

Formulation and evaluation of poly-herbal face pack

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Aim:

The aim of the present study was to prepare and evaluate poly-herbal face pack.

Objective:

1. To prepare and evaluate poly-herbal face pack for cosmetic purpose.
2. To evaluate powder characteristics of the prepared poly-herbal face pack.

Materials & Method:

Orange peel powder, Morigna powder, Sandal wood powder, Maize starch, peppermint oil was purchased from ayurvedic practitioner store and then required quantity were weighed and sieved from 40 mesh size and mixed to form a uniform blend.

Results and Discussion:

The microscopical and chemical characters of individual powders were distinguished, and quantitative measurements were taken. The formulated powder had passable flow which is well suitable for a face pack. Particle size of the powder was found to be 15 -20µm.

Conclusion: Herbal face packs or masks are very versatile and are used to fuel blood circulation, revitalizes the muscles and it aids in sustaining the elasticity of the skin and seize dirt and pollution from skin pores. Thus, in the present work, we found good properties of the face pack and further optimization studies are required on this study to find the useful benefits of face packs on human use as cosmetic product.

Keywords: Face Pack; herbal; Cosmetics.

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Abstract

Now a day's a rise in the level of pollution, fungus, allergens, microbes etc, human skin has become sensitive and prone to various skin problems. An attempt has been made to synthesize a pack ideal for all skin types. Therefore, the prime objective of this work is to formulate and evaluate a poly-herbal face pack by using natural ingredients used to fuel blood circulation, revitalizes the muscles and it aids in sustaining the elasticity of the skin and seize dirt and pollution from skin pores. The prepared formulation was evaluated by different parameters such as organoleptic properties, physico-chemical parameters, stability including irritancy test and anti-microbial test. Among all the formulations B3 and B4 were found to be promising in physico-chemical parameters, free from skin irritation and its consistency was same throughout the storage condition and had microbial stability.

Keywords- Face Pack, herbal, Cosmetics, Natural, Formulation, Evaluation.

Introduction

Since the prehistoric times, people have the knowledge about the uses of plants for the crucial role needed for maintaining healthy skin. Cosmetics are the products used mainly for cleaning, beautifying and promote attractive appearance [1]. Facial skin is a major part of the body, which indicates the health of an individual [2]. In Ayurveda, the herbal pack/paste is called as "mukha lepa" generally use in facial therapy. This herbal pack/paste smeared on face to treat acne, pimple, scars, marks, and pigments [3] 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 [4]. 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 [5]

Face pack is a smooth powder with natural constituents which are rich in vitamins, antioxidants and are used for facial application for a healthy and glowing skin. 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. Natural facial packs are simple to use. They increase the circulation of the blood within the veins of the face, thereby increasing the liveliness of the skin [6] Face Packs are usually kept on the skin for Fifteen to twenty minutes which allows all the water to evaporate and the resulting film thus contracts and hardens which can be easily removed. The warmth and tightening effect produced by application of face pack produces the stimulating sensation which helps rejuvenation of the face, while the colloidal and

adsorption clays used in these preparations remove the pollutants, dirt, and grease from the skin of the face. When the face pack is applied it eventually removes skin debris and deposited dirt gets washed off with it.

Present research article deals with the formulation and evaluation of poly-herbal face pack for whitening and glowing skin at home by using natural materials i.e., orange peel powder, Morigna powder, Sandal wood powder, Maize starch and peppermint oil.

Materials & Method:

All the natural materials used in the study i.e., orange peel powder, Morigna powder, Sandal wood powder, Maize starch, peppermint oil was purchased from local ayurvedic practitioner store in a form of dried powder (Sharangdhar Pharmaceuticals Pvt.Ltd.,Pune)

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

Morigna powder (*Moringa oleifera*)

Moringa oleifera leaf extract is a rich source of flavonoid and phenolic compounds. Additionally, it also shows a strong antioxidant activity by scavenging free radicals. Moringa is helpful in preventing acne breakouts on the skin. It also helps in removing pimples, dark spots, blemishes, and blackheads. It protects the human skin from environmental damage, and it also combats premature skin aging [7]

Orange Peel (*Citrus reticulate*).

Orange is a citrus fruit which contains different nutritional source such as Hisperidin, vitamin C, calcium, potassium, and magnesium. It prevents the skin from free radical damage; Orange peels are loaded with antioxidants especially beneficial for skin tightening and skin lightening. Also, it has instant glow property; prevent acne, blemishes, wrinkles, and aging [8]

Sandal Wood Powder (*Santalum album*)

The Sandalwood tree has been significantly honored in the Vedic books for its sacredness. Chandana or Indra's Sandalwood tree named after Lord Indra as it spreads the fragrance to the whole of paradise. Sandalwood powder and oil have remarkable effect on skin that aids in curing skin conditions like dry skin, crackling, flaking and wrinkles. Imbalance of Pitta doshas makes the skin prone to acne, blackheads, redness, and skin irritations. The goodness of sandalwood oil assists in restoring the damaged skin cells promotes the skin complexion and maintains skin glow and radiance [9]

Maize starch (*Zea mays*)

The mask from this product is suitable for all types of skin, even sensitive. The provided action is gentle, delicate, and restoring. A face mask made of maize starch smoothes small wrinkles on the skin, significantly slows down age-related changes and whitens it. Most often it is used for aging facial skin, on which the positive qualities of the product are manifested as much as possible. It practically does not cause allergic reactions. Adding various components to the mask will help to achieve a quick positive effect. Starting with the fight against acne and ending with skin rejuvenation [10]

Peppermint oil (*Mentha piperita* L)

Peppermint (*Mentha piperita*) is a well-accepted herb that can be used in various forms (i: e, oil, leaf, leaf extract, and leaf water). Peppermint oil possesses a fresh sharp menthol odor and a pungent taste followed by a cooling sensation. It also has a variety of therapeutic properties and is used in topical preparations, aromatherapy, bath preparations, gargles, mouthwashes, and toothpastes. Topical preparations of peppermint oil have been used to calm itchy skin and relieve irritation and inflammation [11]

Methods of Preparation

Four different formulations were prepared with varying concentrations of all ingredients named as B1 to B4. Concentration of each ingredient was mentioned in Table 1. The accurate quantity ingredients were weighed and triturate them together to form a uniform mixture than ground it into fine powder by using sieve #120. Then 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 [12]

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.

Methods of Evaluation

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

Organoleptic Evaluation

The organoleptic parameters include its nature, color, odor, feel and consistency which were evaluated manually for its physical properties [13]

Irritancy test

Mark an area of 1sq.cm on the left-hand dorsal surface. A definite quantity of prepared face packs was 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 [14]

Stability studies

Stability testing of prepared formulation was conducted for batch B3 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 were evaluated for physical parameters like Color, Odor, pH, Consistency and feel [15]

Determination of moisture content

Weigh about 1.5 gm of the powdered drug into a weighed flat and thin porcelain dish. Dry in the oven at 100°C or 105°C, until two consecutive weights do not differ by more than 0.5 mg. Cool in desiccators and weigh. The loss in weight is usually recorded as moisture [16]

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. Bulk density refers to the adjustment of particles or granules to pack themselves collectively [17, 18] The Hausner's ratio is calculated as D/D' where D is the tapped density and D' , the bulk density. Carr's index helps to measure powder flow from bulk density

Angle of repose

It is defined as the maximum angle possible in between the surface of pile of powder to the horizontal flow.

Bulk density Bulk

Density is the ratio between the given mass of a powder and its bulk volume. Required amount of the powder is dried and filled in a 50 ml measuring cylinder up to 50 ml mark. Then the cylinder is dropped onto a hard wood surface from a height of 1 inch at 2 second intervals. The volume of the powder is measured. Then the powder is weighed. This is repeated to get average values. The Bulk Density is calculated by using the below given formula.

Bulk Density = Volume/Mass

Tapped density

Tapped density is an increased bulk density attained after mechanically tapping a container containing the powder sample. After observing the initial powder volume or mass, the measuring cylinder or vessel is mechanically tapped for 1 min and volume, or mass readings are taken until little further volume or mass change was observed. It was expressed in grams per cubic centimeter (g/cm³).

Phytochemical screening

The aqueous extract of the herbal face pack was evaluated for the presence of different phytoconstituents as per the standard procedures [19]

a. Shinoda test

Aqueous solution was added to a pinch of magnesium turnings and 1-2 drops of concentrated hydrochloric acid were added. Formation of pink color indicates the presence of Flavanoids.

b. Lead acetate test

Aqueous solution was taken and few drops of 10% lead acetate solution were added. Appearance of yellow color precipitate indicates the presence of flavonoids.

c. Salkowski test

Aqueous Solution (5 ml) was mixed with chloroform (2 ml), and concentrated sulphuric acid (3 ml) was carefully added to form a layer. A reddish-brown coloration of the interface was formed to show positive results for the presence of terpenoids.

Particle size

Particle size is a parameter, which affect various properties like spread ability, grittiness etc., particle size was determined by sieving method by using I.P. Standard sieves by mechanical shaking for 10 min.

PH

PH of 1% aqueous solution of the formulation was measured by using a calibrated digital pH meter at constant [20]

Wash ability

This is the common method for checking the wash ability 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 [20]

Microbial Assay

The antibacterial activities of all four formulations were determined by modified agar well diffusion method. In this method, nutrient agar plates were seeded with 0.2 ml of 24 h broth culture of *Escherichia coli* and *Staphylococcus aureus*. The agar plates were allowed to solidify. A sterile 8 mm borer was used to cut wells of equidistance in each of the plates. 0.5 ml of formulations, herbal extracts were introduced into the wells at randomly. The plates were incubated at 37°C for 24 hours. The antibacterial activities were evaluated by measuring the zones of inhibition (in mm) [21]

Application of poly-face pack

The pack should be applied daily on wet face, forming a paste of it in water or rose water with optimum thickness. It should be applied evenly on the face with the help of a brush. It should be left for 10-20 minutes for complete drying. Then it should be removed with the help of a wet sponge.

Result and Discussion

The results of evaluation are displayed in Table for organoleptic and 6physic-chemical and general powder evaluation. The study of nature, color, odor, taste, texture, wash ability, grittiness, moisture content and pH of dried powders of combined form under investigation provided the important feature of organoleptic and physicochemical evaluation. The moisture content value was found to be less than 5%. The acidic or alkaline nature of the dried powder of combined form was determined by preparing 1% dispersion of powder form in distilled water and measuring the pH with pH meter. The pH of 1% dispersion of powder was obtained as 5.9 which indicated that the powder of combined form was slightly acidic in nature. Dried powder of combined form was evaluated for particle size, angle of repose, bulk density and tapped density

before being formulated. Values of , tapped density , bulk density ,angle of repose, , Carr's index, Hausner'sr ratio obtained for powder of combined form were found of B3 to be respectively, 0.43 g/ml, 0.46 g/ml, 31, 1.12 and ,have good flow properties. The powder had good flow property which is suitable for a face pack. And it's easily washable with water. Antimicrobial evaluation was performed with two organisms Staphylococcus aureus, E.Coli and the Zone of inhibition was found in formulation was displayed in table



Image 1 Formulation of poly-herbal face pack



A- After application of face pack.
B- Before application of face pack.

Image 2 Evaluation of poly-herbal face pack of Batch B3

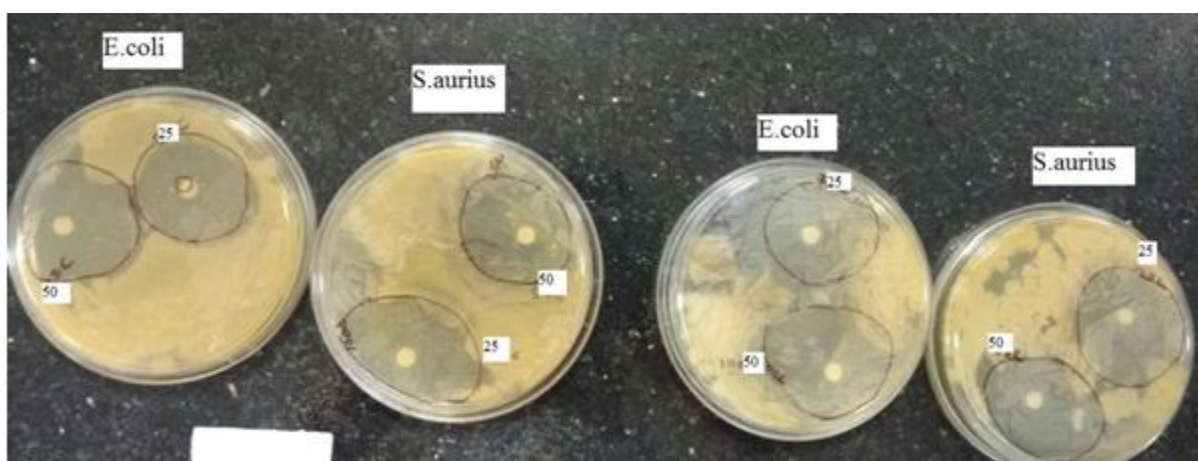


Image 3 Microbial Evaluation of Batch B3 and B4

Formulation of face pack

Sr. No.	Name of Ingredients	Quantity of sample for 50 g			
		B1	B2	B3	B4
1	Morigna powder	10	20	30	25
2	Orange Peel	10	20	25	30
3	Sandal Wood Powder	20	20	25	20
4	Maize starch	55	40	20	25
5	Peppermint oil	5	q.s	q.s	q.s

Organoleptic Evaluation

Sr. No.	Parameter	Observation			
1	Nature	Powder	Powder	Powder	Powder
2	Color	Yellowish Green	Green	Olive Green	Green
3	Odor	Pleasant	Pleasant	Pleasant	Pleasant
4	Taste	Bitter	Bitter	Bitter	Bitter
5	Texture	Fine	Fine	Fine	Fine
6	pH	7.14	6.8	5.9	6.0
7	Moisture Content	2.3%w/w	1.9%w/w	1.2%w/w	2.5%w/w
8	Wash ability	Easily Washable	Easily Washable	Easily Washable	Easily Washable
9	Grittiness	NIL	NIL	NIL	NIL
10	Nature of face after wash	Redness but clean	Soft and Clean	Soft and Clean	Soft and Clean

Irritancy test

Sr no.	Parameter	Observation			
1	Irritation	YES	NIL	NIL	NIL
2	Redness	YES	NIL	NIL	NIL
3	Swelling	NIL	NIL	NIL	NIL

Stability studies

Sr. No.	Parameter	Room Temperature				35° C			
		B1	B2	B3	B4	B1	B2	B3	B4
1	Color	NIL	Slight Change	NIL	NIL	Slight change	NIL	NIL	NIL
2	Odor	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
3	pH	NIL	NIL	NIL	NIL	Slight change	NIL	NIL	NIL

4	Texture	Fine	Fine	Fine	Fine	Fine	Fine	Fine	Fine
5	Smoothness	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth

Rheological Evaluation					
Sr. No.	Parameter	B1	B2	B3	B4
1	Tapped Density	0.42 g/ml	0.45 g/ml	0.43 g/ml	0.41 g/ml
2	Bulk Density	0.50 g/ml	0.49 g/ml	0.46 g/ml	0.47 g/ml
3	Angle of Repose	34	36	31	32
4	Hausner's Ratio	1.43	1.35	1.12	1.26
5	Carr's Index	Fair	Fair	Good	Good

Phytochemical Evaluation				
Sr. No.	Phytoconstituents	Test	Observation	Inference
1	Flavanoids	Shinoda Test	Pink Color	Presence of Flavanoids.
2	Flavanoids	Lead Acetate Test	Yellow Color	Presence of Flavanoids.
3	Volatile oil	Menthol Test	Yellow Color	Presence of menthol in Peppermint.

Microbial Assay					
Sr. No.	Bacteria	Zone of inhibition			
		B1	B2	B3	B4
1	Escherichia coli	29±1.24	34±1.53	38±0.94**	37±1.17*
2	Staphylococcus aureus	34±1.53	37±1.07	40±0.94**	38±0.94*



Lead acetate test for flavanoids



test for menthol



Shinoda test for flavanoids

Conclusion

A poly-herbal face pack is used to rejuvenate the muscles, maintain the elasticity of the skin, remove adhered dirt particles, and improve the blood circulation. The benefits of herbal based cosmetics are there as they are nontoxic nature. This poly-face pack supplies essential nourishment to the skin. It helps in the elimination of blemishes, acne, pimple, scars, and marks. Poly-herbal Face pack exfoliates the skin and provides a soothing, calming, and cooling effect

on the skin. Frequent uses of herbal face packs improve skin texture and complexion. Pollution and harsh climates badly affect the skin. Thus, in the present work, an attempt was made to formulate the poly-herbal face pack containing naturally available ingredients like Morigna powder, orange peel powder, sandalwood powder, maize starch, and peppermint oil. It is suggested that the prepared formulation was physico-chemically and microbiologically stable and possessed characteristics of a standard cosmeceuticals formulation for skincare.

Ethics approval and consent to participate

Not applicable.

Human and animal rights

No Animals/Humans were used for studies that are base of this research.

Conflict of interest

The authors declare no conflict of interest, financial or otherwise.

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