

Original Article

Herbal face pack formulation from *Citrullus lanatus*

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ABSTRACT

Watermelon (*Citrullus lanatus*) belongs to the family *Cucurbitaceae*. Even though watermelon is commonly classified as a vegetable, it is botanically considered as a fruit and used primarily as a dessert. The main aim of this study is, to evaluate and formulate the *Citrullus lanatus* face pack. Watermelon rind powder, turmeric powder and sandal wood powder were used for this formulation. The dried powders were mixed and passed from sieve no. 120. Particle size of the powder was found to be 125 micron. The organoleptic evaluations, irritancy test, rheological evaluations, pH value, ash value determination, moisture content evaluation were performed. The herbal face pack is used to stimulate blood circulation, recreate the muscle, regulate the elasticity of skin and cleansing the skin. The herbal formulations has the less side effects. So, we decided to work on the herbal face pack.

Keywords: *Citrullus lanatus*, Herbal face pack, Rind powder, Humectant, Anti-acne.

Watermelon contains vitamins (A, C and B6), amino acid (Citrulline), anti-oxidant (Lycopene), bioactives such as curcubitacin, triterpenes, sterols and alkaloids. It also contains dietary fibres in 16%, minerals such as potassium in 4%, and anti-oxidant like phenol in 1415ppm and flavonoids in 732ppm [1]. The major part of the body and which is act as a mirror which reflects health of that person is skin. To maintain the health of the skin, the diet should contain amino acids, lipids and carbohydrates. From ancient times, the womens take care of their skin because they are very conscious about it [2]. As mentioned in ayurveda, face packs can help to reduce wrinkles, dark circles, pimples and acne. Fairness and smoothness of skin can be increased by using herbal face packs. From many years, the face packs are used for removing the dirt from the skin pores [3].

MATERIALS & METHODS

The rind of *Citrullus lanatus* were collected and cut into small pieces. Then it is dried under the sunlight for 2-3 days. Then it is powered by using mixer grinder and passed from sieve no. 120 for uniform particle size i.e. 125 micron.

Then this rind powder of *Citrullus lanatus* was authenticated by Dr. Tembhurne R. R. from Dept. of Botany, Sangola College, Sangola. Then collected the turmeric powder and sandal wood powder. Then mixed all these three powder in a given proportion. Then crush it by using mortar and pestle. Then evaluate the formulation by using different parameters such as organoleptic evaluations, irritancy test, rheological evaluations, pH value, ash value determination, moisture content evaluation [3].

Formulation

Table 1: Formulation of face pack

| Ingredient | Quantity (gm) | Uses |
|------------------------|---------------|----------------------|
| Watermelon rind powder | 30 | Humectant, Anti-acne |
| Turmeric powder | 5 | Anti-oxidant |
| Sandal wood powder | 15 | Anti-inflammatory |

Evaluation of Formulation

1) **Organoleptic evaluation:** It is used to determine the various parameters of the powder such as nature/appearance, color, odor, taste, texture and smoothness by using sense organs like eyes, nose, teeth and skin [4].

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- 2) **Irritancy test:** In a pinch of face pack, added 2-3 drops of rose water. Mixed it well and then it is applied on the skin for 10 min. Then it is observed [5].
- 3) **Rheological evaluation:** In this, bulk density, tapped density and angle of repose were determined.

A) **Bulk density:** Weighed 20gm formulation and added in a clean glass measuring cylinder. Then the volume is measured as bulk volume [3]. It is calculated by using following formula:

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

B) **Tapped density:** Weighed 20gm formulation and added in a clean glass measuring cylinder. Then tapped it for 10 times and measured the tapped volume [3]. It is calculated by using following formula:

$$\text{Tapped density} = (\text{Mass of powder})/(\text{Tapped volume})$$

C) **Angle of repose:** Weighed 20gm formulation. On the surface place white paper. Pour the formulation on a clean funnel which has adjusted height at 10cm from the surface by using burette stand. Then measure the height of pile and draw a circle around it. Then measure its radius three times [3]. Calculate the average radius by using following formula:

$$\text{Average radius (r)} = (R_1 + R_2 + R_3 + \dots + R_n)/(\text{No. of radius})$$

By using height of pile and its average radius we can calculate angle of repose by using following formula:

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

4) **pH value:** Adjust the 10ml clean distilled water at a neutral pH by using dil. HCl and dil. NaOH. In that, added the 10mg formulation. Stir it well. Then take pH meter and deep it in a solution and compare its color with standard [4].

5) Proximate analysis

I. **Moisture content:** Weighed 1.5gm of formulation and empty crucible as W1. Then weighed the formulation and crucible together as W2. Then it is transferred in a hot air oven for 15 minutes. Then place it at room temperature for few minutes, then transfer it in a desiccator for cooling.

Then weighed it as a W3 [4]. Then by using following formula it is calculated:

$$\text{Moisture content} = \frac{W_2 - W_3}{W_2 - W_1} \times 100$$

II. **Ash value:** It is used to calculate ash of the formulation.

A) **Total ash:** Weighed 2gm of formulation and empty crucible. Then formulation added in that crucible, it is placed in a muffle furnace for 15 minutes. Then it is kept at room temp. For few minutes and then it is cooled in a desiccator. Then weighed it and calculated total ash by using following formula:

$$\text{Total ash} = \frac{\text{Weight of ash}}{\text{Drug taken}} \times 100$$

B) **Acid-insoluble ash value:** Weighed 2gm of formulation and empty crucible. Then formulation added in that crucible, it is placed in a muffle furnace for 15 minutes. Then it is kept at room temp. For few minutes and then it is cooled in a desiccator. Then in a clean beaker add 25ml dil. HCl then it is placed on a hot plate along with some water in another beaker for boiling. Then it is cooled at room temperature and then filtered by using ashless filter paper and washed with hot water. Then wrap it and place in a crucible and again place it in a muffle furnace for 15 min. Then cool it at room temperature and then in a desiccator [4]. Then weighed it and calculated the acid-insoluble ash by using following formula:

$$\text{Acid-insoluble ash value} = \frac{\text{Crucible with ash wt.} - \text{Empty crucible wt.}}{\text{wt. of drug taken}} \times 100$$

C) **Water-soluble ash value:** Weighed 2gm of formulation and empty crucible. Then formulation added in that crucible, it is placed in a muffle furnace for 15 minutes. Then it is kept at room temp. For few minutes and then it is cooled in a desiccator. Then in a clean beaker add 25ml distilled water then it is placed on a hot plate along with some water in another beaker for boiling. Then it is cooled at room temperature and then filtered by using ashless filter paper and washed with hot water. Then wrap it and place in a crucible and again place it in a muffle furnace for 15 min. Then cool it at room temperature and then in a desiccator [4]. Then weighed it and calculated the acid-insoluble ash by using following formula:

$$\text{Water-soluble ash value} = \frac{\text{Crucible with ash wt.} - \text{Empty crucible wt.}}{\text{wt. of drug taken}} \times 100$$

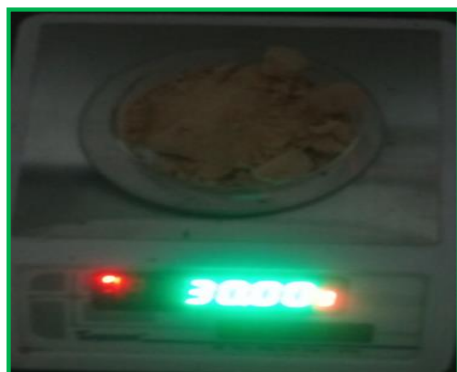


Figure 3: Powder of *Citrullus lanatus*



Figure 4: Powder of turmeric



Figure 5: Powder of sandalwood

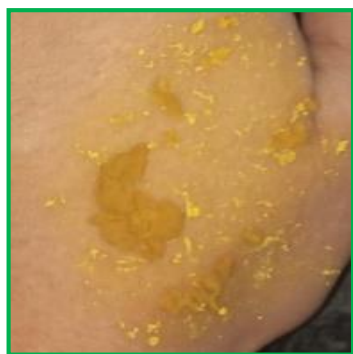


Figure 8: Irritancy test



Fig 9: Bulk density,



Fig 10: Tapped density,



Fig 11: Angle of repose,



Figure 12: pH value



Figure 13: Moisture content



Figure 14: Acid-insoluble ash value



Figure 15: Water-soluble ash value

RESULTS

1. **Organoleptic evaluation:** Organoleptic evaluation are the external appearance of the *Citrullus lanatus*.

Table 2: Organoleptic evaluation

| Parameter | Observation |
|-------------------|-----------------------|
| Nature/Appearance | Powder |
| Colour | Butterscotch (Yellow) |
| Odor | Slight |
| Taste | Characteristic |
| Texture | Fine |
| Smoothness | Slightly rough |

2. **Irritancy test:** This test includes the traumatic effect of the *Citrullus lanatus* after its use on face which are depicted in following table

Table 3: Irritancy test

| Parameter | Observation |
|------------|---------------|
| Irritation | No irritation |
| Erythema | No erythema |
| Edema | No edema |
| Itching | No itching |
| Swelling | No swelling |

3. **Rheological evaluation:** Rheological evaluation consist of evaluation of flow properties.

Table 4: Rheological evaluation

| Parameter | Observation |
|-----------|-------------|
|-----------|-------------|

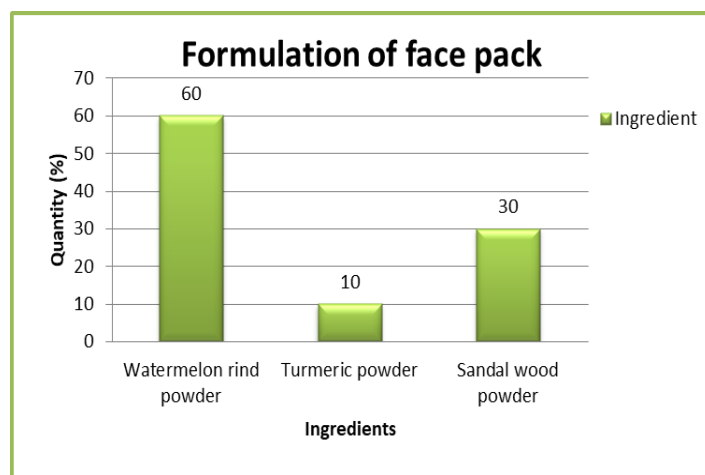
| | |
|-----------------|-----------|
| Bulk density | 0.34gm/ml |
| Tapped density | 0.43gm/ml |
| Angle of repose | 22.21° |

4. **pH value:** The observed pH value is 6-7

5. **Proximate analysis:** These analysis consists of laboratory investigations of the specimen.

Table 5: Proximate analysis

| Parameter | Observation (%) |
|--------------------------|-----------------|
| Moisture content | 2 |
| Total ash value | 19 |
| Acid-insoluble ash value | 10.50 |
| Water-soluble ash value | 5.5 |



Graph 1: Formulation of face pack

DISCUSSION

The rind of *Citrullus lanatus* contains plant constituents such as vitamin (A, C and B6), amino acid (citrulline), antioxidants, curcubitacin, triterpenes, sterols, alkaloids. It also contain dietary fibres (16%), minerals (4%). This constituents shows anti-acne, humectant property. Herbal face pack from watermelon (*Citrullus lanatus*) rind were firstly formulated. Because of its properties and less side effects of herbal drugs [6]. The various evaluation tests were performed to check the property of the powder. Organoleptic evaluation is to confirm its morphological characteristics. Then the irritancy test to check allergic reaction on body. The rheological evaluation determines the bulk density, tapped density and angle of repose. Proximate analysis were performed to check presence of moisture, ash value in acid, water. pH value is also determined [8].

CONCLUSION

The results of the evaluation test show that, the formulation is good to use. Organoleptic evaluation gives knowledge about its morphological characteristics like nature, color, odor, taste, texture, smoothness. Then irritancy test shows that this formulation does not caused any irritation, erythema, edema or itching. Rheological evaluation shows calculation of bulk density i.e. 0.34gm/ml, tapped density i.e. 0.43gm/ml and angle of repose i.e. 22.21°. Proximate analysis include moisture content i.e. 2%, total ash value i.e. 19%, acid-insoluble ash value i.e. 10.5% and water-soluble ash value i.e. 5.5%. The observed pH value is 6-7. These all observation

shows that, this formulation has anti-acne and humectants property without allergic reactions.

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