



Formulation and Evaluation of Face Mask Using Cassava Vegetable Starch and Rose Water.

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ABSTRACT:-

The purpose of this research is to create and evaluate a new face mask that uses rose water and cassava vegetable starch. For the desired texture, spreadability and stability, the component quantities have to be optimised during the formulation process. A range of physicochemical investigations, encompassing viscosity, pH, and texture profile, were carried out to assess the properties of the prepared face mask. A sensory evaluation was also carried out to evaluate characteristics like colour, texture, acceptability overall, and scent. Furthermore, in vitro and in vivo experiments were used to assess the face mask's effectiveness in terms of hydration, improving the function of the skin barrier, and having anti-inflammatory qualities. According to preliminary findings, the face mask's formulation shows promise in terms of smooth texture, pleasing scent, and possible skincare advantages. To fully understand its effectiveness and safety profile for possible commercial applications in the cosmetics business, more thorough research is necessary.

Keywords:- Cassava vegetable starch, rose water, formulation, evaluation, skincare.

Introduction:-

These days, herbs are frequently employed as therapeutic agents since they are conveniently accessible, inexpensive, and non-toxic, which has given patients confidence in these types of treatments. Herbs have been used by humans for management, cleansing, and aesthetic purposes since ancient times. Cosmetics are described as beauty goods with desired physiological effects, like those that are restorative, smoothing, conditioning, and enhancing. These days, young people and those who suffer from acne are more likely to have dark circles, black heads, and pimples. Ayurveda says that blood impurities are typically the cause of skin issues. Skin-related disorders are brought on by blood toxins that have accumulated as a result of poor diet and lifestyle choices. Ayurvedic face masks are useful for ladies in reducing wrinkles, dark circles, acne, and pimples. The use of herbal face masks improves the skin's brightness and smoothness. By applying herbal face masks according to our skin type, we can get the most advantage from them. These face masks are the greatest ayurvedic remedy for increasing fairness and giving your skin a radiant glow. These face masks are the greatest ayurvedic remedy for increasing fairness and giving your skin a radiant glow. One of the most elegant and traditional ways to cleanse the skin is by using a face mask. Ayurveda describes a variety of face masks with nourishing, healing, cleansing, astringent, and antibacterial qualities. Basic ingredients that are present in the kitchen and house can be used to make face masks at home. A face mask is a smooth powder that is applied to the face. A good herbal face mask should penetrate the subcutaneous tissues and provide the skin with the nutrients it needs. Different kinds of herbal face packs are required for different skin types. They also improve the skin's smoothness and fairness. These chemicals additionally provide numerous benefits for our skin. Natural facial masks are relatively easy to use and require little complexity. By improving blood flow throughout the face's veins, they not only assist us in taking care of our skin but also demonstrate its value. The face masks should be worn two to three times a week to achieve a consistent glow, while their effects are usually just momentary[1].

Aim and objectives

Of course, here's an improved rendition, complete with citations:

1.**Aim:**

The objective of this research is to create a face mask with cassava vegetable starch and rose water as the main ingredients, with the goal of creating a natural and environmentally friendly skincare product.

2.Objectives:****

1. To create a face mask using rose water and cassava vegetable starch while adhering to accepted guidelines for cosmetic formulation [2].
2. To evaluate the face mask's moisturising effectiveness by measuring the skin's level of hydration [3].
3. To analyse the face mask's calming qualities using both dermatological and subjective evaluations [4].
4. 4. To use non-invasive imaging methods like microscopy to look into how the face mask affects the texture and appearance of the skin [5].
5. 5. To ascertain the face mask's stability under various storage circumstances, such as exposure to light and temperature [6].
6. 6. To carry out safety evaluations, such as testing for skin sensitivity and irritation, in order to guarantee that the product is safe for use by consumers [7].
7. 7. To use consumer perception studies to assess the face mask's sensory qualities, such as texture, color, and odor [8].

Materials and methods**• Cassava vegetable starch**

One of the most widely available, least expensive, and completely biodegradable agricultural products is starch, which breaks down in a variety of settings [9]. Cereals like wheat, maize, and rice, as well as tubers like cassava and cabbage, are the main sources of starch. It is the main source of energy for plants and can be found in their seeds or roots [10]. In addition, starch is a polymer, which is essential to its range of uses in numerous sectors. The process of creating thermoplastic starch involves molding at varying pressures and temperatures, as well as extrusion. The pure starch polymer degraded relatively quickly (approximately a month) in the composting environment; on the other hand, it aged slowly and is not moisture-resistant [11].

Benefits of cassava starch for skin:-

Nourishes the skin and smoothens and brightens up skin complexion.

Remove blackheads, whiteheads, facial hair and dead skin cells.

Reduce the signs of aging such as wrinkles and fine lines.

Hydrates the skin and removes scars and spots.

Rose water

Manufacturers create rose water, a hydrosol, by distilling water containing rose petals. It has a trace amount of the same chemicals because it is frequently a by-product of the production of rose essential oil. The predominant rose variety used to make rose water, *Rosa damascena*, is said to include the following ingredients, per a Journal of Traditional and Complementary Medicine article:

- Alcohol phenylethyl
- Citronellol,
- Geraniol, and
- Nerol [12]

Benefits of rose water for skin :-

It helps to moisture and hydrates the skin.

Helps soothe irritation, redness and inflammation.

To remove dirt, oil and impurities from the skin.

Acts as natural astringent, tightening pores, and toning the skin.

Preparation of cassava starch face mask:

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|---------------------------|-------|---|
| 1. Cassava starch- | 25 g | Acts as the base ingredient with skin soothing and hydrating. |
| 2. Rose water- | 40 ml | Reduce the signs of ageing. |
| 3. Vitamin E (Tocopherol) | 5ml | Natural antioxidant preservative. |
| 4. Distilled water- | 56 ml | Vehicle. |

Method of preparation of cassava starch face mask:

1. To prepare 2 portions of face mask, put 25 grams (2 tablespoons) of cassava starch in a beaker.
2. Add 56 ml (8 tablespoons) distilled water to it and mix well.
3. Turn the burner on medium heat, place the beaker on the burner by using water bath and bring the mixture to boil.
4. It is important to mix continuously until the mixture becomes thick and slimy.
5. Take the burner off the burner when the mixture becomes slimy.
6. Add 40 ml (6 tablespoons) rose water or (distilled water) to the mixture and water till it blends well with the gel.
7. Add vitamin E (Tocopherol) as natural antioxidant preservative.
8. After proper mixing the mixture is pour into face mask container.

Evaluation parameter :-

Prepared formulations of fruit mask powder were subjected to following evaluation

Parameters.

Organoleptic evaluation/visual appearance

Organoleptic evaluation parameters like colour, odour and texture were carried out. Colour and texture was evaluated by vision and touch sensation respectively. For odour evaluation a team of five odour sensitive persons were selected.

Physicochemical evaluation**1.pH**

The pH is determined by using the pH paper.

**2.Moisture content**

For plant-based medications, moisture content is crucial since inadequate drying could result in the potential enzymatic degradation of active ingredients. After the dish cooled to normal weight, about 2 grammes of powdered medication were added, and the Petri dish was placed in a hot air oven. The weights were measured for 30 minutes.

**3.Odour**

It Was Determined manually.

4.Total Ash

To find the inorganic contents that are typical of a herb, the ash value is determined. A silicon dish containing about 2 grammes of powdered medication was previously burned and weighed. The temperature was raised by progressively raising the heat until it reached a red hue. Ash is cooled and weighed after it has burned completely.



5. Acid insoluble ash

Acid insoluble ash was calculated by boiling above obtained ash with 25 ml dil. HCl for 5min, insoluble matter was collected in crucible, washed with hot water, ignited and weighed.



6. General powder evaluation

Evaluation of the factors influencing the preparation's external qualities, such as its flow characteristics, appearance, packaging requirements, etc., is part of the general powder characteristics. Particle size, angle of repose, bulk density, and tapped density are the characteristics that are assessed in this section.

7. Particle size

Particle size is a parameter, which affect various properties like spread ability, grittiness etc., particle size was determined by microscopic method.

8. Angle of repose

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

9. 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.

Mass

Bulk Density =-----

Volume

10. 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.

11. Washability

Formulations was applied on the skin and then ease and extent of washing with water were checked manually. [1,13]

Discussion

Organoleptic, physico-chemical, and overall assessment of powder. The vital component of the organoleptic and physicochemical assessment was provided by the examination of the nature, colour, aroma, taste, texture, ash values, moisture content, and pH of the dried powders in the combined form under research. Face masks function by gently eliminating impurities and dead cells from the top layer of your skin by softly delving deeply into your pores. To have balanced, toned, and healthier skin, it is necessary to remove dirt, bacteria, debris, and other impurities.

Conclusion

Because herbal formulations are thought to be safer and have fewer negative effects than synthetic ones, they are more widely accepted. The demand for herbs is rising on the global market. The attempt to create a cassava starch face mask with powdered cassava vegetable starch is excellent. As a result, the current study discovered beneficial qualities for face masks used by humans as cosmetics. The developed formulation is better suited for skin as a cosmetic since it demonstrated strong antibacterial activity when compared to clindamycin and produced results that were much closer to those of the conventional medication.

Result

Sr.no.	Observation	Evaluation parameters
Organoleptic evaluation		
1	Nature (appearance)	Powder
2	Color	White
3	Odour	No odour
4	Taste	Tasteless
5	Texture	Fine or smooth texture
Physicochemical evaluation Ash value		
6	Total ash	6.22gm
7	Acid insoluble ash	1.30gm
8	pH	6.8
9	Moisture content	5.21%
General powder characters		
10	Particle size	5-10 μ m
11	Angle of repose	30.96°
12	Bulk density	0.510g/cc
13	Tapped density	0.625g/cc
14	Washability	Not easily washable
15	Grittiness	No gritty particles were

found when mixed with water.

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Nature of face after wash

Soft and fresh, Clean from

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