



## FORMULATION & EVALUATION OF HERBAL FACE PACK

Prachi Meshram<sup>1\*</sup> and Dr. Rajesh Mujariya<sup>2</sup>

<sup>1</sup>Research Scholar, Institute of Pharmaceutical Science & Research, Balaghat.

<sup>2</sup>Professor & Principal, Scholar, Institute of Pharmaceutical Science & Research, Balaghat.



\*Corresponding Author: Prachi Meshram

Research Scholar, Institute of Pharmaceutical Science & Research, Balaghat.

Article Received on 17/01/2025

Article Revised on 07/02/2025

Article Accepted on 27/02/2025

### ABSTRACT

**Aim:** Cosmetics designed via incorporating natural sources such as herbs have been proven very fulfilling, in coping up with the present needs of different skin types. Considering these aspect research study aimed as formulation & evaluation of herbal face pack powder. **Objective:** As due to increased pollution, allergy, microbes etc, human skin has become more sensitive and prone to faster aging. An attempt has been made to synthesize a pack ideal for all skin types. After the synthesis, all the parameters have been calculated in order to meet up the quality standards. To achieve these objective the constituents were extracted from herbal ingredients such as Multani mitti, green tea, saffron, gram flour, turmeric, shwet chandan and milk powder. They were purchased from the local area of Balaghat (M.P.) and were dried separately, grinded, passed through sieve no 40, mixed homogenously. Five different formulation were prepared contain 10%(F1), 8%(F2), 6%(F3), 4%(F4), & 2%(F5), in variation of milk powder which is responsible for gloving skin. Formulations were then evaluated for parameters including organoleptic, physicochemical, rheological features, phytochemical, stability, and irritancy examination. **Results:** The dried powders of combined pack showed good flow property which is suitable for a face pack. 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. The results proved that the formulation was stable on all aspects. Irritancy test showed the negative. Formulation F1 found high glowing in nature as compare to other however F5 contain 18% swat chandan have high cooling effect. Stability tests performed revealed the inert nature of the pack. **Conclusion:** In the present work, we formulated a pack, which can be easily made with the easily available ingredients. It showed all the benefits of a face pack and further optimization studies are required on its various parameters to find its useful benefits on the human beings.

**KEYWORDS:** Skin, Herbal face pack, Preparation, Irritation, Synthesis, Ingredients.

### INTRODUCTION

Since the ancient era, people are aware of the use of plants for the essential needs of a healthy and beautiful skin. Cosmetics are the products used to clean, beautify and promote attractive appearance.<sup>[1]</sup> Skin of the face is the major part of the body, which is a mirror, reflecting the health of an individual. A balanced nutrition containing amino acids, lipids and carbohydrates are required for the skin to keep it clear, glossy and healthy. In ancient times, women were very conscious about their beauty and took special care of their specific skin types.<sup>[2]</sup> Even today, people especially in rural areas, and hilly regions go for the natural remedies like plants extracts for various cosmetics purposes like neem, aloe vera, tulsi, orange peel, rose etc. Herbal cosmetics are the products which are used to purify and beautify the skin. The main advantage of using herbal cosmetic is that it is pure and does not have any side effects on the human body. Men have rough skin and when they don't take

sufficient care, then the skin turns dark due to overexposure to the sun, other pollutants etc.<sup>[3]</sup> In this article we have formulated homemade face pack to whiten, lighten and brighten the skin naturally for men and women. This face pack has natural skin lightening property and can be easily prepared at home.<sup>[4]</sup> Face packs with natural constituents are rich in vital vitamins that are essential for the health and glow of the skin. These substances have been proven to be beneficial for skin in many ways. Natural facial packs are easy to use. They increase the circulation of the blood within the veins of the face, thereby increasing the liveliness of the skin.<sup>[5]</sup> A good herbal face pack must supply necessary nutrients to the skin, available in the form of free-flowing powder applied facially for the external purpose. It should penetrate deep down the subcutaneous tissues to deliver the required nutrients. Every type of skin is specific for the requirement of skin pack. Nowadays different types of packs are available separately for the

oily, normal and dry skin. Face packs are used to increase the fairness and smoothness of the skin. It reduces wrinkles, pimples, acne and dark circles of the skin.<sup>[6]</sup> Face packs which are recommended for oily skin prone to acne, blackheads, usually control the rate of sebum discharge from sebaceous glands and fight the harmful bacteria present inside acne lesion. The leftover marks of skin can be reduced by incorporation of fine powders of sandalwood, rose-petals and dried orange peels. Herbal face packs are nowadays being used on a large scale, due to the various benefits of them over chemical based packs. They are non-toxic, non-allergic and non-habit forming. They are natural in every aspect, having larger shelf lives. They have no added preservatives. They can be easily formulated and stored over a larger span of time. Present research article deals with the formulation and characterization of cosmetic herbal face pack made from natural constituents.

### MATERIALS AND METHODS

The crude drugs used in this study were procured from the nearby local area of Balaghat (M.P.). Herbs were authenticated by Botanist of Govt. J.S.T. college, Balaghat. All the ingredients were washed, shade dried and powdered finely for further use. The following ingredients were used for the preparation of this polyherbal face pack formulation.<sup>[7]</sup>

**Multani Mitti OR Fuller's Earth:** Fig. (1) multani mitti which helps to remove the impurities in the form of dead skin cells. It helps to make the skin radiant. It has been proven best for the irritation-prone skin. Its soothing action calms the skin, cures the inflammation caused due to elevated phlogistic agents. It is perfect for oily skin. It removes the dirt and excess of oil by acting as a perfect adsorbent. It provides fresh, radiant and glowing skin.<sup>[8]</sup>



FIG. 1: Multani mitti.

**Haridra (Curcuma Longa):** Haridra in Fig. (2) has been used in this preparation due to its blood purifying property and helps in wound healing, because of its antiseptic action. It cures the skin diseases occurring due to blood impurities. It is a very good anti-inflammatory and anti-allergic agent. The phytoconstituents, mainly terpenoids present in it helps to lighten the skin tone. Haridra delays the signs of aging like wrinkles, improves skin elasticity. It cures pigmentation, uneven skin tone and dull skin.<sup>[9]</sup>



FIG. 2: Shwet Turmeric.

**Chandan (Santalum Album):** White Sandalwood powder in Fig. (3) is used to cure various skin allergies. It has cooling and soothing action. It protects the skin from environmental pollution and keeps it glowing, fair and healthy. Sandalwood possesses antimicrobial properties, therefore it is used to cure various skin problems and also removes scars, acne etc.<sup>[10]</sup>



FIG. 3: Santalum album.

**Green Tea:** Belonging to the family Theaceae, green tea in Fig. (4) due to its rich phytoconstituents, serves for numerous therapeutic benefits. It slows down aging, reduces inflammation and provides a healthy glow.<sup>[11]</sup>

**Gram Flour:** Gram flour, commonly known as Besan in Fig. (5), has been used extensively since the olden times for its beauty-enhancing benefits. It mainly acts as a tonic for the skin as it helps to clean and exfoliate it. Gram flour is nothing but a pulse flour obtained from grinded chickpeas. It is very beneficial for skin as well as hair. It is used to decrease tanning of the skin, also reduces the oiliness of skin, thus proving as a good anti-pimple agent. It lightens the skin tone, therefore used as an instant fairness agent.<sup>[12]</sup>



FIG. 4: Green tea.

**Saffron:** Mainly consists of dried stigmas and upper parts of styles of plant known as *Crocus sativus* in Fig. (5), belonging to the family Iridaceae. It is rich in carotenoid glycosides, mainly containing terpenoids. It lightens the skin tone and provides fair and glowing skin.<sup>[13]</sup>



**FIG. 5: Gram flour.**

**Milk Powder:** It is very beneficial for skin, as it provides nourishment for dry, rough skin for the longer duration. Milk cream either in the form of powdered raw milk in Fig. (6) or milk as such provides a brilliant shine to skin. This is beneficial in hydrating the face deeply and makes skin youthful, lustrous and flawless. It bleaches the skin to remove dark spots, pigmentation, acne etc. This pack also removes blackheads, whiteheads, and other skin imperfections naturally. This facial pack helps in fading sun tan.<sup>[14]</sup>



**FIG. 6: Milk powder.**

#### The formulation of Face Pack

The powdered constituents were sieved using #40 mesh and mixed homogenously in Fig. (7) for uniform formulation. It was then kept in a moisture-proof container in a cool place for the purpose of standardization of various parameters<sup>[15-17]</sup> (Table 1).



**FIG. 7: Prepared face pack.**

**Table 1: Composition of Herbal face pack.**

S. No	Constituent	Role	%	%	%	%	%
			F1	F2	F3	F4	F5
1.	Gram flour	Cleanses	40	40	40	40	40
2.	Multani mitti	Antiacne, blemishes	20	20	20	20	20
3.	Shwet Chandan	Brightness,	10	12	14	16	18
4.	Milk powder	Softness	10	8	6	4	2
5.	Turmeric	Brightness, Antiseptic	5	5	5	5	5
6.	Green tea	Antiaging	10	10	10	10	10
7.	Saffron	Brightness	5	5	5	5	5

#### APPLICATION OF FACE PACK

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

#### USES OF FACE PACK

- Softens the skin, removes the dryness as it is rich in hydrating agents as milk powder.
- Brightens the skin tone due to the presence of shwet Chandan, turmeric, and saffron.
- Cleanses the skin, due to the presence of gram flour as it clears the skin by removing the dirt particles adhered to it.

- Clarifies the skin by fighting the problems of acne and blemishes, by the removal of excess oil from the face due to the presence of Multani mitti.
- Contains antiseptic action to deal with the minor cuts, marks due to the presence of turmeric.
- Exfoliates skin by removing the dead cells, which also prevents early aging due to the presence of green tea.

#### MORPHOLOGICAL EVALUATION

It refers to the evaluation of the pack by its color, odor, appearance, touch, etc. The external characters of the samples were examined based on the method described by Siddiqui et al<sup>[18]</sup> (Table 2).

**Table 2: Morphological evaluation.**

S. No	Parameter	F1	F2	F3	F4	F5
1.	Color	Pale yellow	Pale yellow	Pale yellow	Pale yellow	Dark yellow
2.	Odor	Pleasant	Pleasant	Pleasant	Pleasant	Pleasant
3.	Appearance	Smooth, fine	Smooth, fine	Smooth, fine	Less Smooth, fine	Less Smooth, fine

**PHYSICOCHEMICAL EVALUATION**

Physicochemical parameters were determined, including the determination of extractive value, ash value, pH and moisture content<sup>[19]</sup> (Table 3).

**Table 3: Physicochemical evaluation.**

S.No	Parameter	F1	F2	F3	F4	F5
1.	L.O.D	5%	5%	5%	5%	4%
2.	pH	6.5	6.5	6.5	6.1	5.8
3.	Ash value	4.5	4.5	4.4	4.4	4.5
4.	Extractive value (aq.)	8.7	8.7	8.7	8.7	8.6

**DETERMINATION OF RHEOLOGICAL PROPERTIES OF THE PREPARED PACK**

Physical parameters like Untapped (Bulk) density, tapped density, the angle of repose, Hausner's ratio, and

Carr's index were observed and calculated for the formulation.

**Table 4: Rheological evaluation.**

Formulation Code	Bulk density Gm/ml	Tapped density Gm/ml	Hausner's ratio	Car's Index	Angle of repose
F1	0.67	0.74	1.15	11.53%	34.25
F2	0.64	0.74	1.14	12.19 %	28.23
F3	0.62	0.78	1.22	15.22%	32.40
F4	0.63	0.74	1.18	14.16%	34.16
F5	0.61	0.72	1.21	15.02%	28.45

**Characterization of Powdered Bulk density**

It is characterized by the angle of repose to the horizontal plane. Angle of repose was controlled by utilizing fixed funnel technique. Specific amount of powder medication was moved to the funnel keeping the opening of the funnel hindered by thumb. Powder was cleared from funnel at that point estimated its angle of repose. Obvious bulk density (pb) was dictated by pouring the mix in to a graduated cylinder.

The bulk volume (vb) and weight of the powder (M) was calculated utilizing the formula.<sup>[8]</sup>

$$Pb=M/Vb$$

**Tapped density:** Tapped density was calculated by Tapping the known amount of powdered drug for a specific time by using a graduated measuring cylinder. The tapped density (Pt) was calculated by using formula

$$Pt=M/Vt$$

Where,

Vt=minimum volume occupied in the cylinder

M= weight of the blend was measured.<sup>[8]</sup>

**Carr's index:** It is also known as compressibility index, it is simple method to measure the compressibility index,

indicating easiness of material free flowing, it is calculated by.<sup>[8]</sup>

$$I=(Vo-Vt/Vo)\times 100$$

Where, Vo is the bulk volume Vt=tapped volume.

**Table 5: Carr's Index.**

Carr's index%	Flow ability
5-15	Excellent
12-16	Good
18-21	Fairly acceptable
23-35	Poor
33-38	Very poor
<40	Very very poor

**Hausner's ratio:** Hausner's ratio was ease of indirect index of powder flow measurement. Hausner's ration is indirectly proportional to flow properties of powder means if Lower is Hausner's ratio(<1.25) indicates better flow properties than higher Hausner's ratio (>1.25).<sup>[9]</sup>

It was calculated by. Hausner ratio=Pt/Pd Where,

Pt=tapped density

Pd=bulk density lower Hausner's ratio

(<1.25) indicates better flow properties than higher ones (> 1.25).

**Angle of repose:** Angle of repose ( $\theta$ ) is defined as the angle between surface of a pile formed by powder and horizontal plane. It is measured by using a funnel method.

The powder blend was poured through a funnel that can be raised vertically until a maximum cone height (h) was formed. After passing of poured powder from funnel the maximum height of cone is obtained and radius of the heap (r) was measured and angle of repose ( $\theta$ ) was calculated by use of the following formula.

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

**Table 6: Angle of Repose.**

Sr. No.	Flowability	Angle of repose
1	Excellent	<25
2	Good	25-30
3	Passable	30-40
4	Poor	37-45
5	Very poor	>45

**Phytochemical screening:** The aqueous extract of the herbal face pack was evaluated for the presence of different phytoconstituents as per the standard procedures<sup>[22]</sup> (Table 5).

**Table 7: Stability evaluation:**

S.No	Parameter	25°C	35°C	45°C	25°C	35°C	45°C	25°C	35°C	45°C	25°C	35°C	45°C	25°C	35°C	45°C
		F1			F2			F3			F4			F5		
1.	Color	No change	No change	Slightly change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	Slightly change
2.	Odor	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change	No change
3.	pH	6.62	6.62	5.95	6.62	6.63	5.95	6.61	6.62	5.99	6.62	6.62	5.95	6.62	6.62	5.98
4.	Texture	fine	fine	fine	fine	fine	fine	fine	fine	fine	fine	fine	fine	fine	fine	fine
5.	Smoothness	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth	smooth

## RESULTS AND DISCUSSIONS

- Organoleptic evaluation showed that the F1 pleasant smelling powder dark yellow in color while other are in pale yellow color.
- Physicochemical parameters reflected that the moisture content was as minimal as 5%.
- pH was found neutral to suit the requirements of all the skin types.
- Ash value and extractive values were found within the limits.
- F4 & F5 found less smooth, may be due to less concentration of milk powder.
- Rheological findings justified the flow properties of the pack as it was found to be free-flowing and non-sticky in nature.
- The results proved that the formulation was stable in all aspects. It is rich in the major phytoconstituents

**Table 7: Phytochemical evaluation.**

S.No	Phytoconstituents	F1	F2	F3	F4	F5
1.	Carbohydrates	+	+	+	+	+
2.	Alkaloids	+	+	+	+	+
3.	Glycosides	+	+	+	+	+
4.	Tannins	-	-	-	-	-
5.	Volatile oil	-	-	-	-	-

**Irritancy test:** Mark an area (1sq.cm) on the dorsal surface of the left hand. Definite quantities of prepared face packs were applied to the specified area and time was noted. Irritancy, redness, and swelling were checked and reported for regular intervals up to 24 hours if any<sup>[23]</sup> (Table 7).

**Table 6: Irritancy evaluation.**

S.No	Parameter	F1	F2	F3	F4	F5
1.	Irritation	-	-	+	+	+
2.	Redness	-	+	+	+	+
3.	Swelling	+	+	+	+	+

**Stability test:** Stability testing of the prepared formulation was conducted by storing at different temperature conditions for the period of one month. The packed glass vials of formulation stored at different temperature conditions viz., Room temperature and 35°C were evaluated for the physical parameters like Color, Odor, pH, texture, and smoothness<sup>[1]</sup> (Table 7).

such as carbohydrates, alkaloids, and glycosides which act as true nourisher for the skin.

- Irritancy test showed negative results for irritancy, redness and swelling as the herbals in their natural form without addition of chemicals were found to be compatible with the skin proteins.
- Stability tests performed at different temperatures over a period of one month revealed the inert nature of the pack in the terms of color, odor, appearance, texture, and pH.
- Cars index of F1 found excellent while F2, F3, F4 & F5 found good.
- Angle of repose of of F2 & F5 found good flow as compared to other formulation.

The formulation was found to be stable. From the above research, it has been notified that since the formulation is made up of naturally occurring dried herbal ingredients,

there are almost negligible chances of the deterioration of the formulation, as there is no moisture containing the element in raw as well as processed form. The formulation was kept for one month at room temperature to observe the changes in its color, odor, texture and appearance. The pH was also observed before and after one month. It can be easily used at any temperature, at any place. Since it is a herbal formulation, it takes time to show the results. However, the use provides smooth and clear skin within 4-5 days. Its continuous use shows superb effects such as flawless, radiant and clear skin. Since no chemical, preservative, artificial color or perfume has been added in the pack, the chances of its degradation are almost negligible. This leads to an increased shelf life with stable ingredients.

### CONCLUSION

- In this work, we found excellent properties of the face packs and further studies are needed to be performed to ascertain more useful benefits of face packs as cosmetics.
- The benefits of herbal based cosmetics are their nontoxic nature. It nourishes the facial skin. This face pack supplies vital nourishment to the skin. It helps in the elimination of acne, pimple, scars, and marks.
- Natural remedies are accepted nowadays with open hands as they are safer with fewer side effects than the chemical based products.
- Pollution and harsh climates badly affect the skin and these effects can be countered by the regular usage of face packs.

### REFERENCES

1. Rani S, Hiremanth R. Formulation & Evaluation of Poly-herbal Face wash gel. *World J Pharm Pharm Sci.*, 2015; 4(6): 585-8.2
2. Sowmya KV, Darsika CX, Grace F, Shanmuganathan S. Shanmuganathan S. Formulation & Evaluation of Poly-herbal Face wash gel. 4(6): 585-588. *World J Pharm & Pharma sci.*, 2015; 4(6): 585-8.
3. Ashawat MS, Banchhor M. Herbal Cosmetics Trends in skin care formulation. *Pharmacogn Rev.*, 2009; 3(5): 82-9.
4. Kanlayavattanukul M, Lourith N. Therapeutic agents and herbs in topical application for acne treatment. *Int J Cosmet Sci.*, 2011; 33(4): 289-97.
5. Chanchal D, Swarnlata S. Herbal photoprotective formulations, and their evaluation. *Open Nat Prod J.*, 2009; 2: 71-6.6.
6. Mithal BM, Saha RN. A Hand book of cosmetics 2nd ed, 2004.
7. Kumar KK, Sasikanth K, Sabareesh M. NDorababu. Formulation and Evaluation Of Diacerein Cream. *Asian J Pharm Clinical Research*, 2011; 4(2): 93-8.
8. Rajapet M. Amazing Benefits Of Multani Mitti For Face, Skin, And Health Cited on Dec., 2016,
9. Mieloch M, Witulska M. Evaluation of Skin Colouring Properties of Curcuma Longa Extract. *Int. J Pharm Sci.*, 2014; 76(4): 374-8.10.
10. Bhat KV, Balasundaran M, Balagopalan M. Identification of Santalum album and Osyris lanceolata through morphological and biochemical characteristics and molecular markers to check adulteration (Final Report of the project KFRI 509/06).
11. Sadowska-Bartosz I, Bartosz G. Effect of Antioxidants Supplementation on Aging and Longevity. *J BioMed Research International.*, 2014; (2014): 1-17.
12. nceTadimalla TR. 23 benefits of chickpea flour/gram flour/besan for skin, hair & health, Available from <http://www.stylecraze.com/articles/benefits-of-besangram-flour-for-skin-and-hair/#gref>. cited 19 June, 2017.
13. Kokate CK, Purohit AP, Gokhale SB. Textbook of Pharmacognosy 49th ed., 2014.
14. Sinha NK. Beauty And Skin Benefits Of Milk Powder: Milk Powder Home Made Facial Mask Recipes, Cited 20 June.
15. Basic tests for pharmaceutical dosage forms Second edition, 1998.
16. Baby AR, Zague V, Maciel CP. Kaneko TM, Consiglieri VO, Velasco MVR. Development Of Cosmetic Mask Formulations. *J Rev Bras Cienc Farm.*, 2004; 40(1): 159-61.
17. Wilkinson JB, Moore RJ. Harry's Cosmetology 7 th Edition, 1982.
18. MA Siddhiqui. Format for the pharmacopoeial analytical standards of compound formulation, workshop on standardization of Unani drugs, Central Council for Research in Unani Medicine., 1995; New Delhi, 1995.
19. World Health Organisation. Pharmaceuticals Unit: Quality control methods for medicinal plant materials: 1992: Available from: <http://www.who.int/iris/handle/10665/63096>
20. Lachman L, Lieberman HA, Kanig JL. The Theory and practice of Industrial pharmacy 3rd ed, 1987.
21. Aulton ME. Pharmaceutics, The science of dosage forms design 2nd ed., 2002.
22. Khandelwal KR. Practical Pharmacognosy 12th ed. 2004. Mandeep S, Shalini S, Sukhbir LK, Ram KS, Rajendra J. Preparation and Evaluation of Herbal Cosmetic Cream. *Pharmacologyonline.*, 2011; 1258-64.