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Formulation and Evaluation of Herbal Facial Toner

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ABSTRACT

Facial toners function as essential components of everyday skincare routines because they eliminate remaining skin contaminants while they restore the skin's natural pH balance and prepare the skin for upcoming makeup applications. The popularity of herbal and natural cosmetic products has grown in recent years because these products provide safe and effective results while generating fewer side effects than synthetic products. The current research investigates the development and assessment of a herbal facial toner which uses water-based extracts from Butterfly pea flower *(Clitoria ternatea L.)* and Hibiscus flower *(Hibiscus rosa-sinensis L.)* that contain anthocyanins and flavonoids and tannins and phenolic compounds which provide antioxidant and anti-inflammatory and skin-soothing effects. The toner base was created using rose water with glycerin as the humectant and sodium benzoate as the preservative. The researchers developed multiple product formulations through experimental work which included different levels of herbal extracts and proceeded to test the resulting products through physicochemical analysis which included assessing their organoleptic properties and pH and viscosity and spreadability and washability and drying loss and stability testing. The optimized formulation demonstrated acceptable clarity and uniformity and skin-friendly pH and product stability and simple application method. The research demonstrates that the developed herbal facial toner functions as a safe and effective product which people can use for their daily cosmetic needs since it serves as a natural substitute for chemical-based toning products.

Keywords: Facial toner, Herbal cosmetics, Butterfly pea flower, Hibiscus flower, Natural skincare.

INTRODUCTION

Cosmetics are substances applied to the human body to cleanse, beautify, and enhance appearance, a concept derived from the Greek word kosmetikos, meaning skill in decoration. Facial toner functions as an important skincare product because it prepares skin after cleansing, restores pH balance, eliminates impurities, and boosts the effectiveness of subsequent products. The formulated facial toner described here is a gentle water-based preparation which manufacturers designed to work with all skin types and which contains natural ingredients including butterfly pea flower extract that provides antioxidant and soothing benefits and hibiscus flower extract which delivers mild exfoliation and hydration and rose water which offers refreshment and glycerin which prevents moisture loss and sodium benzoate which serves as a preservative. This formulation provides a mild solution which replaces strong chemical toners by helping to reduce skin irritation while people use it to gain refreshed skin that looks healthy and stays hydrated.

AIM

The study intends to develop a herbal facial toner which uses Butterfly pea flower and Hibiscus flower as its main ingredients and through various evaluation methods the researchers will identify the best formulation of the toner.

MATERIALS AND METHODS

Materials: Butterfly pea flowers and Hibiscus Flowers were collected and authenticated. Rose water was used as the base and mild astringent. Glycerin was used as humectant.

Extraction of Butterfly Pea Flower: The process started with cleaning dried butterfly pea flowers to remove contaminants which were then shade-dried and coarsely crushed to increase extraction success. The plant material was soaked in distilled water at a substrate-to-solvent ratio of 1:15 or 1:20 which was gently heated for 30 to 40 minutes to extract water-soluble phytoconstituents that included anthocyanins and flavonoids and phenolic compounds. The mixture was filtered through muslin cloth or Whatman

filter paper after it reached room temperature which produced a deep blue aqueous extract. The airtight container held the filtrate at refrigerated temperatures to prevent both degradation and microbial growth before it underwent phytochemical screening which led to its use in the herbal facial toner formulation.

Dried Butterfly Pea flower

Flower Extract

Extraction of Hibiscus Flower (*Hibiscus rosa-sinensis*): The researchers washed freshly collected hibiscus flowers to eliminate all dust and foreign particles. The researchers separated the petals, which they shade-dried to maintain the heat-sensitive phytoconstituents, and then they ground the petals into coarse powder to achieve better extraction results. The researchers soaked the powdered material in distilled water using two different substrate-to-solvent ratios of 1:15 and 1:20, which they heated for 30 to 40 minutes while stirring intermittently to extract water-soluble bioactive components, including anthocyanins, flavonoids, mucilage, phenolic compounds, and organic acids. The researchers filtered the mixture through muslin cloth and Whatman No.1 filter paper after it reached room temperature to eliminate insoluble materials, which produced a reddish aqueous extract. The researchers stored the filtrate in a clean airtight container inside a refrigerator, and they performed phytochemical screening before using it in the herbal facial toner formulation.

Dried Hibiscus Powder

Flower Extract

Formulation of Herbal Facial Toner

Four different formulations (F1-F4) of face toner utilizing various concentrations of the herbal extracts were created.

Steps in procedure

1 .Preparing the aqueous extracts of the butterfly pea and hibiscus (i.e. filtering).

2. Combining rosewater and glycerin to create the base.

3. Adding the herbal extracts slowly while mixing continuously.

4. Dissolving sodium benzoate in the toner for preservation.

5. Adjusting the pH

6. Filtering the final solution into spray bottles and keeping them in a cool place.

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FORMULATION CHART

SL NO	INGREDIENTS	F1	F2	F3	F4
1	Butterfly pea flower extract	5%v/v	10%v/v	15%v/v	20%v/v
2	Hibiscus flower extract	20%v/v	15%v/v	10%v/v	5%v/v
3	Sodium benzoate	0.5%w/v	0.5%w/v	0.5%w/v	0.5%w/v
4	Rose water	30%v/v	30%v/v	30%v/v	30%v/v
5	Glycerin	4%v/v	4%v/v	4%v/v	4%v/v
6	Distilled water	q.s	q.s	q.s	q.s

DIFFERENT FORMULATION

EVALUATION OF HERBAL FACIAL TONER

The following are evaluation criteria used to evaluate formulations tested:

1. Phytochemical Testing: using standard qualitative tests for testing for the presence of anthocyanin, flavonoids, phenolic and tannins in the extracts.

2. Organoleptic Evaluation: evaluating the appearance of; colour, clarity, odour and uniformity of the formulation by sight (eyes).

3. pH Measurement: measurement of the pH of the formulations using a digital calibrated pH meter.

SL NO	FORMULATION	pH
1.	F1	5.15
2.	F2	5.25
3.	F3	5.56
4.	F4	6.10

Result of pH of Facial toner

pH of Facial toner

4.Viscosity determination

Viscosity was determined using a Brookfield viscometer

SL. NO	FORMULATION	VISCOSITY (Cp)
1.	F1	9.52Cp
2.	F2	8.58Cp
3.	F3	8.71Cp
4.	F4	7.34Cp

Result of Viscosity of Facial Toner

Viscosity of Facial Toner

5. Spreadability: Application of toner to the skin and assessment of the even spread of toner on skin.

6. Wash ability: Manual assessment regarding the ease of removal of toner with water.

7. Storage Conditions of Formulation: Formulations stored at 45 °C for 1 month will be qualitatively evaluated for any changes in appearance, or clarity.

RESULTS AND DISCUSSION

In all formulations, organoleptic and physicochemical properties were found to be acceptable. Phytochemical screening of all formulations showed that they contained bioactive agents with antioxidative and protective properties; pH values were all within a range considered acceptable for skin surfaces; and viscosity measurements indicate that they would allow for easy application. Stability studies showed that there were no significant changes during the period of storage. Formulation F3 demonstrated the most favorable cosmetic characteristics as well as physiochemical stability.

CONCLUSION

This is an ultimate conclusion to the research. The research successfully developed and assessed a herbal facial toner composed of extracts from butterfly pea and hibiscus flowers. The herbal formulation was stable, had verified physicochemical properties, and was well-accepted as a cosmetic product. F3 was determined to be the optimized formulation of this study. The formulated herbal toner can be classified as a safe and natural replacement for synthetic skin care products and has potential use in commercial cosmetics.

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