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# FORMULATION AND EVALUATION OF ANTI-AGING CREAM OF ANTHOCYANINS FROM MUSA ACUMINATA BRACT

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## ABSTRACT

Aging is a physiological process that is inevitable and natural, and it is the primary risk factor for all age-related illnesses. People's health is at great risk as they age, and the public healthcare system is under a lot of strain. Scientists are therefore becoming increasingly interested in ways to prolong life and prevent and treat aging-related illnesses. *Musa Acuminata* contains a lot of anthocyanin, a subclass of flavonoids. Anthocyanins may slow down aging and aid in the treatment of age-related illnesses. *Musa Acuminata* dye pigments were evaluated for UV spectroscopy, antioxidant assays, and phytochemical analyses. To determine its potential against organisms, the anti-aging cream which contains pure anthocyanin pigments and other ingredients was evaluated for antibacterial qualities.

**KEYWORDS:** Aging, *Musa acuminata*, Anthocyanin, Antiaging cream, Antioxidant activity, Antibacterial Activity.

## INTRODUCTION

Since ancient times, the banana plant has been utilized to treat illnesses and health issues. There

are two genera and forty-two species in the Musaceae family. A well-known herbaceous flowering plant throughout the world is the Musa species. It contains Plantin and banana. The banana is an old fruit crop. Among its significant bioactive components are phenolic chemicals, alkaloids, flavonoids, and tannins. Anthocyanin is primarily responsible for the water-soluble, intensely colored, and aesthetically pleasing blue, violet, red, and orange hues of flowers and fruits.[1] Aged skin caused by exposure to oxidants may be protected by anthocyanin key factor in skin deterioration and aging processes. The emergence of life some years ago marked the beginning of the global epidemic. Aging causes a number of detrimental changes that spread across cells and tissues, progressively impairing function and sometimes resulting in death. Creams have a strong sense of value and are basically emulsions. Stable creams made from a water-in-oil (W/O) emulsion framework with a tall fluid stage supported have prolonged their use in medicines and cosmeceuticals. As looked into. The suitability of ointments and moisturizing creams due to worries about the blended treatments physical stability.[2]

## MATERIALS AND METHODS

### Sample collection

Banana bracts were collected from the local market in Vaibhavwadi and Some were collected from local area.

**Fig. no. 1: *Musa acuminata* bract with banana.**


**Fig. no. 2: Dried bracts of *Musa acuminate.***

**Sample preparation:-** Banana bracts were washed with tap water to remove adherences, dirt and other surface impurities properly. Then they were cut into small or desired pieces manually.

### Solvent preparation

1. Solvents were prepared into 30%, 40% and 50% concentration of Ethanol with the addition of distilled water in different 1000 ml beaker Respectively.
2. The pH of the solvent solutions were maintained at 4, 5 and 6 for each concentrations

with the help of hydrochloric acid and sodium hydroxide.

**Extraction of anthocyanin**

1. The extraction was done by mixing 50 g of banana bracts in pieces into 500 ml of ethanol at different concentrations (30, 40 and 50%).
2. The extraction process was carried out in water bath at 50°C for 60 minutes. (Ninh et al., 2015 and Simona et al., 2012).
3. Each mixture was filtered through a muslin cloth to remove coarse particles.
4. Then vacuum filtration with whatmann filter paper (no.1) was performed to remove other dissolved minute particles.
5. Finally, extract was obtained.[3]


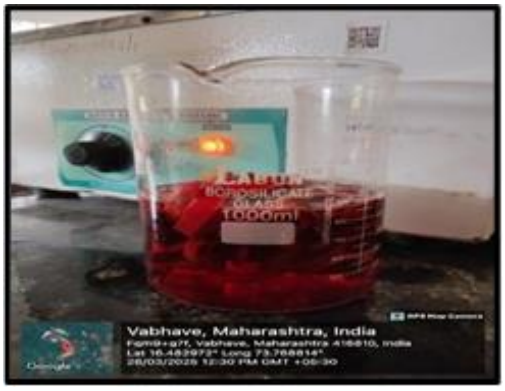


**Fig. no. 3: Chopped bract of *musa acuminata.* Fig. no. 4: Extraction of anthocyanin.**

**Phytochemical evaluation:** The extract of m. acuminata were analyzed for the presence of phytochemicals using standard procedure.

**Table no. 1: Phytochemical evaluation.**

| Test | Observation | Inference |
|---|---|---|
| **1. Carbohydrates** Small quantity of extract +2ml of molish reagent +2ml H2SO4 | Formation of reddish ring | Presence of carbohydrates |
| **2. Alkaloids** Some amount of extract+ mayer's reagent | Formation of cream colored ppt. | Presence of alkaloids |
| **3. Saponins** 2ml of extract +20ml of distilled water +shake in graduated cylinder for 15 min . | Formation of layer of foam | Presence of saponins |

| | | |
|---|---|---|
| **4. Tannins**<br>2mnl of extract +few drops of lead acetate | Formation of yellowish ppt | Presence of tannins |
| **5. Flavonoids**<br>Small quantity of extract +H2SO4. | Appearance of orange color | Presence of flavonoids |
| **6. Terpenoids**<br>2ml of extract +2ml of acetic acid +sulfuric acid | Formation of bluish ring | Presence of terpenoids |
| **7. Phobotannins**<br>2ml of extract +boiled with 1% HCL | Deposition of red ppt . | Presence of phobotannins |
| **8. Coumarins**<br>2ml of extract + 3ml of 10% sodium hydroxide | Formation of yellow color | Presence of coumarins |
| **9. Cycloglycosides**<br>5ml of extract +2ml of acetic acid +1 drop of 1% ferric chloride + 1ml of sulfuric acid | Formation of greenish ring | Presence of cycloglycosides |
| **10. Phenol**<br>Small e of extract +3-4 drops of ferric chloride solution | Formation of deep blue color | Presence of phenol |
| **11. Quinones**<br>Small amount of extract + 5ml of hydrochloric acid | Development of yellow ppt | Presence of quinones |
| **12. Anthraquinones**<br>2ml of extract+2ml of 10% ammonium hydroxide | Formation of pink color | Presence of anthraquinones |
| **13. Steroids**<br>2ml of extract + dissolved in 2ml of chloroform + equal amount of acetic acid and concentrated sulphuric acid by the side of test tube | Formation of bluish green color | Presence of steroids |
| **14. Anthocyanin**<br>2ml of extract add 1ml of NaOH +5min boil | Green color appears | Presence of anthocyanin |

**Formulation of base**

**Table no. 2: Ingredients for formulation of base.[4]**

| Sr. no. | Ingredients | Quantity(ml) |
|---|---|---|
| 1. | Liquid paraffin | 2ml |
| 2. | Bees wax | 3gm |
| 3. | Tween 80 | 2ml |
| 4. | Distilled water | 16ml |

**Procedure of base**

1. The oil phase consisted of 3gm of emulsifying bees wax and 2ml of liquid paraffin was

added and transferred into a 100 ml beaker and they were allowed to melt at 60 degree celcius in a water bath. Using a glass rod to mix well.

2. The aqueous phase 16 ml of water was added and transferred into a 100 ml beaker constituting the aq. phase.
3. The aq. phase was added to the oil phase gradually and kept in magnetic stirrer at 50 Degree celcius then 2ml of tween 80 were added and then cream was cooled.
4. Centrifugation Test: The prepared base was transferred into a centrifuge tube and was centrifuged at 5000rpm for 5min.[5]

**Formulation of cream**

**Table no. 3: Ingredients for formulation of cream.**

| Sr. no. | Ingredients | Quantity(gm/ml) |
|---|---|---|
| 1 | Liquid paraffin | 2ml |
| 2 | Bee wax | 3gm |
| 3 | Borax | 0.016gm |
| 4 | Methyl Paraben | 0.024gm |
| 5 | Orange Oil | q.s |
| 6 | Distilled water | 6ml |
| 7 | Anthocyanin extract | 10ml |

**Procedure for cream**

1. The oil phase consisted of 3g of emulsifying bees wax and 2ml of liquid paraffin was added and transferred into a 100ml beaker and they were allowed to melt at 60 Degree in a water bath. Using a glass rod to mix well.
2. The aqueous phase 6ml of water was added and transferred into a 100 ml beaker constituting the aqueous phase.
3. Then added required quantity of borax and methyl paraben in aq. phase
4. The aqueous phase was added to the oil phase gradually and kept in a magnetic stirrer at 50 Degree celcius along with it 10 ml of anthocyanin extract was added. then 2ml of tween 80 and some amount of orange oil were added and then the cream was cooled.[6]

**Evaluation of anti-aging cream**

1. **Physical evaluation:** physical parameters such as color and appearance were checked visually.
2. **Measurement of pH:** The pH of various formulation was determined by digital pH Meter.
3. **Stability study:** The stability study was carried out by storing the anti-acne cream at

different temperatures 4 degree cel. And 27 degree cel.

4. **Homogeneity:** The formulation was tested for homogeneity by visual appearance and touch
5. **Feel:** Emolliency, slipperiness and amount of residue left after the application of the fixed amount of cream was checked.
6. **Smear:** Smear was made on the skin.
7. **Removal:** The ease of removal of the cream applied was examined by washing the applied with tap water.[7]

## ❖ RESULT AND DISCUSSION

### 1. Phytochemical evaluation test


**Fig. no. 5: Phytochemical evaluation test.**

**Table no. 3: Phytochemical evaluation.**

| Sr. No | Test | Inference |
|---|---|---|
| 1. | Anthocyanin | + |
| 2. | Carbohydrate | + |
| 3. | Alkaloid | - |
| 4. | Saponin | + |
| 5. | Tannin | - |
| 6. | Flavonoids | + |
| 7. | Terpenoids | - |
| 8. | Coumarin | - |
| 9. | Phenol | - |
| 10. | Quinone | - |
| 11. | Steroids | - |

**Formulation of base**


**Fig. no. 6: Formulation of cream without anthocyanin extract.**

**Centrifugation test**


**Fig. no. 7: Cream was stable by centrifugation test.**

**Formulation of cream**


**Fig. no. 8: Final cream formulated with anthocyanin extract.**

**Evaluation of formulated anti-aging cream**

**Table no. 4: Evaluation of formulated anti-aging cream.**

| Sr. No | Parameters | Cream |
|---|---|---|
| 1. | Appearance | Baby Pink |
| 2. | pH | 6.1 |
| 3. | Homogeneity | Good |
| 4. | Type of smear | Greasy |
| 5. | After Feel | Emolliency and slipperiness |
| 6. | Removal | Easily removable |

## DISCUSSION

The discussion aimed to establish a robust and scientifically sound approach to developing an effective and safe anti-aging cream utilizing the potent antioxidant properties of anthocyanins derived from Musa acuminata bracts. It would have covered the journey from extracting and characterizing the active ingredient to formulating, testing, and considering the regulatory aspects of the final product. The Anthocyanin rich extract from *Musa Acuminata* bracts show promise as a potential anti-aging ingredients in skin care products. The Antioxidant and Anti-inflammatory properties of anthocyanin may help protect the skin from environmental stressors reduce oxidative damage and promote collagen production, leading to improve skin elasticity and reduce fine lines and wrinkles.

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