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Effects of Cosmetics Products on the Human Body and Environment



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ABSTRACT

Cosmetic ingredients are emerging pollutants too. Their environmental monitoring is at a very early stage. However, it is known that they reach the environment in multiple ways, often through water, posing health risks to marine and freshwater ecosystems and to humans. Thus, in public health science, the term “cosmetovigilance” began to represent a kind of health surveillance where the aim is the safety of the cosmetic product for commercial purposes. This surveillance is very important to control potentially hazardous ingredients and can thus set our minds at ease on the products placed on the market. In recent years, the cosmetic industry has increased its use of preservatives, surfactants, perfumes, stains, and other ingredients in the creation of cosmetic goods. On the one hand, such chemicals improve the quality, properties, and shelf life of cosmetics; on the other hand, many of these substances are poisonous to humans, posing health concerns ranging from a moderate hypersensitivity reaction to anaphylactic shock or even death. As a result, the indiscriminate use of cosmetics might become a public health concern. There is more scope for future research in this field as there are large number of cosmetics products that are untouched from this perspective.



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[INTRODUCTION]

Cosmetics are defined as products used for the purposes of cleansing, beautifying, promoting attractiveness or alternating appearance. From the ancient time different herbs are used for cleaning, beautifying and managing them. Face skin is the major part of the body, which indicates the health of an individual. In Ayurveda, the herbal paste is called as “mukha lepa” used as a facial therapy. This herbal paste is smeared on face to treat acne, pimple, scars, marks and pigments.[1]The 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 a tightening, strengthening and cleansing effect to the skin. They are usually left on the skin for fifteen to thirty 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 the application of the 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 pack is eventually removed skin debris and deposited dirt gets removed with it. Herbal face packs increase the fairness and smoothness of skin. We can derive the maximum benefits of herbal face packs by using them according to our skin type. These face packs increase skin glow and are best ayurveda treatment to increase fairness. Face packs are one of the oldest and most beautiful methods of cleansing skin. There are various kinds of face packs described in Ayurveda which have nourishing, healing, cleaning, astringent and antiseptic properties. Herbal face packs are cheaper and have no side effects for getting fair skin naturally⁶. The present research article deals with the formulation and evaluation of herbal face pack for glowing skin at home by using natural materials i.e. multani mitti, turmeric, sandalwood, Orange peel powder, Kaolin powder, Liquorice .Face pack is the smooth powder that 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 remove 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 help to reduce wrinkles, pimples, acne and dark circles. Also increase the fairness and smoothness of skin. It also helps someone to boost their confidence.[2]

Ayurveda is the most useful and successful means for achieving this purpose. These packs are available in various types and forms and broadly classified into the following :

1. Plastic masks: Wax based, latex-based, or vinyl based.
2. Hydrocolloid masks: Gel masks (ready to use).[3]

[NEED]

An herbal face pack is used to rejuvenate the muscles. It maintains the elasticity of the skin.

It removes adhered dirt particles and improves the blood circulation.

The benefits of herbal-based cosmetics are their nontoxic nature. It nourishes the facial skin. This face pack supplies vital nourishment to the skin.[4]

[OBJECTIVE]

The main purpose of Herbal face packs is to remove the dark circle. It removes Pimples, scars, through the increase blood circulation and maintains it. It also rejuvenates the skin and remove dirt particles from the skin pores.[5]

[MULTANI MITTI]

Botanical Name: Bentonite Clay

Multani Mitti Powder is a fine powder and it is also known as “Fuller’s Earth”, is a mineral-rich clay material that has long been used as a beauty ingredient. It is an abundant source of minerals like magnesium, silica, quartz, calcium, iron, calcite and dolomite.[6]

Uses:

Most important applications make use of the minerals' natural absorbent properties in products sold as absorbents or z for poisoning. Even given the risk of salmonella, the clay content of soil could save the life of a person exposed to paraquat, for example, as paraquat is intended to break down in the soil.[7]



Fig No.: 1 (MULTANI MITTI)[8]

[Sandalwood Powder]

Binomial name: Santalum album

It is use if skin is only for removing dark spots on skin. Sandalwood has an anti-tanning and anti-aging property. It also helps skin in many ways like toning effect, emollient, antibacterial properties, cooling astringent properties, soothing and healing property.[9]

Uses:

- Exfoliates the skin, soothes sunburn
- Removes suntan and also reduces signs of ageing such as dry skin and wrinkles.[10]



Fig no.: 2 (Sandalwood Powder) [11]

[TURMERIC POWDER]

Botanical name: Curcuma longa

Family: ginger family Zingiberaceae.[12]

Uses:

- Glowing skin.
- Boosts healing.
- Helps treat psoriasis.
- Helps with acne scarring.
- May Treat Scabies.[13]



Fig no.: 3 (Turmeric powder) [14]

[KAOLIN]

Botanical name: kaolinite

Uses:

- It can also be made in a laboratory. People use it to make medicine.
- Kaolin is used for mild-to-moderate diarrhea, severe diarrhea (dysentery), and cholera.
- In combination with products, kaolin is used to treat diarrhea and to relieve soreness and swelling inside the mouth caused by radiation treatments. [15]



Fig No.: 4 (KAOLIN) [17]

[LIQUORICE]

Botanical name: Glycyrrhiza glabra plant

Uses:

- Licorice powder is useful in managing sore throat, cough and excessive production of mucus in the respiratory tract.
- It also helps loosen mucus and cough it out.
- Licorice is good for sore throat, throat irritation, cough and bronchitis due to its Ropan (healing) and expectorant properties.[19]



Fig No.: 5 (LIQUORICE) [20]

[ORANGE PEEL POWDER]

Botanical name: - Citrus Sinensis (sweet orange)

Uses:-

- Protects skin from free radical damage.
- Heals dry, flaky, and itchy skin.
- Hydrates dehydrated skin.
- Brings back moisture
- Prevents oxidative stress in skin cells, for youthful, glowing skin.[21]



Fig No.: 6 (ORANGE PEEL POWDER) [22]

[NEEM POWDER]

Botanical name: - Azadirachta indica

Uses:-

- It also has Antifungal and Antibacterial activity.
- Neem oil helps in the healing process of post-surgical scalp wounds.
- Neem oil has a good prolonged treatment for acne.
- It reduces scars, heals wounds, and minimizes warts and moles.[23]



Fig No.: 7 (NEEM POWDER) [24]

[METHODOLOGY]

METHOD OF PREPARATION: HERBAL FACE PACKS

4 different formulations were prepared with varying concentrations of all ingredients named as F1 to F4 Concentrations of each ingredient were mentioned in Table 1. The facepack was prepared accordingly the particle size and their binding property mixed thoroughly in a plastic container shown in figure no. 1

TABEL .1: Ingredients of Herbal Face pack

S.NO	Ingredient	F1 (Qty ingm)	F2 (Qty in gm)	F3 (Qty ingm)	F4 (Qty ingm)
1	Orange peel Powder	6	10	7	8
2	Neem Powder	8	7	10	7
3	Sandalwood Powder	10	8	8	10
4	Turmeric Powder	8	8	5	6
5	Multani Powder	10	8	10	8
6	Kaolin	5	4	4	6
7	Liquorice	3	5	6	5

The procedure of F1 sample herbal face packs

- Weigh accurately 6gm of orange peel powder and put it on a mortar and pestle.
- Add 8gm of neem powder into it after that
- Add 10gm of sandalwood powder into it and mix it properly.
- Add 8gm of turmeric along with 10gm of multani powder into it.
- After that Add 5gm of kaolin and 3 gm of liquorice
- It should also be placed into it and mix it properly.
- After that put the mixture in sieve no 80.
- After sieving the mixture of facepack should be packed in plastic sealedcontainers.[25]

The procedure of F2 sample herbal face packs

- Weigh accurately 10gm of Orange peel powder and put it on a mortar and pestle.
- Add 7gm of Neem powder into it after that
- Add 8gm of Sandalwood powder into it mix it properly.
- Add 8gm of turmeric along with 8gm of Multani powder into it.
- After that Add 4gm of Kaolin and 5gm of Liquorices
- It should also be placed into it and mix it properly.
- After that put the mixture in sieve no 80.
- After sieving the mixture of face pack should be packed in plastic sealedcontainers.[26]

The procedure of F3 sample herbal face packs

- Weigh accurately 7gm of Orange peel powder and put it on a mortar and pestle.
- Add 10gm of Neem powder into it after that
- Add 8gm of Sandalwood powder into it and mix it properly.
- Add 5gm of turmeric along with 10gm of Multani powder into it.
- After that Add 4gm of Kaolin and 6gm of Liquorices.

- It should also be placed into it and mix it properly.
- After that put the mixture in sieve no 80.
- After sieving the mixture of face pack should be packed in plastic sealed containers.[27]

The procedure of F4 sample herbal face packs

- Weigh accurately 8gm of Orange peel powder and put it on a mortar and pestle.
- Add 7gm of Neem powder into it after that
- Add 10gm of Sandalwood powder into it mix it properly.
- Add 6gm of turmeric along with 8gm of Multani powder into it.
- After that Add 6gm of Kaolin and 5gm of Liquorices
- It should also be placed into it and mix it properly.
- After that put the mixture in sieve no 80.
- After sieving the mixture of face pack should be packed in plastic sealed containers.[28]



FIG No.: 8 (HERBAL FACE PACK PREPARED)[29]

The 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 blemish spots too.
- kept as it is for complete drying for 20 to 25 min and then wash with cold water.[30]

Methods of Evaluation

Following evaluation parameters were performed to ensure the 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.

Physical Evaluation

The particle size was tested by the 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.

Physicochemical Evaluation

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

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, and edema, was checked if any for regular intervals up to 24 hrs and reported.

Stability studies

Stability testing of the 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.

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 as purity of the product. It also gives an idea about the nature of the chemical constituent's. Less extractive value indicates the 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 the first 6 hours. Filter rapidly through filter paper into a 50ml cylinder and evaporate 25ml 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 105° 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 a 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 105° and weigh. Keep it in a desiccator. Dry the extract to constant weight, and 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, 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. The percentage of total ash was calculated with reference to the air-dried sample.

Acid insoluble Ash value:

It is 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 to 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. The 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 whether 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 ash less filter paper. Washed with hot water and ignited in a crucible for 15min at a temperature not exceeding 450°C. Cooled and weighed.

Percentage water-soluble ash was calculated in reference to air dried sample.

Particle size:

Particle size is a parameter, which affects 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.

Angle of repose:

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

Open-ended cylinder method:

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

Bulk density:

Bulk Density is the ratio between the given mass of a powder and its bulk volume. The required amount of the powder is dried and filled in a 50 ml measuring cylinder up to 50ml mark. Then the cylinder is dropped onto a hardwood 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.

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

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).

DISCUSSION

Herbal face packs are the natural product which are fewer side effect with marketed products. In this face pack no any costly machinery equipments are used in their formulation. No any chemicals are used in this face pack only natural product are used. They are totally different from marketed products. The advantage of herbal cosmetics is their non-toxic nature, reduce allergic reactions and time tested usefulness of many ingredients. Herbal face pack are cheap

and easy to apply on dry skin with rose water. Herbal face pack prepared by himself should be tasted by the Valuable customers and their feedback was given positive regarding the herbal face packs.

RESULTS

Herbal face packs are very useful products. They are low cost effective and they are fewer side effects as compared to other face packs. They are naturally herbal based products with no any chemicals used. They are non toxic in nature. Organoleptic evaluation shows the product is a smooth and pleasant-smelling powder. Herbal face packs nourishes the skin. Irritancy test of herbal face packs shows negative. The stability test performed revealed the inert nature of the pack.

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