Research Article

A polyherbal face pack: preparation and evaluation using in-house ingredients

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Abstract

Objective: Due to increased pollution, stressful life style, exposure to ultraviolet (UV) light, allergies and microbe's etc. human skin are becoming more sensitive and prone to faster aging. Our **skin** texture is at the mercy of many factors as we age like sun, weather, and habits. Here in this study an attempt has been made to prepare a polyherbal face pack using household ingredients ideal for all skin types. **Material and Methods:** Four different formulations were prepared, made up of readily available in house natural materials i.e. Aloe vera, Sandal wood, Rose petals, Turmeric, Gram flour and Almond. After preparation of Face pack different parameters were evaluated in order to analyze the quality standards. **Results and Conclusion:** The organoleptic evaluation of prepared formulations showed that the formulated Face pack is smooth and pleasant smelling powder. The pH of all formulations observed near to neutral range. During irritancy test, non among the four of formulations showed any irritation. The results proved that the Face pack formulations names as P1, P2, P3 and P4 are suitable for its intended use.

Keywords: Poly herbal, face pack, allergy, Aloe vera, Sandal wood, Turmeric and almond

Introduction

The signs of good health of an individual is indicated by the texture of face skin which is frequent exposed part of the body. Skin is composed of bio-molecules such as amino acids, lipids and carbohydrates etc. so a balanced nutrition is required for the skin to keep it healthy and glossy (Sownya et al., 2015). Face pack is the smooth powder used for facial application which is applied on the face in the form of suspension or paste and allowed to dry and set to form film giving various effects like skin tightening, strengthening, exfoliates skin, provides soothing effect, and produce cooling effect on the skin. This are meant for cleansing and nourishing facial skin. They are usually left on the skin for ten to twenty minutes to allow all the water to evaporate; the resulting film thus contracts and

hardens and can easily be washed off with water. 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 such preparations remove the dirt and grease from the skin of the face. Different types of Herbal face packs are used for different types of skin. Herbal face packs helps to reduce wrinkles, pimples, acne and dark circles. It may also increases the fairness and smoothness of skin (Somwanshi et al., 2017).

The Natural face packs contain some vital vitamins that are required for the health and glow of skin. The main objective of this work is to formulate and evaluate a polyherbal face pack for cosmetic purpose from house hold available ingredients. These substances also prove to be beneficial for our skin in many ways. Natural face packs are easy to prepare and pretty simple to use. Effects of the facial packs are generally temporary and for the regular glow it should be used multiple times in a week.

Materials and Methods

All the natural materials used in the present study i.e. Aloe

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vera (*Aloe barbadensis* Mill), Sandal wood (*Santalum album*), Rose petals (*Rosa*), Turmeric (*Curcuma longa*), Gram flour (*Cicer arietinum*) and Almond (*Prunus dulcis*) were purchased from local market of Kishanganj district. All these ingredients were dried in shade and powdered for further use. The below mentioned are the details of the plant materials used for the formulation of face pack.

Aloe Vera (*Aloe barbadensis* Mill)

Aloe Vera plant is a decorative plant as well as the pulp of the leaves useful for herbal medication. Aloe vera is a valuable natural substance for skin disorders. It imparts the sensation of freshness and gives nourishment to skin cells. It is also good moisturizer intended for a skin. In cosmetology, Aloe vera especially deals with the problem of pigmentation, skin eruption, itching, blisters, skin aging, sun burns and pimples. It contains about more than 20 amino acids, minerals, vitamins, polysaccharides and several other nutrients that make it a miracle beauty herb (Vogler and Ernst, 1999).

Sandalwood (*Santalum album*)

It is considered as holy wood in India with wide range of medicinal properties that makes it the best and most reliable home remedies for skin. It has powerful antimicrobial property which work effectively in fighting the bacteria and fungi and prevent the occurrence of pimples and acne. Sandalwood paste is one of the best skin care remedies that can be used to soothe sunburns and clear skin tanning. The toning effect of sandalwood helps in shrinking skin pores that provides an even skin texture and prevents sagging and aging of skin. It tightens the wrinkling skin tissues in order to provide a supplement and youthful appearance to the skin (Aglawe et al., 2018).

Rose Petals powder (*Rosa*)

Rose petals powder is rich with the antibacterial properties, due to the positive effects of vitamins K, C and B. It also provide a pleasant smell. A rose is a woody **perennial flowering plant** of **genus** *Rosa*, in the family **Rosaceae**. It is grown as ornamental plant for its beautiful flowers and the petals of flower is used commercial in perfume industries. **Rose** petals are occasionally made into **jam**, **jelly**, **marmalade**, and **soup** or are brewed for tea, primarily for their high **vitamin C** content. Rose hips are also used to produce **rose hip seed oil**, which is used in skin products and some makeup products (Herbwisdom, 2017).

Turmeric (*Curcuma longa*)

Turmeric 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 & 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 (Saxena et al., 2017).

Gram flour (*Cicer arietinum*)

Gram Flour 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 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 and also reduces the oiliness of skin; thus proving as a good antipimple agent. It lightens the skin tone, therefore used as an instant fairness agent (Grace et al., 2014).

Almond (*Prunus dulcis*)

Almonds have long been studied as a rich source of fatty acids, phytochemical polyphenols and antioxidants such as vitamin E. The Supplementation is known to significantly modulate serum lipids. Ancient Chinese and Ayurvedic practices have used almond oil for centuries to help soothe and soften the skin and to treat minor wounds and cuts. Almond contain Vitamin A has the ability to stimulate the production of new skin cells. Vitamin E present in almond has antioxidant properties that may help prevent cell damage and help reduce ultraviolet (UV) damage to the skin caused by the sun. Omega-3 fatty acids helps prevent premature aging and safeguard against sun damage (Foolad et al., 2019).

Method of preparation

Four different formulations were prepared with varying quantity/concentrations of all ingredients named as P1, P2, P3 and P4. Formula used to prepare individual preparation by using each of the ingredient is mentioned in Table 1. The ingredients were powdered using clean mixer and grinder later the fine powdered is sieved using #80 mesh. The individual ingredients were weighed accurately by using digital balance and mixed geometrically to obtain uniform mixing. The individual preparation was stored in an airtight container, labelled as stated earlier with composition incorporated and used for further valuation studies (Gorantla et al., 2013).

Table 1. Formulation of face pack

Sr. No.	Name of ingredients	Scientific Name	Quantity of Ingredients for 40 g			
			P1	P2	P3	P4
1	Aloe Vera	<i>Aloe barbadensis</i> Mill	4	6	8	10
2	Sandalwood	<i>Santalum album</i>	10	8	6	4
3	Rose Petals	<i>Rosa</i> Petals	6	6	6	6
4	Turmeric	<i>Curcuma longa</i>	4	6	8	10
5	Gram flour	<i>Cicer arietinum</i>	6	6	6	6
6	Almond	<i>Prunus dulcis</i>	10	8	6	4

Procedure of Face Pack Application

Take prepared Herbal face pack powder in a bowl in adequate quantity and add sufficient water to obtain a stiff viscous mass. Mix well and apply over the facial skin. Cover the acne and blemishes spots too and kept as it for complete drying for 20 to 25 minutes and then wash with cold water without rubbing.

Method of Evaluation

Following evaluating parameters were performed to check the creditability of prepared face pack.

Organoleptic Evaluation

The evaluation of organoleptic parameters such as colour, odour, appearance, texture and smoothness were carried out. Colour and texture was evaluated visually and by touch sensation respectively. For odour evaluation, a team of four healthy Faculty member persons were selected (Bureau of Indian Standards, 2002).

Physicochemical Evaluation

A) pH: The pH of individual preparation was determined by using digital pH meter which was initially calibrated at pH 7 and 9.2 with suitable buffer solution. A 10 % (w/v) dispersion of the individual preparation was prepared in distill water and pH was determined directly without any dilution (Laxmi and Vijayalaxmi, 2017).

B) Loss on Drying: Moisture content is important for the plant drugs because insufficient drying may lead to possible enzymatic deterioration of active principles. Weigh accurately about 3gm of powder preparation in petri dish and placed in hot air oven and measure the weight after 30 minutes up to standard weight.

C) Ash value: Ash value is calculated to determine the inorganic contents which are characteristic for an herb. About 2gm of powder drug was taken in crucible dish previously ignited and weighed. Temperature was increased by gradually increasing the heat not exceeding to red color. After complete burning, ash is cooled and weighed.

Powder Properties Evaluation

Physical parameters like Angle of repose, Bulk density, Tapped density and Hausner's ratio were observed and calculated for the formulation (Saxena et al., 2017).

A) Angle of Repose: After allowing the required amount of dried powder is dropped from height of 6 cm, 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:

$$\text{Angle of Repose } (\theta) = \tan^{-1} \left(\frac{h}{r} \right)$$

Where, θ - Angle of repose,

h - Height of the heap,

r - Radius of the base.

B) Bulk Density: It is the weight of given substance in a given volume. It is calculated by the ratio of given mass of powder and its bulk volume. It is determined by transferring an accurately weighed amount of powder sample to the graduated cylinder with the help of funnel. The initial volume was noted. The ratio of weight to the volume it occupied was calculated by using formula:

$$\text{Bulk density} = \frac{\text{Mass of powder}}{\text{Volume of powder}}$$

C) Tapped Density: It is measured by transferring a known quantity (10 gm) of powder into a graduated cylinder and tapping it for a specific number of times. The initial volume was noted. The graduated cylinder was tapped continuously for a period of 10-15 min. The density can be determined as the ratio of mass of the powder to the tapped volume.

$$\text{Tapped density} = \frac{\text{Mass of Powder}}{\text{Tapped Volume}}$$

D) Hausner's Ratio: It indicates the flow property of the powder. The ratio of tapped density to the bulk density of the powder is called Hausner's ratio.

$$\text{Hausner's ratio} = \frac{\text{Tapped density}}{\text{Bulk density}}$$

Irritancy test: Mark an area of about 1 sq. cm on the left-hand dorsal surface. Definite quantities of prepared face packs were applied to the marked area and time was noted. Irritancy, erythema and edema was checked if any for regular intervals up to 24 hrs and reported (Anilkumar et al., 2020).

Washability: Formulation was applied on the skin and then ease and extent of washing with normal tap water were checked manually (Himaja et al., 2015).

Results

The evaluation of organoleptic properties displayed the slight changes in colors of formulations due to difference in

Table 2. Organoleptic properties and evaluation

Sr. No.	Parameters	Observation			
		P1	P2	P3	P4
1	Appearance	Free flowing Powder	Free flowing Powder	Free flowing Powder	Free flowing Powder
2	Color	Pale Yellow	Slightly brown	Pale Yellowish to Light Brown	Yellowish to Light Brown
3	Odour	Slight	Slight	Slight	Slight
4	Texture	Fine	Fine	Fine	Fine
5	Smoothness	Smooth	Smooth	Smooth	Smooth

Table 3. Physicochemical evaluation

Sr. No.	Parameters	Observation			
		P1	P2	P3	P4
1	pH	7.10 ± 0.1	7.30 ± 0.1	7.20 ± 0.1	7.40 ± 0.1
2	Moisture content	3.9	4.2	4.8	4.4
3	Ash value	1.40	1.50	1.60	1.60

Table 4. General Powder Characteristics

Sr. No.	Parameters	Observation			
		P1	P2	P3	P4
1	Angle of Repose	37.32	36.82	37.20	36.90
2	Bulk Density	0.37	0.33	0.34	0.36
3	Tapped Density	0.47	0.45	0.51	0.50
4	Hausner's ratio	1.51	1.40	1.54	1.35

Table 5. Irritancy test

Sr. No.	Parameters	Observation			
		P1	P2	P3	P4
1	Irritancy	Nil	Nil	Nil	Nil
2	Erythema	Nil	Nil	Nil	Nil
3	Edema	Nil	Nil	Nil	Nil

Table 6. Washability test

Sr. No.	Parameter	Observation			
		P1	P2	P3	P4
1	Washability	Easily Washable	Easily Washable	Easily Washable	Easily Washable

composition of each formulation. Formulation P1 and P2 were Pale Yellow to brown in color while formulation P3 and P4 were Yellowish to Light Brown. The odor of all four formulations was slight pleasant and acceptable as it is desirable in cosmetic formulations. The texture was fine and smooth for all preparation. The physicochemical parameters shows pH of all formulations near to neutral range. The ash content and moisture content were within limit. The general powder characteristics were evaluated for parameter like Angle of repose, Bulk density, Tapped density and Hausner's ratio and findings observed to be free flowing properties of all formulation. The evaluation of irritancy test shown no signs of erythema, edema or irritation these indicates these formulations are safe to use. The washability test shows easy washability by normal tap water of all four formulation. In present work of formulation and evaluation, four different formulations were prepared with varying concentrations of all ingredients. The ingredients like Aloe vera, Sandal wood, Rose Petals and Turmeric has antiseptic, antimicrobial and antiinflammatory activity. Gram flour acts as tonic to clean the skin and decrease tanning and skin acne. Almond powder produce soothening and antioxidant effect.

Conclusion

In the present scenerio of industrialization, pollutant and stressful life style people are suffering from various skin ailments and need cure without side effects in easy regular way. Thus herbal ingredients provides the way to formulate cosmetics without any harmful effect. Herbal formulations are acceptable now for its safer profile with nil or few side effects compared to the synthetic counterparts. It was an attempt to formulate and evaluate herbal face pack formulation, and found to improves

face skin blood circulation, rejuvenate and help to maintain the elasticity of the skin. The all four formulations found to have satisfactorily passed all evaluation parameters and improve the appearance of the skin without any side effects. Thus it has been revealed that herbal face pack carries enough potential to give efficient glowing effect on skin.

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Conflict Of Interest

The authors declare no conflict of interest.

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