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Formulation and Evaluation of Antioxidant Amla Face Pack.

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Abstract
Everybody wants to get a fair and charming skin. Now a day, acne, black heads, pimples are common among persons who suffer from it. According to Ayurveda, skin problems are normally due to impurity in blood. Herbal face packs are used to simulate blood circulation, rejuvenate the muscles and help to maintain the elasticity of the skin and remove dirt from skin pores. The advantage of herbal cosmetics is their nontoxic nature, reduce the allergic reactions and time tested usefulness of many ingredients. Thus in the present work, an attempt has been made in formulating an ideal face pack suitable for all skin types

Keywords: Face Pack, Cosmetics, Glowing, Natural, Formulation, Evaluation, Skin, Herbal.

Introduction

Everybody want to get fair and charming skin now a day. Acne black head pimples, dark circle are common among youngsters and person who suffers from it .according to Ayurveda, skin problems are normally due to impurities in blood accumulated toxins in the blood during improper food and lifestyle are causes skin related disease

.various herbs, medicine are described in Ayurveda for blood purification .the herbal paste which is applied on face to treat acne, pimples, scars marks and pigment are known as' mukha lepha' in Ayurveda.

This beauty therapy is popular as facial the smooth powder which is used for facial application is "face pack". A good herbal face pack must supply necessary nutrients to skin. It should penetrate the subcutaneous tissue in order to deliver the required nutrients different types of skin need different types of herbal face pack

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. 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 eventually removed the skin debris and deposited dirt gets removed with it.

These packs are available in various types:

1. plastic mask :wax based , latex based , vinyl based
2. hydrocolloids masks : gel masks
3. Argillaceous masks: clay based or earth based

Benefits of applying face pack:

- Nourishes the skin. Fruit face packs supply essential nutrients to skin.
- Helps to reduce, acne, pimple, scars and marks depending on its herbal ingredients.
- Face packs usually remove dead cells of skin.
- These face masks provide a soothing and relaxing effect on skin.
- They help to restore the lost shine and glow of skin in short span of time.
- Regular use of natural face masks bring glow to skin, improve skin texture and complexion.
- The harmful effects of pollution and harsh climates can be effectively combated with judicial use of face packs.
- They help to prevent premature aging of skin.
- Formation of wrinkles, fine lines and sagging of skin can be effectively controlled by using natural face packs.
- Natural face packs make the skin look young and healthy.

Ingredients table:

For the preparation of face pack following ingredients were used:

Sr.no	Ingredients	Biological Source	Uses
1	Amla powder	Emblica officinalis	Clears the skin, Exfoliates dead cells, Heals acne.
2	Turmeric powder	Curcuma longa	Reduces Pigmentation, Providing a more even Complexion,
3	Sandal wood	Santalum album Linn	Skin beauty and glow.
4	Multani mitti	Floridin	Helps fight dark circles and sun damage due to its cooling effect on the Skin
5	Cinnamon oil	Cinnamomum zeylanicum Nees	Being rich in anti-fungal, anti-bacterial, and antioxidant Properties,
6	Lemon	Citrus limon	Turally lightens skin tone, Increases collagen gets pimples. Egulates oily Skin.
7	Rose water	Ancient Persia	Improve your complexion and reduce skin redness. Antimicrobia l
8	Honey	Apis Mellifera	Antibacterial, antimicrobial, and anti- inflammatory

Table 1: Ingredients and their uses.

Materials and Method:

A) Amla powder (Euphorbiaceae)

The inner bark is used to impart an astringent, bitter taste to the broth of a traditional fish soup known as *holat*.

Chemical constituents:

These fruits contain high amounts of ascorbic acid (vitamin C), and have a bitter taste that may derive from a high density of ellagitannins, such as emblicanin A (37%), emblicanin B (33%), punigluconin (12%), and pedunculagin (14%).

Use:-

- Clears the skin. Orange peel exhibits excellent anti-inflammatory properties.
- Exfoliates dead cells. The rind of orange is considered a boon for the skin as it treats blackheads and blemishes.
- Brightens up.
- Reverse ageing.
- Heals acne.

Figure no.1 Amla

B) Turmeric (Zingiberaceae)

It was traditionally used for disorders of the skin, upper respiratory tract, joints, and digestive system

Chemical constituents:

Curcuminoids (5%) and essential oil (6%). The chief constituent of the colouring matter is curcumin (60%).

Use:

- Add it to coffee, hot chocolate, tea, or warm milk.
- Use it to season vegetables such as cauliflower and sweet potato.
- Sprinkle over oatmeal or other breakfast cereals.
- Sprinkle over fruit for an added kick.
- Add to seasonal beverages such as eggnog, mulled cider, and mulled wine.

Figure No.2 Turmeric

C) Sandal wood (Santalaceae)

Sandalwood is a class of woods from trees in the genus Santalum. The woods are heavy, yellow, and fine-grained, and, unlike many other aromatic woods,

Chemical Constituents:

Sandalwood oil contains more than 90% sesquiterpenic alcohols of which 50– 60% is the tricyclic α-santalol. β- Santalol comprises 20–25%.

Use:

- Scarring. Sandalwood oil helps nourish the skin,
- Improve the elasticity of skin cells, even out skin tone.
- Inflammation, eczema, psoriasis, and wounds.
- Acne
- Even skin tone or skin whitening.

Figure No.3 Sandal wood

D) Multani mitti:

Multani mitti helps fight dark circles and sun damage due to its cooling effect on the skin.and skin infection.

Chemical Constituents:

It's composed of hydrated aluminum silicates and is rich in magnesium chloride and calcium bentonite,

Use:-

- Reducing Oil.
- Fighting Acne.
- Balancing and Brightening Skin Tone.
- Reducing Pigmentation

Figure No.4 Multani mitti

E) Cinnamon oil (Lauraceae)

The scent of cinnamon is spicy, sweet, and for many, filled with happy memories of delicious food and cozy days. Cinnamon oil is prized for its lush fragrance. It's also linked to several health and beauty benefits.

Chemical Constituents:

Cinnamon consists of a variety of resinous compounds, including Cinnamaldehyde, Cinnamate, Cinnamic acid, and numerous Essential oils. The spicy taste and fragrance are due to the presence of Cinnamaldehyde and occur due to the absorption of oxygen. As cinnamon ages, it darkens in colour, improving the resinous compounds. Various physiochemical properties of cinnamon. The presence of a wide range of essential oils, such as Trans- cinnamaldehyde, Cinnamyl acetate, Eugenol, L-Borneol,

Caryophyllene oxide, β-Caryophyllene, L-Bornyl acetate, E- Nerolidol, α-Cubebene, α-Terpineol, Terpinolene, and α-Thujene, has been reported

Use:-

- health benefits of cinnamon ·
- Anti-viral, anti-bacterial and anti- fungal
- May support gut health
- May help manage blood pressure

Figure No.5 Cinnamon oil

F) Lemon (Rutaceae)

Lemons give flavor to baked goods, sauces, salad dressings, marinades, drinks, and desserts, and they are also a good source of vitamin C. One 58 gram (g) lemon can provide over 30 milligrams Trusted Source (mg) of vitamin C. Vitamin C is essential for health, and a deficiency can lead to health problems.

Chemical Constituents

Limonene (69.9%), β-pinene (11.2%), γ-terpinene (8.21%), (Figure 4), sabinene (3.9%), myrcene (3.1%), geranial (E-citral,2.9%), neral (Z-citral, 1.5%), linalool (1.41%).

Use:

- Antioxidant. Lemon juice naturally contains vitamin C, an antioxidant that may help reduce skin damage and premature aging.
- Astringent qualities. Due to its high pH levels, lemon can decrease oil on the skin and reduce inflammation.
- Antifungal.
- Skin lightening.

Figure No.6 Lemon

G) Rose water

Rose water is a flavoured water made by steeping rose petals in water. Additionally, it is the hydrosol portion of the distillate of rose petals, a by-product of the production of rose oil for use in perfume.

Chemical Constituents:

The volatiles consisted mainly of 2- phenylethanol (69.7–81.6%), linalool (1.5–3.3%), citronellol (1.8–7.2%), nerol (0.2–4.2%), geraniol (0.9–7.0%) along with rose oxides and all other characteristic minor rose compounds.

Use:-

- Soothes skin irritation.

- Soothes sore throats.
- Reduces skin redness.
- Helps prevent and treats infections.
- Contains antioxidants.
- Heals cuts, scars, and burns.
- Enhances mood.
- Relieves headaches.

Figure no.7 Rose water

H) Honey (Apis Mellifera)

Using cumin as a spice increases antioxidant intake, promotes digestion, provides iron, may improve blood sugar control and may reduce food-borne illnesses.

Chemical Constituents:

Honey consists mostly of glucose, fructose, maltose, and sucrose; water; and other minor components including proteins, organic acids, amino acids, vitamins, flavonoids, and acetylcholine

Use:-

- In Addition to Its Use as A Natural Sweetener,
- Honey is used as an Anti- Inflammatory,
- Antioxidant and Antibacterial Agent.
- To treat coughs and Topically to Treat Burns
- Promote wound healing.

Figure no. 8 Honey

Experimental Methodology: Formulation of antioxidant face pack: Procedure

Step 1.All the required herbal powders for the face pack preparation were accurately weighed individually by using digital balance. The quantity and compositions are listed in

Step 2. The herbal drugs such as Amla Powder were transferred to mortar and pestle and triturated.

Step 3. Herbal drugs such as cumin & Nutmeg were triturated in a separate mortar and pestle to form a uniform fine mixture.

Step 4. Previously prepared mixture of herbal powders was transferred to the mixture of fine powders and triturated to obtain uniform drug powder of face pack.

Step 5. The powders were passed through sieve no #44

Step 6. The prepared face pack powder was packed into a self-sealable polyethylene bag, labelled and used for further studies.

Table 2: Proposed formulation

Sr. No	Ingredients	Quantity (%)
1	Amla powder	10
2	Turmeric	5
3	Sandal wood	15
4	Multani mitti	10
5	Cinnamon powder	3
6	Lemon	2 ml
7	Honey	5
8	Rose water	q s

Face pack application

Take prepared face pack powder in a bowl as per the requirement and add rose water. Mix well to form a paste with optimum thickness. It should be applied evenly on the face with the help of a brush. Cover the acne and blemishes spots. Keep as it is for complete dryness for 20-25 minutes. Then it should be washed with cold water.

Evaluation of Antioxidant Face Pack:

The formulated the Antioxidant amla face pack was expected to be examined for parameters like Organoleptic Parameters, pH, bulk density viscosity, angle of repose, ash value tapped density.

Organoleptic Characteristics:

The organoleptic parameters include its appearance, color, odor, texture, grittiness, washability, which were evaluated manually for its physical properties.

Physicochemical Evaluation:

Physicochemical parameters were determined, including the determination of moisture content, extractive values, pH and ash values.

Determination of moisture content:

Moisture content is important for the plant drugs because insufficient drying may lead to possible enzymatic deterioration of the active principles. • Moisture content was determined by loss on drying (LOD). Weigh accurately 3gms of the powder drug and take in a weighed petri dish and placed in hot air oven at 100-108ºC. It was weighed until constant weight was obtained.

Determination of extractive values:

Extractive values are primarily useful for the determination of exhausted or adulterated drugs. It helps to determine the quality as well purity of the product. It also gives an idea about the nature of the chemical constituent's less extractive value indicates addition of exhausted material, adulteration or incorrect processing during drying or storage or formulating.

Water soluble extractive value:

Macerate about 5gm of accurately weighed sample with 100ml chloroform water in a stoppered flask for 24 hours. Shake frequently for first 6 hours. Filter rapidly through filter paper into a 50ml cylinder and

evaporate 25 ml aqueous extract to dryness in a tared flat-bottomed shallow dish. Evaporate to dryness on a water bath and completely dry the residue in an oven at 105º and weigh. Keep it in a desiccator. Dry the extract to constant weight, finally calculate the percent w/w of water-soluble extractive value with reference to the air- dried drug.

Alcohol soluble extractive value:

Macerate about 5gm accurately weighed sample with 100ml 90% alcohol in a 100ml stoppered flask for 24 hours. Shake frequently for first 6 hours. Filter rapidly through filter paper into 50ml cylinder and collect the filtrate and evaporate 25ml of alcoholic extract to dryness in a tared flat- bottomed shallow dish. Evaporate to dryness on a water bath and completely dry the residue at 105º and weigh. Keep it in a desiccator. Dry the extract to constant weight, finally calculate the percent w/w of alcohol soluble extractive value with reference to the air-dried drug.

Determination of pH:

It is the measurement of acidity or alkalinity of the product measured on a scale of 0-14.pH of formulated face pack in rose water was found.

Determination of Ash values:

The residue remaining after complete incineration is the ash content of the product. Ash value is a criterion to judge the identity or purity of the drug. A high ash value is indicative of contamination, substitution, and adulteration or carelessness in preparation of the product. Ash values can be determined by as follows:

Total Ash value:

Total ash value is useful for detecting low grade, exhausted products and also useful for detecting excess of sandy, earthy matter with drug. About 2-4gm of the prepared sample was placed in a previously ignited and tared crucible. The material was spread evenly on the crucible and ignited by gradually increasing the heat until it was white i.e. free from carbon. It was then cooled in desiccator and weighed. Percentage total ash was calculated with reference to the air-dried sample.

Acid insoluble Ash value:

Used to determine the earthy matter. To the crucible containing total ash, 25ml of HCl was added and covered with a watch glass. Boiled gently for 5min. The watch glass was rinsed with 5ml hot water and added into the crucible. The insoluble matter was collected on an ashless filter paper and washed with hot water until it was neutral. The filter paper containing the insoluble matter was transferred to the original crucible, dried on a hot plate and ignited to constant weight. Allowed to cool in a desiccator for 30min and weighed. Percentage acid insoluble ash was calculated in reference to air-dried sample.

Water soluble ash value:

It is the difference in weight between total ash and residue after treatment of total ash with water. It is used to detect either the material is exhausted by water or not. To the crucible containing total ash, 25ml water was added and boiled for 5min. The insoluble matter was collected on an ashless filter paper. Washed with hot water and ignited in a crucible for 15min at a temperature not exceeding 450ºC. Cooled and weighed. Percentage water soluble ash was calculated in reference to air dried sample.

Rheological evaluation:

It gives an overall idea about the visco elastic flow behavior of the product. Physical parameters like angle of repose, tapped density, bulk density, Hausner's ratio and Carr's index were observed and calculated for the formulation.

Angle of repose:

The angle of repose or critical angle of repose, of a granular material is the steepest angle of descent or dip relative to the horizontal plane to which a material can be piled without stumping. It is important for the design of processing, storage and conveying systems of particulate materials. It is also useful to quantify the flow properties of powder because it influences cohesion among the different particles. The fixed funnel cone method employs the calculation of height (H) above a paper that is placed on a horizontal surface. The formulated pack was carefully poured through the funnel till the peak of the conical heap just touched the tip of the funnel. Here 'R' denotes the radius of the conical heap.

The equation for calculating angle of repose

(a) is,

a= tan-1HR

Tapped Density:

The tapped density is an increased bulk density attained after mechanically tapping a graduated measuring cylinder containing powder sample. The tap density of a powder can be used to predict both flow properties and its compressibility. The volume of packaging can be determined in a graduated cylinder. 25gms of weighed formulation powder was taken and slowly added to the cylinder with the aid of a funnel. The initial volume was observed firstly and the sample was then tapped until no further volume reduction occurred. The value obtained after tapping was noted. The equation for calculating the tapped density is,

Tapped density = weight of (g) tapped volume (ml)

Bulk Density:

The bulk density value includes the volume of all the pores within the powder sample. The term bulk density refers to method used to indicate a packaging of particles or granules. 25gms of weighed powder was taken and slowly poured into the graduated cylinder. The volume occupied by the powder was noted. The formula for calculating bulk density is,

D = MV

Where,

D = bulk density,

M = mass of particles,

V = total volume occupied by them.

Hausner's Ratio: Hausner's ratio is related to interparticle friction and as such can be used to predict the powder flow properties. The equation for measuring the Hausner's ratio is,

Hausner's ratio = tapped density bulk density

Carr's Index:

Carr's index is another indirect method of measuring the powder flow from bulk density. It is directly related to the relative flow rate cohesiveness and particle size. It is simple, fast and popular method of presiding powder flow characters. The equation for measuring it is,

%compressibility = tapped density – bulk density

Particle size: Particle size is a parameter, which affect various properties like spreadability, grittiness, etc. Particle size was determined by microscopy method according to the standard procedure.

Result and Discussion

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

Organoleptic evaluation

Antioxidant face pack was evaluated for organoleptic parameters showed in the Table 3. The colour of prepared formulation was brown. The odour of prepared formulation was pleasant and good acceptable which is desirable to cosmetic formulations.

Table no: 3

Sr no.	Parameter	Observation
1	Colour	Brown
2	Odour	Pleasant
3	Appearance	Fine
4	Smoothness	Smooth

Observation

Rheological findings justified the flow properties of the face 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.

Rheological Evaluation

Antioxidant face pack was evaluated for powder property. Showed in Table 4. Rheological findings justified the flow properties of herbal face pack. It was found to be free flowing and non- sticky in nature

Table No: 4

Sr no.	Parameter	Observation
1	PH	6
2	Moisture content	1.34%
3	Water soluble extractive value	16%
4	Alcohol soluble extractive value	13%
5	Total ash value	2.066%
6	Acid insoluble ash value	0.925%
7	Water soluble ash value	1.48%

Physiochemical evaluation

Antioxidant face pack was evaluated for physiochemical parameters showed in Table 5. The pH of the formulation was found to be 6. The moisture content was within limit.

Table no. 5

Sr no.	Parameter	Observation
1	Bulk density	0.35g/ml
2	Tapped density	0.40g/ml
3	Angle of repose	20.1
4	Hausner ratio	1.33
5	Carr index	17.4%

6	Partical size	54.87

Observation:
Moisture content value clearly indicated that the formulation was hygroscopic in nature. Extractive values and ash values were found within the limits. pH was found neutral to suit the requirements of all skin types.

Irritancy test
The prepared herbal face was subjected for irritancy test and the results are showed in Table 6. The antioxidant face pack formulation doesn't showed any sigh of irritation, redness and swelling during irritancy studies.

Table no. 6

Sr no.	Parameter	Observation
1	Irritation	Nil
2	Redness	Nil
3	Swelling	Nil
4	Photo irritation	No irritation no redness

Observation:
Evaluation showed that the pack is smooth & pleasant odour. Rheological findings justified the flow properties of the pack as it was found to be free flowing & non sticky in nature. Formulation was stable on all aspects, with no Irritancy. Stability tests revealed the inert nature of the pack. Further optimization studies are required on its various parameters to find its useful benefits on the human beings.

References:
1. Irritancy test showed negative results for irritancy, redness, swelling and photo irritancy, as the herbals in their natural form without addition of chemicals were found to be compatible with the skin proteins.

Stability studies
The prepared amla face pack was subjected for stability studies and the results are showed in Table 7. No change in colour, odour, texture, smoothness and pH was observed.

Table no. 7

Sr no	**Parameter**	**Room**	**40**
1	Colour	No change	No change
2	Odour	No change	No change
3	Texture	Fine	Fine
4	Smoothness	Smooth	Smooth

5	pH	6	6

Observation:

Stability tests performed at different temperatures over a period of one month revealed the inert nature of the face pack in the terms of color, odor, appearance, texture and pH.

Conclusion:

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 & pleasant odour. Rheological findings justified the flow properties of the pack as it was found to be free flowing & non sticky in nature. Formulation was stable on all aspects, with no Irritancy. Stability tests revealed the inert nature of the pack. Further optimization studies are required on its various parameters to find its useful benefits on the human beings.

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