a member of the Zingiberaceae family, is the source of turmeric^[11]. Grown rhizomes of turmeric

Turmeric is a native of southern India and Indonesia and is grown extensively in the Indian subcontinent's landmasses. It was used as a spice and a perfume in antiquity. The rhizome has a strong staining orange-yellow colour, a pepper-like scent, and a somewhat bitter, heated taste^[12].

Uses

1. This medicine contains turmeric because of its blood-purifying qualities and its antibacterial effect, which aids in wound healing.
2. Treats ailments of the skin.
3. It is an anti-allergic and anti-inflammatory agent.
4. Its phytoconstituents, particularly the terpenoids, contribute to a lighter skin tone.
5. The primary application of turmeric is skin rejuvenation. It postpones aging symptoms like wrinkles.

**Fig 8:** Turmeric

Using the Face Pack

1. Applying the pack to the face once a day while making a paste with water is recommended.
2. To ensure that it dries completely, leave it for fifteen minutes. Then, a damp sponge should be used to remove it.
3. Applications for Face Pack because it contains a lot of moisturizing ingredients, such as milk powder, it softens the skin and eliminates dryness.
4. enhances the color of the skin because it contains saffron and turmeric.

Due to the rice flour's ability to remove dirt particles from the skin, it cleanses the skin^[12].

Formula

Table 1: Formula for Face Pack

S. No	Name of Ingredients	Uses	Quantity for 25 gm		
			F1	F2	F3
1.	Papaya peel	Antioxidant, Antimicrobial	5	7	9
2.	Multani Mitti	Reducing oil	2.5	3.5	1.5
3.	Turmeric	Anti- Inflammatory	3.75	3.75	2.75
4.	Sandal wood	Antioxidant	2.5	2.5	2.5
5.	Neem	Antibacterial	1.25	1.25	1.25
6.	Saffron	Antioxidant Property	1.25	1.25	1.25
7.	Milk Powder	Brightness of skin	3.75	3.75	3.75
8.	Rice Powder	Antioxidant	5	4	3

Method of Preparation

Step 1: Using a digital balance, each necessary herbal powder for the face pack preparation was precisely weighed. Both the amount and the makeup are listed. Each of the powdered components was ground into evenly sized particles.

Step 2: All components, including papaya peel. Milk powder, saffron, neem, sandalwood, turmeric, and multani mitti. Were moved to a mortar and pestle and ground to produce a mixture.

Step 3: To obtain consistent medicine powder for the face pack, the previously prepared mixture of herbal powder was added to the mixture of fine powder and triturated.

Step 4: Sieve No. 85 was used to filter the particles.

Step 5: The face pack powder was ready, labelled, and placed into a plastic bag that could seal itself, in preparation for additional research [13].

Procedure for application of face pack

1. The pack should be applied daily on wet face, forming a paste of it in water with optimum thickness.
2. It should be applied evenly on the face with the help of a brush.
3. It should be left for 15 minutes for complete drying.
4. Then it should be removed with the help of a wet sponge.



Fig 9: Papaya face pack

Evaluation Parameter

1. Morphological Evaluation

The morphological parameters displayed in Table 2 were assessed for the herbal face pack. The formulation had a light-yellow colour. Prepared compositions had a nice, agreeable smell, which is ideal for cosmetic formulations. Smoothness and texture were appropriate given the specifications of cosmetic formulas [14].

Table 2: Organoleptic Properties

S. No	Parameter	F1	F2	F3
1.	Appearance	Smooth	Smooth	Smooth
2.	Color	Cream	Yellowish Cream	Reddish Cream
3.	Odor	Pleasant	Pleasant	Pleasant
4.	Texture	Fine	Fine	Fine
5.	Smoothness	Smooth	Smooth	Smooth

Physicochemical Evaluation

Herbal face pack was evaluated for Physicochemical parameters showed in the Table 3.

The pH of formulation was found close to neutral. The ash content and moisture content were within limit. The particle size of formulations was found in the range.

Table 3: Physical Parameter and Physicochemical Evaluation

S. No	Parameter	F1	F2	F3
1.	Partical Size	0.180	0.180	0.180
2.	Ash Content	83%	80%	75%
3.	pH	6.9	7.2	7.1
4.	Loss of Drying	3.1	3.9	3.4



Fig 10: Ash content



Fig 11: Loss of drying

Irritancy Test

The results of irritancy test were shown in Table 6. The formulation showed absence of irritation, redness and swelling during irritancy studies. This formulation has safe to use on skin [15].

Table 4: Irritancy Test

S. No	Evaluation	F1	F2	F3	Observation
1.	Irritant	-----	-----	-----	No Irritation
2.	Redness	-----	-----	-----	No Irritation
3.	Swelling	-----	-----	-----	No Irritation



Fig 12: Irritancy Test

Evaluation flow property [16]



Fig 13: Angle of repose

Table 5: Evaluation flow property

S. No.	Evaluation	F1	F2	F3
1.	Tapped Density	25	28	27.5
2.	Bulk Density	34	35	32
3.	Angle of repose	38.65	33.02	30.11
4.	Hausner ratio	0.73	0.8	0.85
5.	Carr's index	36	25	16.36

**Fig 14:** Tapped Density

Results

Physical parameters: The various face pack formulations were created and assessed based on the physical characteristics listed in Table 2. Free flowing properties were displayed using the flow property parameter. Because the components of the formulas varied, so did their hues. Formulations F1 and F2, which are yellowish and reddish in colour, respectively. The developed compositions had a pleasant and acceptable smell, which is ideal for cosmetic formulations. The formulas' particle sizes ranged from 0.180 to 0.180. All of the formulations had pH values that were close to neutral. It is, between 6.9 and 7.2 pH. Both the moisture and ash contents were within tolerance.

Irritancy test: Table 4 displayed the results of the irritancy test. The F1, F2, and F3 formulas do not redness, enema, Inflammation and irritation during irritancy studies. This formulation is safe to use for skin.

Physical Evaluation (powder property)

Herbal face pack was evaluated for physical parameters (powder property) showed in the Table 5. Rheological findings justified the flow (powder) properties of the herbal face pack. It was found to be a free-flowing and non-sticky in nature.

Table 6: physical evaluation

S. No.	Evaluation	F3
1.	Tapped Density	27.5
2.	Bulk Density	32
3.	Angle of repose	30.11
4.	Hausner ratio	0.85
5.	Carr's index	16.36

The Formulation F3 was found to be a good in physical parameters, free from skin irritation and maintained its consistency even after stressed storage conditions. It is suggested that the prepared formulation was physico-chemically and microbiologically stable, and possessed characteristics of a standard cosmeceuticals formulation for skin.

Discussion

Prepared and formulated were subjected to various assessment parameters and the findings obtained were within the limits which are given in Table 2, Table 3, Table 4 and

Table 5. The pH of all formulations lied near to neutral range. i.e. in the range of 6.9 to 7.2 pH. The ash content and moisture content were within the limits.

Conclusion

In the present scenario, people need cure for various skin problems without side effects. Herbal face packs are considered as sustaining and productive way to advance the appearance of skin. Thus in the present work, It is a very good attempt to formulate the herbal face pack containing naturally available ingredients like Multani Mitti, Turmeric, Sandalwood, Papaya Peel, Neem Leaves Extract And Saffron, Rice Powder, Milk Powder. It is suggested that the prepared formulation was physico-chemically and microbiologically stable, and possessed characteristics of a standard cosmeceuticals formulation for skin.

Acknowledgement

The author wishes to express their sincere thanks to adv. V.K. secretary and Sau. H.K., member of ZP and presidents NMSM Shevgaon for their encouragement. The sincere thanks to Prof. Rajesh Mokate, Principal AKCOP Bodhegaon, for their help in making this research.

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