

Formulation and Evaluation of Herbal Antibacterial Face Pack

Vidhate Prajwal G., Salve Jagruti R., Lanke Komal P., Panmand Dipali A.,
Somvanshi Akanksha A., Kasar Archana D.
Samarth Institute of Pharmacy, Belhe, Maharashtra., India

Abstract: Herbal face packs or mask are used to stimulate blood circulation, rejuvenates and assist to hold the pliability of the pores and skin and put off dust from pores and skin pores. It is a excellent try and set up the natural face % containing distinct powders of plants. The benefit of natural cosmetics is their non-poisonous nature, lessen the hypersensitive reactions and time examined usefulness of many ingredients. Thus with inside the gift paintings, we located right houses of the face packs and in addition optimization research are required in this take a look at to discover the beneficial advantages of face packs on human, use as beauty product The goal of this paintings is to formulate and compare a beauty education polyherbal face % crafted from natural ingredients. Multani mitti, turmeric, aloe vera sandal wood, orange peel, neem and nutmeg powder had been procured from the neighborhood marketplace in dried, powdered after which surpassed thru sieve no. 80, blended very well organized and evaluated for its organoleptic, physicochemical and microscopical characters. The dried powder of mixed shape had satisfactory glide assets that is appropriate for a face %. Herbal face packs or mask are used to stimulate blood circulation, rejuvenates and assist to hold the pliability of the pores and skin and put off dust from pores and skin pores. It is a excellent try and set up the natural face % containing distinct powders of plants. The benefit of natural cosmetics is their non-poisonous nature, lessen the hypersensitive reactions and time-examined usefulness of many ingredients. Thus, with inside the gift paintings, we located right houses of the face packs.

Keywords: Face pack. Cosmetics. Herbal, Formulation, Evaluation.

I. INTRODUCTION

1.1 Ayurvedic Concept of Skin

Ayurveda, the science of life, was elucidated in India over 6,000 years was the first record of scientific medicine in the history of the world. The word "Ayurveda" literally means knowledge (Veda) of life (Ayu). The aim of Ayurveda, therefore, is to improve the quality of life and increase the life span (longevity). Its major emphasis is on prevention of disease and promotion of health by strengthening tissues so that they can withstand exogenous and endogenous factors causing oxidative stress. Phytomedicine plays a prominent role in Ayurveda. Over 600 plants are described in original Ayurvedic compendia like Charaka and Sushruta Samhita. In these texts, plants are classified into groups based on their effects In Ayurveda, Charaka has described twak (skin) in six layers but named only the first two layers as udakadara (bahyatwak) and astrikdhara. The third layer is the seat of Sidhma (dermatitis) and Kilas Kushta (leucoderma).

The fourth layer is the seat of Dadru Kushta (ringworm). The fifth layer produces Alaji (boil) and Vidradhi (abscess) and the sixth layer is the deepest layer of the skin. Sushruta has described the seven layers of skin as avabhasini, lohita, shweta, tamra, vedini, rohini and mamsadhara Avabhasini is the outermost layer and reflects the complexion and the quality of the Rasa Dhatu (nutrient fluid, the first of the seven tissues of the body). Avabhasini means to reflect and to enlighten. Thus, it is the one which reflects Chhaayaa (aura). Lohita is slightly thicker than Avabhasini. Shweta is the third layer and conditions like psoriasis characterized by scaling. Vedini means to know, to perceive. Thus, this is the true skin which is responsible for perception of sensation. Rohini is the sixth layer and before mamsadhara. Tumours, mumps etc can occur at this layer. Mamsadhara is the innermost layer and it is the platform for the skin's stability and firmness, Mamsa means muscle and dhara is one, which holds or imparts support. This layer is adhering to the muscles. When this layer is in balance, the skin looks young and supple.

According to Ayurveda, Twak (skin) is a Matruja Avyaya i.e., derived from mother or having maternal origin. It is the mirror of an individual's health. Ayurvedic concepts of skin diseases are based on the tridoshas i.e.. Vata, Pitta and Kapha. Imbalance in any one dosha leads to various types of skin i.e.. Vata skin, Pitta skin. Kapha skin and Combination skin.

- Vata skin: Dry, thin, fine pores, delicate and cool. It is easy to dehydrate and is very susceptible to dry weather. It tends to form wrinkles faster than other skin types.
- Pittaskin: Light, soft, warm and medium thickness. It tends to be more freckled and moles than other skin types. It is photosensitive, has the lowest resistance to the sun, and is most likely to accumulate sun damage over the years.
- Kapaskin: Thick, oily, soft and cool to the touch ; more prone to wrinkles later in life than vata and pitta types, but due to its thickness and oiliness, flax (toxin) It tends to accumulate under the skin. It has a dull complexion, enlarged pores, excess oil, acne and acne, a damp type of eczema, and water retention.
- Combination Skin: A combination of two skin types: Dry and sensitive VataPitta skin, oily and sensitive KaphaPitta skin, and VataKapha skin are generally dry and have several oily zones.

1.2 Cosmetics

The term beauty and cosmetics is as old as humanity and civilization. Women are crazy about looking beautiful. Today, cosmetics are considered one of the most important products in life. This is the cornerstone of the Fast-moving Consumer Goods (FMCG) sector. Cosmetics are based on the Pharmaceuticals and Cosmetics Act of 1940 and the Regulations of 1945. It is a substance defined as "the target object".

1.3 Herbal Face Pack

Ayurveda uses an herbal paste called "Mukarepa" as a facial therapy. This herbal paste is applied to the face to treat acne, acne, blemishes, blemishes and pigments. Face packs are smooth powders used for facial applications. These formulations can be applied to the face in the form of liquids or pastes and dried and cured to form films that provide toning, toning and purifying effects on the skin.

II. MATERIALS AND METHODS

Ingredients of Formulations

2.1 Ingredients of the Formula

All natural materials used in this study. H. Multanimitti, turmeric, aloe vera, sandalwood, orange peel, neem and nutmeg were purchased from the local market in the form of dry powder. Below are details of the botanical materials used in the face pack formulation.

Sr No.	Name of Ingredient	Scientific Name	Quantity (For 100 gm)
1	Orange peel powder	Citrus reticulate	5 gm
2	Neem powder	Azadirachta indica	15gm
3	Sandal Wood	Santalum alba	20gm
4	Aloe Vera powder	Aloe barbadensis	10gm
5	Turmeric	Curcuma longa	5gm
6	Bentonite	Absorbant Aluminum phyllosilicate clay	20gm
7	Light Kaolin	Hydreted Aliminum silicate	10gm

Table 1: Ingredients of formulations

Orange Peel (Citrus reticulate)

Orange is a citrus fruit that contains various nutrient sources such as vitamin C, calcium, potassium and magnesium. Protects the skin from damage caused by free radicals, skin moisture and oxidative stress. It also has the property of momentary brilliance and prevents acne, scratches, wrinkles and aging due to the antibacterial, anti-inflammatory and antioxidant effects of various chemical components.

Neem (*Azadirachta indica*)

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

Sandal wood (*Santalum alba*)

Sandalwood has an anti-tanning and anti-getting old belongings. It additionally allows pores and skin in lots of approaches like firming effect, emollient, antibacterial properties, cooling astringent belongings, soothing and recuperation belongings.

Aloe Vera (*Aloe barbadensis*)

Aloe vera is an exquisite moisturizer meant for a pores and skin. Aloe vera rejuvenates pores and skin, hydrates this and maintains pores and skin layer searching sparkling all of the time. Aloe vera has anti-microbial belongings rendering it perfect to address zits and pimples. Aloe vera powder carries numerous vitamins like glycerine, sodium palmate, sodium carbonate, sodium palm kemelate, sorbitol.

Turmeric (*Curcuma longa*)

Turmeric is mainly used to rejuvenate the skin. It delays signs of aging such as wrinkles and has other properties such as antibacterial, antiseptic and anti-inflammatory. It is the best source of blood purifiers. It is effective in treating acne due to its antiseptic and antibacterial effects that fight acne and pimples and give the skin a youthful glow. It also reduces the formation of sebaceous glands.

Bentonite

Applying Bentonite Clay to scars, acne marks, and stretch marks can possibly help lighten some skin discoloration.

Kaoline

China Clay reduces oily skin, clears pores and cleanses the skin. It treats acne and tightens and softens the skin.

III. MEHTOD OF PREPARATION

- Weighed the exact amount of material (Table 1) Grind into fine powder using a sieve # 80
- All ingredients were mixed in mortar pestle.
- Prepared face pack was packed into a self sealable polyethylene bag.
- Labeled and Used for Future Research.

Application of Face Pack on Skin

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. Kept as it is for complete drying for 20 to 25 min and then wash with cold water.



Fig.1. Herb Face Pack

Apply Face Pack to Skin

If necessary, put the prepared face pack powder in a bowl, add rose water and mix. Mix well and apply to facial skin. It also covers acne and blemishes. Leave it for 20 to 25 minutes to dry completely and wash with cold water.

Precautions to be Taken While Applying Face Pack)

1. Do not leave the face pack on your face for more than 15-20 minutes. Very long storage can lead to wrinkles, sagging and enlargement of open pores.
2. Apply face pack once a week. Do not remove or scratch the dry face pack.
3. It can damage the underlying skin.
4. Spray (at room temperature) water on your face before removing the dry face mask. After removing the mask roll the ice cubes on the skin of the face. This helps to close open pores and tighten skin. It also tightens and soothes the skin.
5. Do not rub your face violently. This can lead to acne and darkening of the skin.
6. If you apply a face pack, keep away from heat.
7. Avoid applying face packs near the "eye zone". The skin around the eyes is very sensitive. Removing the face mask can damage the skin around the eyes.

IV. EVALUATION OF FORMULATION

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

Morphological Parameter

We visually checked morphological parameters such as color, odor, appearance and texture.

Physicochemical Evaluation

a) pH

pH of 1% aqueous solution of the formulation was measured by using a calibrated digital pH meter at constant value.

b) Loss on Drying

Weigh about 1.5 g of powdered drug into a weighed flat and thin porcelain dish. Dry in an oven at 100 ° C or 105 ° C until the difference between the two consecutive weighings is 0.5 mg or less. Cool with a desiccator and weigh. Weight loss is usually recorded as moisture

c) Ash Content

Total Ash Value

Accurately weighed, about 24 g of crushed, air-dried material is placed in a pre-ignited and tare crucible (usually platinum or silica). Spread the material over a uniform layer to lighten it and gradually increase the heat to 500600 ° C until it turns white, indicating the absence of carbon. Cool with a desiccator and weigh. If this method does not produce carbon-free ash, cool the crucible and moisten the residue with approximately 2 ml of water or saturated ammonium nitrate solution. Dry in a water bath, then on a hot plate and ignite until constant. Cool the residue in a suitable desiccator for 30 minutes and weigh immediately. Calculate the total ash content per gram of air-dried material in mg l

Acid Insoluble Ash Value

Add 25 ml of hydrochloric acid to a crucible containing whole ash, cover with a watch glass, and bring to a boil slowly for 5 minutes. Rinse the watch glass with 5 ml of hot water and pour this liquid into the crucible. Collect the insoluble material on ash-free filter paper and wash with hot water until the filtrate is neutral. Transfer the filter paper containing the insoluble ingredients to the original crucible, dry it on a hot plate, and let it shine until it reaches a certain weight. Cool the residue in a suitable desiccator for 30 minutes and weigh immediately. Calculate acid-insoluble ash in mg per gram of air-dried material.

Water Soluble Ash Value

Add 25 ml of water to a pan containing all the ash and bring to a boil for 5 minutes. Collect the insoluble material in a sintered glass crucible or ashless filter paper. Rinse with hot water and ignite in a crucible at a temperature below 450° C for 15 minutes. Subtract the weight of this residue in me from the weight of the total ash. Calculate the water-soluble ash content per 1 g of air-dried material in mg.

d) Particle Size

Particle size is a parameter that affects various properties such as spreadability and particle size. Particle size was determined by a sieving method using an L.P. standard sieve with mechanical shaking for 10 minutes.

Phytochemical Evaluation

a) Detection of Glycoside

Borntrager's Test

Borntrager test Add 5-10 ml of diluted HCl to a 1 g face mask, boil in a water bath for 10 minutes and filter. The filtrate was extracted with CCl₄ / benzene, an equal volume of ammonia solution was added, the mixture was filtered, and the mixture was shaken. Pink or red formation of ammonium layer due to the presence of anthraquinone units

b) Detection of volatile oil

In face pack 2-4g when treated with alcohol solution of volatile oil.

Physical Evaluation (Powder Property)

a) Tapped Density

Tapped density is an accelerated bulk density attained after routinely tapping a box containing the powder sample. After gazing the preliminary powder quantity or muss, the measuring cylinder or vessel is routinely tapped for 1 min and quantity.

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

b) 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.

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

c) Angle of Repose

It is defined as the maximum angle possible in between the surface of pile of powder to the horizontal flow. It required amount of dried powder is placed in a cylindrical tube open at both ends is placed on a horizontal surface. Then the funnel should be raised to form a heap. The height and radius of the heap is noted and recorded. For the above method, the angle of repose (θ) can be calculated by using the formula.

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

where θ - Angle of repose,
h - Height of the heap,
r - Radius of the base

d) Hausner's Ratio

$$\text{Hausner's Ratio} = \text{Tapped Density} / \text{Bulk Density}$$

b) Carr's Index

$$\text{Carr's Index} = (\text{Tapped Density} - \text{Bulk Density}) / \text{Tapped Density} \times 100$$

Stability Studies

Stability test of the prepared product was carried out by storing it under various temperature conditions for 1 month. Vials filled with the drug product were stored at various temperature conditions such as room temperature and 40 ° C.

Microbial Assay

The antibacterial activity of various formulations was determined by the modified agar well diffusion method. In this procedure, the nutrient agar plate was inoculated with 0.2 ml of 24-hour culture medium. Culture of *Escherichia coli* and *Pseudomonas aeruginosa* that cause scabs vulgaris. The agar plate was solidified. Equally spaced wells on each plate were cut using a sterile 8 mm drill bit. A 0.5 ml formulation, herbal extract was randomly introduced into the wells. The plates were incubated at 37 ° C for 24 hours. Antibacterial activity was assessed by measuring the inhibition zone (mm).

Detergency/ Spreadability

This is the usual way to check the detergency of a product. The formulation is applied to the skin and then the ease and extent of washing with water is manually checked by using 1 liter of water to remove all the contents of the formulation applied to the surface.



Fig . A

Fig . B

Fig . C

Fig – A) Before keeping in incubator

B) Zone of inhibition shown by *Escherichia coli*

C) Zone of inhibition shown by *Pseudomonas aeruginosa*

Washability

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 litre of water is used to remove all content of the formulation were applied on the surface.

V. RESULT AND DISCUSSION

Following assessment parameters have been carried out to make sure superiority of organized face Pack

Morphological Evaluation

Herbal face percent changed into evaluated for morphological parameters confirmed withinside the Table

Sr. No.	Parameter	Observation
1)	Colour	Yellowish
2)	Odour	Pleasant
3)	Appearance	Free Flowing Powder
4)	Texture	Fine
5)	Smoothness	smooth

Table 3: Morphological Evaluation

Physicochemical Evaluation

Herbal face percent changed into evaluated for physicochemical parameters confirmed withinside the Table 3. The pH of system changed into observed near neutral. The ash content material and moisture content material have been inside limit. The particle length of formulations changed into observed withinside the variety of 25-30µm.

Sr. No.	Parameter	Observation
1)	pH	6.82
2)	Loss on drying	1.8 % w/w
3)	Ash content : 1. Total ash value 2. Acid insoluble ash value 3. Water soluble ash value	2.7 % w/w 0.60 % w/w 1.3 % w/w
4)	Particle size (µm)	25 – 30 µm

Table 4: Physicochemical Evaluation

Physical Evaluation (powder property)

Herbal face % changed into evaluated for bodily parameters (powder property) confirmed withinside the Table five. Rheological findings justified the flow (powder) homes of the natural face %. It changed into discovered to be a free-flowing and non-sticky in nature.

Sr.no.	Parameter	Observation
1)	Tapped density	0.625 gm/ml
2)	Bulk density	0.5 gm/ml
3)	Angle of repose	36 (Fair)
4)	Hausner's ratio	1.25 (Fair)
5)	Carr's index	20 (Fair)

Table 5: Physical Evaluation

Stability Study

The effects of balance had been proven in Table 7. No extrade in color, odor, texture and smoothness changed into observed. The balance research confirmed a mild extrade in pH of formula at 40°C.

Sr.no.	Parameter	At Room Temperature	At 40°C
1)	Colour	No Change	No Change
2)	Odour	No Change	No Change
3)	Texture	Fine	Fine
4)	Smoothness	Smooth	Smooth
5)	PH	6.82 + 0.04	6.82 + 0.05

Antimicrobial Assay

Antibacterial activity was assessed by measuring the inhibition zone (mm). The evaluation results are shown in Table 8. Prescription and Evaluation of Herbal Antibacterial Face Pack

Sr. No.	Bacteria	Zone of inhibition (in mm)
1)	Escherichia coli	36 mm
2)	Pseudomonas aeruginosa	35 mm

Table 7 .Antibacterial Assay

VI. CONCLUSION

Natural treatments are extra applicable withinside the notion that they're more secure with fewer aspect outcomes than the artificial ones. Herbal formulations have developing call for withinside the international market. Herbal face packs are taken into consideration as maintaining and effective manner to increase the advent of pores and skin. Herbal face packs or mask are used to stimulate blood circulation, rejuvenates the ones muscle groups and assist to hold the pliancy of the pores and skin and dispose of dust from pores and skin pores. Thus, withinside the gift work, it's far a excellent try to formulate the natural face % containing obviously to be had elements like Multani mitti, turmeric, aloe vera, sandalwood, orange peel, neem and nutmeg. It is recommended that the organized components turned into physico-chemically and microbiologically stable, and possessed traits of a fashionable cosmeceutical's components for skincare.

VII. SUMMARY

In the current scenario, people need to treat various skin problems without side effects. Plant-based ingredients have paved the way for cosmetic formulations without harmful effects. Herbal face packs are considered a sustainable and economical way to improve the appearance of the skin. As a cosmetic product, we have found good properties for human skin face packs. Herbal face packs or masks help stimulate circulation, rejuvenate muscles, maintain skin elasticity and remove dirt from skin pores. The advantage of herbal cosmetics is that they are non-toxic, reduce allergic reactions and prove the long-standing usefulness of many ingredients. This face pack is informative and economical and has passed all evaluation parameters

REFERENCES

- [1]. Sachin Somwanshi & Ramdas Dolas, Formulation and evaluation of cosmetic herbal face pack for glowing skin, Article in International Journal of Research in Ayurveda and Pharmacy • August 2017
- [2]. Mr. K.G Bhutkar & Mrs. M. Shah, Formulation and evolution of herbal antibacterial face pack article, May 2019 JETIR May 2019, Volume 6, Issue 5 www.jetir.org (ISSN-2349-5162).
- [3]. Yadav N And Yadav R, Preparation and evaluation of herbal face pack Research Article, International Journal of Recent Scientific Research Vol. 6, Issue, 5, pp.4334-4337, May, 2015
- [4]. Avinash O. Maske, Manisha Pandhare, Ashwin D. Wanjari, Formulation and evaluation of herbal face pack for glowing skin Research Article, International Journal of Advances in Pharmaceutics E-ISSN: 2320-4923; P-ISSN: 2320-4931
- [5]. Chanchal D, Swarnlata S., Herbal photoprotective formulations, and their evaluation, Open Nat Prod J 2009; 2: 71-6.
- [6]. Banchhor, M., Ashawat, M.S., , Saraf, S. and Saraf, S. (2009), Herbal Cosmetics: Trends in Skin Care Formulation, Phcog Rev 3(5): 82-89.
- [7]. Millikan, L. E., 2001. Cosmetology, cosmetics, cosmeceuticals: definitions and regulations. Clinics indermatology 19 (4): 371-374.
- [8]. Rani, S. R. and Hiremanth, Text book of Industrial pharmacy, Drug delivery systems & Cosmetics & Herbal drug technology: Universities press (India) Ltd; 2nd Edition, (2002).
- [9]. Chanchal D. and Saraf S. (2009). Herbal Photoprotective Formulations and their Evaluation. The Open Nat ProdJournal 2: 71-76.
- [10]. Himaja N, Ashok kumar A, Bhart kumar B. Preparation and Evaluation of Poly Herbal Fruit Face Mask. J Res Pharm Sci 2015; 2(11): 07-13
- [11]. Koli DS, Mane AN, Kumbhar VM, Shaha KS. Formulation & Evaluation of Herbal Anti-Acne Face Wash. World J Pharm Pharm Sci 2016; 5(6):2001-2007.
- [12]. Nemade CT, Baste N. Formulation and evaluation of a herbal facial scrub. World J Pharm Res 2014; 3(3): 4367-4371.
- [13]. Rajeswari R, Umadevi M, Rahale CS, Pushpa R, Selvavenkadesh S, Sampath Kumar KP, Bhowmik D. Aloe vera: The Miracle Plant Its Medicinal and Traditional Uses in India. J Pharmacogn Phytochem 2012; 1(4): 118-124.
- [14]. Best Benefits of Turmeric (Haldi) For Skin, Hair, And Health-No.4 Is The Best Nov 2016, Available

from: <http://www.stylecraze.com/articles/turmeric-history-how-to-use-benefits>.
[15]. Dr C.K. Kokate, A.P Purohit, S.BGokhale Pharmacognosy book.