

Formulation and Evaluation of Cosmetic Herbal Face Pack for Glowing Skin

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Abstract: *The objective of this work is to formulate and evaluate a cosmetic herbal face pack for glowing skin by using natural ingredients. With the varying concentrations, four different formulations containing ingredients such as multani mitti, turmeric, aloe vera, sandal wood, orange peel, neem and nutmeg; were prepared named as F1 to F4. All prepared formulations were evaluated by different parameters like organoleptic properties and physico-chemical parameters and stability along with irritancy test and microbial load. Among all formulation, F2 was found to be good in physical parameters, free from skin irritation and maintained its consistency even after stability storage conditions and also having microbiological stability.*

Keywords: Face Pack, Cosmetics, Natural, Formulation, Evaluation

I. INTRODUCTION

Cosmetics are commercially available products that are used to improve the appearance of the skin by action of cleansing, beautifying, promoting attractiveness. 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^{1,2}.

It consists of materials such as amino acids, lipids and carbohydrates etc. So that a balanced nutrition is required for the skin to keep it clear glossy and healthy.³ 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.⁴

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.⁵ They are usually left on the skin for ten to twenty five minutes to allow all the water to evaporate, the resulting film thus contracts and hardens and can easily be removed. The warmth and tightening effect produced by application of face pack produces the stimulating sensation of a rejuvenated face, while the colloidal and adsorption clays used in these preparations remove the dirt and grease from the skin of the face. When the applied face pack is eventually removed skin debris and deposited dirt gets removed with it.

Face packs are basically additives delivering some additional benefits. Different types of herbal face packs are used for different types of skin. Herbal face packs are helps to reduce wrinkles, pimples, acne and dark circles. Also increase the fairness and smoothness of skin. It also helps someone to boost their confidence. Ayurveda is the most useful and successful means for achieving this purpose⁶.

These packs are available in various types and forms and broadly classified into the following categories:⁷

1. Plastic masks: Wax based, latex based, or vinyl based
2. Hydrocolloid masks: Gel masks (ready to use)
3. Argillaceous masks: Clay based or earth based (ready to use or dry powder)

Present research article deals with the formulation and evaluation of cosmetic herbal face pack for glowing skin at home by using natural materials i.e., multani mitti, turmeric, *Aloe vera*, sandalwood, orange peel, neem and nutmeg.

II. MATERIALS AND METHODS

All the natural materials used in the present study i.e., multani mitti, turmeric, *Aloe vera*, sandalwood, orange peel, neem and nutmeg were purchased from local market (Dgadu Teli Chandwadkar, Nashik), in a form of dried powder and were authenticated at Botany department of KTHM College, Nashik.

The details of the plant material used for the formulation of face pack are mentioned below;

2.1 Multani Mitti (Calcium bentonite)

Multani mitti helps skin by different ways like diminishing pore sizes, removing blackheads and whiteheads fading freckles, soothing sunburns, cleansing skin, improving blood circulation, complexion, reducing acne and blemishes and gives a glowing effect to a skin as they contain healthy nutrients. Multani mitti is rich in magnesium chloride.⁸

2.2 Turmeric (*Curcuma longa*)

Turmeric is mainly used to rejuvenate the skin. It delays the signs of aging like wrinkles and also possesses other properties like antibacterial, antiseptic and anti-inflammatory. It is the best source of blood purifier. It is effective in treatment of acne due to its antiseptic and antibacterial properties that fight pimples and breakouts to provide a youthful glow to your skin. It also reduces the oil secretion by the sebaceous glands.^{9,10}

2.3 Aloe Vera (*Aloe barbadensis*)

Aloe vera is a great moisturizer intended for a skin. Aloe vera rejuvenates skin, hydrates this and keeps skin layer looking fresh all the time. Aloe vera has anti-microbial property rendering it ideal to deal with acne and pimples. Aloe vera powder contains several nutrients like glycerin, sodium palmate, sodium carbonate, sodium palm kemelate, sorbitol, etc.¹¹

2.4 Sandal Wood (*Santalum alba*)

Sandalwood has an anti-tanning and anti-aging property. It also helps skin in many ways like toning effect, emollient, antibacterial properties, cooling astringent property, soothing and healing property.¹²

2.5 Orange Peel (*Citrus Reticulate*)

Orange is a citrus fruit which contains different nutritional source such as vitamin C, calcium, potassium and magnesium. It prevents the skin from free radical damage, skin hydration and oxidative stress. Also it has instant glow property, prevent acne, blemishes, wrinkles and aging.¹³

2.6 Neem (*Azadirachta indica*)

Neem is anti-inflammatory, antiseptic and highly beneficial for oily and acne prone skin¹⁴. An anti-acne effect is due to anti-microbial, anti-inflammatory and anti-oxidant activities of different chemical constituents¹⁵.

2.7 Nutmeg (*Myristica fragrans*)

Nutmeg is widely used for its analgesic, anti-inflammatory, antiseptic and anti-bacterial property¹⁴. It helps in reducing wrinkles, fine lines and other signs of aging. It also helps in reducing acne scars and to make them less noticeable.

III. METHODS OF PREPARATION

Four different formulations were prepared with varying concentrations of all ingredients named as F1 to F4. Concentration of each ingredient was mentioned in Table 1. The accurate quantity ingredients were weighed and ground into fine powder by using sieve #120. Then the all ingredients were mixed geometrically by serial dilution method for uniform mixing. Then the prepared face pack was packed into a self-sealable polyethylene bag, labeled and used for further studies.¹⁶

3.1 Procedure of Face Pack Application

Take prepared face pack powder in a bowl as per the requirement and add rose water to mix. Mix well and apply over the facial skin. Cover the acne and blemishes spots too. Keep as it is for complete drying for 20 to 25 min and then wash with cold water.

3.2 Methods of Evaluation

Following evaluation parameters were performed to ensure superiority of prepared face pack;

A. Organoleptic Evaluation

The organoleptic parameters include its nature, color, odor, feel and consistency which were evaluated manually for its physical properties.¹⁷

B. Physical Evaluation

The particle size was tested by microscopy method. The flow property of the dried powder of combined form was evaluated by performing Angle of Repose by funnel method, bulk density and tapped density by Tapping Method.¹⁸

C. Physicochemical Evaluation

Ash content was performed using incinerator, pH was found by using pH meter and loss on drying was also performed.⁷

D. Irritancy Test

Mark an area (1sq.cm) on the left hand dorsal surface. Definite quantities of prepared face packs were applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs and reported.¹⁹

E. Stability Studies

Stability testing of prepared formulation was conducted for formulation F2 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, 35°C and 40°C and were evaluated for physical parameters like Color, Odor, pH, Consistency and feel.²⁰

3.3 Determination of Microbial Load

The prepared formulation was evaluated for Total Viable Count, presence of gram negative pathogens such as E. coli, Salmonella and Pseudomonas by BAC-Test Laboratory in Nashik.¹⁶

Table 1: Formulation of Face Pack

Sr. No.	Name of Ingredients	Scientific Name	Quantity of sample for 100g			
			F1	F2	F3	F4
1	MultaniMitti	Calcium Bentonite	25	30	35	15
2	Turmeric	<i>Curuma longa</i>	20	5	10	20
3	Aloe Vera	<i>Aloe barbadensis</i>	10	15	10	20
4	Sandal wood	<i>Santalum alba</i>	25	25	20	25
5	Orange peel	<i>Citrus reticulate</i>	10	12	6	5
6	Neem	<i>Azadirachta indica</i>	3	8	15	10
7	Nutmeg	<i>Myristica fragrans</i>	7	5	4	5

Table 2: Organoleptic Properties

Sr. No.	Parameters	Observation			
		F1	F2	F3	F4
1	Appearance	Powder (Free Flowing)	Powder (Free Flowing)	Powder (Free Flowing)	Powder (Free Flowing)
2	Color	Slight Yellow	Slight yellow	Greenish yellow	Slight Yellow
3	Odor	Slight	Slight	Slight	Slight
4	Texture	Fine	Fine	Fine	Fine
5	Smoothness	Smooth	Smooth	Smooth	Smooth

Table 3: Physical Parameter and Physicochemical Evaluation

Sr. No.	Parameters	Observation			
		F1	F2	F3	F4
1	Particle size (μm)	26.4 \pm 5.44	22.5 \pm 2.85	24.8 \pm 4.36	25.2 \pm 5.21
2	Ash content	93 \pm 0.732	87 \pm 0.859	92 \pm 0.556	95 \pm 0.462
3	pH	7.66 \pm 0.13	6.65 \pm 0.1	6.79 \pm 0.16	6.88 \pm 0.1
4	Loss on Drying	3.33	3	4	3.67

Table 4: Irritancy Test

Sr. No.	Evaluation	Formulations				Observation
		F1	F2	F3	F4	
1	Irritant	+	NIL	+	+	- No Irritation
2	Erythema	NIL	NIL	NIL	NIL	- No Irritation
3	Edema	NIL	NIL	NIL	NIL	- No Irritation

Table 5: Parameters of Stability studies of Formulation F2

Sr. No.	Parameters	Observations (Formulations F2)		
		Room Temperature	35 \pm 0.5 $^{\circ}$ C	40 \pm 0.5 $^{\circ}$ C
1	Color	No change	No change	No change
2	Odour	No change	No change	Slightly Change
3	pH	6.65 \pm 0.17	6.65 \pm 0.11	6.72 \pm 0.21
4	Texture	Fine	Fine	Fine
5	Smoothness	Smooth	Smooth	Smooth

Table 6: Microbial Load of Formulation F2

Sr. No.	Test	Observation
1	Total viable count (CFU/g)	867
2	Gram negative pathogens, CFU/g (E. coli, Salmonella, Pseudomonas)	Absent

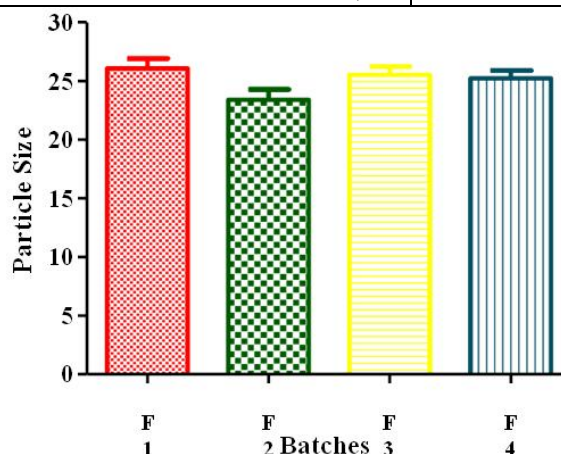


Figure 1: Particle Size of Formulations F1 to F4

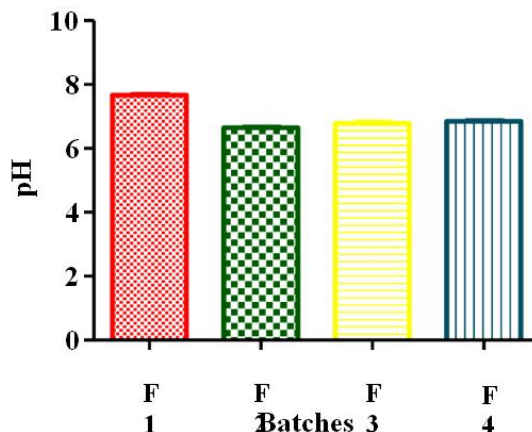


Figure 2: pH of Formulations F1 to F4

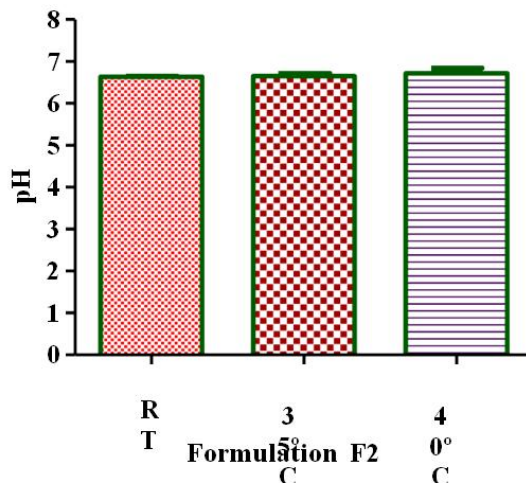


Figure 3: pH of Formulation F2 during Stability studies

IV. RESULT AND DISCUSSION

4.1 Physical Parameters

The different formulation of face pack was prepared and evaluated for physical parameters showed in the Table 2. The flow property parameter showed free flowing properties. The colors of formulations were different due to variation in composition of contents. Formulation F1, F2 and F4 were slightly yellow in color and formulation F3 showed as greenish yellow. The odor of prepared formulations was good acceptable which is desirable as cosmetic formulations. The particle size of formulations was in the range of $22.5 \pm 2.85 \mu\text{m}$ to $26.4 \pm 5.44 \mu\text{m}$ (Figure 1). The pH of all formulations lied near to neutral range i.e. in the range of 6 to 7 pH. (Figure 2). The ash content and moisture content was within limit (Table 3).

4.2 Irritancy Test

The results of irritancy test were shown in Table 4. The formulations F1, F3 and F4 showed mild irritation because of presence of turmeric powder²¹. The formulations which was prepared by lowering the concentration of turmeric i.e. formulations F2 showed no redness, edema, Inflammation and irritation during irritancy studies. This formulation is safe to use for skin.

4.3 Stability Studies

The stability studies showed a slight change in pH of formulation which was stored at 40°C and no changes were observed at room temperature and at 35°C (Figure 3). The odour of formulation was slightly changed after one month

of stability studies at 40°C and there was no change in color and odour at other mentioned conditions of stability which were showed in Table 5.

4.4 Determination of Microbial Load

The microbial load showed the Total Viable Count (867 CFU/g), and the test for presence of gram negative pathogens such as E. coli, Salmonella and pseudomonas absent per gram showed in Table 6.

The Formulation F2 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 skincare.

V. CONCLUSION

In the present scenario, people need cure for various skin problems without side effects. Herbal ingredients opened the way to formulate cosmetics without any harmful effect. 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, aloe vera, sandalwood, orange peel, neem and nutmeg. It is suggested that the prepared formulation was physico-chemically and microbiologically stable, and possessed characteristics of a standard cosmeceuticals formulation for skincare.

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