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Research Article

Formulation and Evaluation of Herbal Liquid Toner by Using *Cymbopogon citratus* and *Ocimum sanctum*

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ABSTRACT

Herbal toner is a type of skincare product derived from natural materials like herbs, flowers and other extracts from plants. It is used after cleaning to help remove any dirt or impurities on the skin. The aim of this study was to develop herbal toner formulation based on natural herbs. It can have major positive impact on the appearance and tightness of pores. Toner infuses skin with nutrients, balances pH, brightens tone, minimizes the appearance of enlarged pores, and boosts hydration. It helps pull out deeply rooted makeup residue, dead skin cells.

INTRODUCTION

Cosmetics:

Cosmetics may be defined as the substance which is derived from synthetic and naturally occurring chemical constituents used to maintain the human body. Cosmetics means any particle intended to be rubbed, poured, sprinkled or spray on, or introduce into, or otherwise applied to human body or any part thereof for cleaning beautifying, promoting attractiveness, or altering the appearance included any articles intended for use as a component of cosmetics.

Herbal cosmetics:

The herbal cosmetics are the preparation containing phytochemicals from a variety of botanical sources, which influences the function of skin and also provide nutrients necessary for the healthy skin and body. In cosmetic preparation, the natural herbs, products and some extract used for their aromatic value are called as herbal cosmetics.

Herbal face toner:

Toner is a type of skincare product derived from natural materials like herbs, flowers and other extracts from plants. It is used after cleaning to help remove any dirt or impurities still on the skin and to prepare the skin for additional skincare

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products, such as moisturizer. Toner, in cosmetics skin colour or simply colour refers to an embrocation or marshland designed to cleanse the skin and shrink the appearance of pores, generally used on the face. It also moisturizers, protects, and refreshes the skin.

Effect of toner on the skin:

Nowadays, the diversity and prevalence of the products cause skin toners to be utilized more as cosmeceutical products with several purposes; for example, rehydration skin, balancing skin pH, tightening skin pores, relieving irritation, and also antiseptis.

Types of Toners:

1. Skin fresheners or bracers:

It is moderate form of the toner. The toner having water and glycerine (humectant). It is most suitable for normal, dehydrated and sensitive skin.

2. Skin tonics:

Skin tonics are normally stronger and having small amount of alcohol (up to 20%), water and a humectant ingredient.

3. Acid toner:

These are a strong form of toner that typically contains alpha hydroxy acid and or beta hydroxy acid.

4. Astringents:

Astringents are the strongest form of toner and they contain a high amount of alcohol (20–60%), water, antiseptic ingredients and a humectant ingredient

Advantages of Toner:

- Removes oil and makeup.
- Soothes your skin.
- Reduces the appearance of pores.
- Help locks in moisture.
- Refreshes and tightens the skin.
- Serres and protects.
- Balance pH levels.
- Restores natural nutrients.
- Remove impurities.
- Enhance absorption.

MATERIALS AND METHOD

Table 1: Materials required for formulation of toner

Sr. No	Ingredients	Uses	F1	F2	F3
1	Tulsi extract(ml)	Treat acne	6 ml	8 ml	10 ml
2	Cucumber juice(ml)	Soothing and Cooling	3 ml	2 ml	2 ml
3	Lemon grass extract(ml)	Reduce inflammation	12 ml	13 ml	14 ml
4	Rose water(ml)	Calmness	14 ml	16 ml	18 ml
5	Glycerin (ml)	Moisturizer	1 ml	1 ml	1 ml
6	Methyl paraben (g)	Preservative	0.002 g	0.002 g	0.002 g
7	Vinegar (ml)	Preservative	0.1 ml	0.1ml	0.1 ml
8	Water (ml)	Vehicle	q. s	q. s	q. s
Total			50 ml	50 ml	50 ml

METHOD OF PREPARATION

1. Extraction of an active constituent from crude drug:

- Take 25gm powdered plant material in 250ml beaker.
- Add 250ml of distilled water in it
- Heat for 24 hours
- Then filter the extract

- The obtained extract evaporates
- This extract further uses for the preparation of herbal face toner.

2. Preparation of herbal toner:

Take the extract of Tulsi, lemongrass and cucumber in a beaker and mix well. Add rose water in above mixture. Then add 1ml of glycerin. Add few drops of vinegar or methyl paraben as a

preservative. Makeup the volume with distilled water and mix well.



Fig No.1: Prepared Herbal Toner

EVALUATION OF TONER

1. Preliminary Phytochemical Screening of Tulsi and Lemon grass:

Preliminary phytochemical evaluation is the step after extraction in order to identify different class of constituents that can be present in extract that is alkaloids, glycosides, flavonoids, tannins, carbohydrates, proteins, lipids, essential oils etc.

2. Organoleptic characteristics:

Parameters like Appearance, Color, Odor, Homogeneity, Consistency and Texture were evaluated by visual interpretation.

3. Washability:

It was determined by rubbing the little amount of toner on hand which was later washed under the running tap water.

4. Determination of pH:

For evaluation, as pH of the toner cannot be directly measured, 10% dilutions were made with distilled water and the pH was determined by using digital pH meter.

5. Rancidity:

For evaluation, 10 ml of formulation taken and added to 10 ml of concentrated hydrochloric acid along with 10 ml Phloroglucinol solution. The mixture was shaken well for 1 minute. The material shall be taken to have passed the test if no pink color is developed.

6. Determination of Viscosity:

Viscosity of the toner was determined by Ostwald viscometer.

7. Loss on drying:

5 ml of formulated toner was taken in a porcelain dish, allowed to dry in hot air oven at 100 °C for 30 minutes. Two consecutive values after drying at the interval of 30 min were recorded and kept in desiccator for 15 min and LOD was determined.

8. Homogeneity:

It is analyzed by visual inspection for the appearance and existing of any clog.

9. Skin irritation:

Small amount of the toner was sprayed on left hand dorsal skin and kept for some time; result was found non- irritant on the skin.

10. Anti-inflammatory activity:

Protein denaturation test (pain killer)

Preparation of reference drug (positive control):

NSAID (ibuprofen) were used as reference drug. Ibuprofen was crushed into fine powder. About 0.2 g of Ibuprofen drug powder was measured using a digital analytical balance and was added to 20.0 ml of distilled water. The solution was mixed well.

Serial dilutions:

Serial dilution from 1000 ug/ml to 0.01 µg/ml was performed for 3 sample extract and for reference drugs (prednisolone and ibuprofen). All samples contained 5.0 ml of total volume. Reaction mixtures were prepared using 2.8 ml of phosphate-buffered saline (pH 6.4) and 0.2 ml of egg albumin (from fresh hen's egg). Then 2 ml of extract from each different concentration were mixed gently with reaction mixtures. A similar procedure was used for reference drugs (prednisolone and ibuprofen) and they were used.

Inhibition of protein denaturation:

Reaction mixtures were incubated in a water bath at 37 °C ± 2 °C for 15-20 min, and later, it was heated at 70 °C at which the reaction mixture was maintained for 5 min. Then, the reaction mixture was allowed to cool down at room temperature for 15 min. Absorbance of mixture before and after denaturation was measured for each concentration

at 680 nm using a colorimeter. Each test was repeated thrice and the mean absorbance was recorded. The percentage of inhibition of protein was determined on a percentage basis with respect to control using the following formula;

$$\text{Percentage inhibition (\%)} = \frac{\text{Absorbance control} - \text{Absorbance sample}}{\text{Absorbance control}} \times 100$$

11. Anti- microbial test:

Preparation of nutrient broth:

For the preparation of nutrient broth take the weighted amount of beef extract, sodium chloride and peptone in 500 ml of distilled water. Heat the mixture and agitate with glass rod to dissolve the ingredients. Add distilled water to make up the final volume. Adjust the pH of the medium to 7.0 by adding acid or alkali. Pour 10 ml medium in each test tube or a conical flask. Apply cotton plugs to all test tube or conical flask. Sterilize in autoclave at 121°C under 15 lb. pressure for 15

min. Allow the autoclave cool. Remove the broth tubes or flasks and store at room temperature for use

Preparation of nutrient Agar:

For the preparation of nutrient agar take the weighted amount of beef extract, sodium chloride and peptone in distilled water except ager. The pH of the fluid medium is determined with the pH meter and adjust by using 1N HCL or 1N NaOH. Add agar powder and medium is heated to dissolve the agar to form clear liquid. The medium is dispensed into tubes or flasks. Plug the flasks containing medium by using nonabsorbent cotton. Sterilize in autoclave at 121°C under 15 lb. pressure for 15 min in an autoclave. Allow the flasks to cool up to 50°C and pour the medium quickly into sterile petri plates under aseptic condition. Allow the medium to cool and to produce solid agar plates.

RESULT AND DISCUSSION

1. Phytochemical Tests: -

Table no.2: Preliminary Phytochemical Screening

A. Test for Carbohydrate			
		Inference	
Sr. No	Tests	Tulsi Extract	Lemongrass Extract
1	Molisch's Test	Present	Present
2	Fehling's Test	Present	Present
3	Benedict's Test	Present	Present
4	Iodine Test	Absent	Absent
5	Mucilage Test	Present	Present

B. Test for Proteins			
		Inference	
Sr. No	Tests	Tulsi Extract	Lemongrass Extract
1	Biuret Test	Absent	Present
2	Millon's Test	Present	Present
3	Xanthoprotein Test	Absent	Absent
4	Test for protein containing Sulphur	Present	Present

C. Test for Amino Acid			
Sr. No	Tests	Inference	
		Tulsi Extract	Lemongrass Extract
1	Ninhydrin Test	Present	Present
2	Tyrosine Test	Present	Present
3	Cysteine Test	Present	Absent

D. Test for Amino Acid			
Sr. No	Tests	Inference	
		Tulsi Extract	Lemongrass Extract
1	Baljet's Test	Present	Present
2	Legal's Test	Absent	Present
3	Keller-Killiani Test	Present	Present

E. Test for Flavonoids			
Sr. No	Tests	Inference	
		Tulsi Extract	Lemongrass Extract
1	Sulphuric Acid Test	Absent	Absent

F. Test for Tannins			
Sr. No	Tests	Inference	
		Tulsi Extract	Lemongrass Extract
1	5% FeCl ₃ Solution	Present	Present
2	Lead Acetate Solution	Present	Present
3	Acetic Acid Solution	Present	Present
4	Dil. Iodine Solution	Present	Present
5	Dil. HNO ₃	Present	Present

G. Test for Carbohydrate			
Sr. No	Tests	Inference	
		Tulsi Extract	Lemongrass Extract

1	Dragendroff's Test	Present	Present
2	Mayer's Test	Absent	Absent
3	Hager's Test	Present	Present
4	Wagner's Test	Present	Present
5	Tannic Acid Test	Absent	Absent

Table No.3: Determination of Evaluation Parameters of Prepared Herbal Toner

Sr. no.	Parameters	F1	F2	F3
1	Appearance	Water like	Water like	Water like
2	Color	Light Orange	Light Orange	Light Orange
3	Odor	Characteristic	Characteristic	Characteristic
4	Homogeneity	Uniform and homogenous	Uniform and homogenous	Uniform and homogenous
5	Irritation	No	No	No
6	Wash ability	Good	Good	Good
7	pH	5.60	5.45	5.58
8	LOD	0.72	0.25	0.48
9	Rancidity	No pink color No rancidity	No pink color No rancidity	No pink color No rancidity



F1



F2



F3

Table No.4: Percentage protein denaturation of Sample (F1)

Sr.no.	Concentration of sample F1 (ppm)	Absorbance of blank	Absorbance of sample	Percentage protein denaturation
1	10	0.483	0.330	31%
2	20		0.280	42%
3	30		0.330	31%
4	40		0.106	78%
5	50		0.265	45%
6	60		0.103	78%

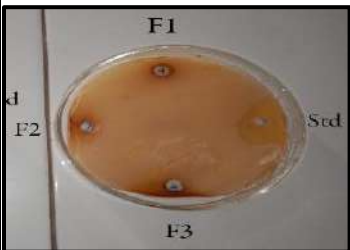
Table no 5 Percentage protein denaturation of Sample (F2)

Sr. no.	Concentration of sample F2(ppm)	Absorbance of blank	Absorbance of sample	Percentage protein denaturation
1	10	0.483	0.448	7.2%
2	20		0.697	44%
3	30		0.540	11%
4	40		0.630	30%
5	50		1.056	118%
6	60		0.201	58%

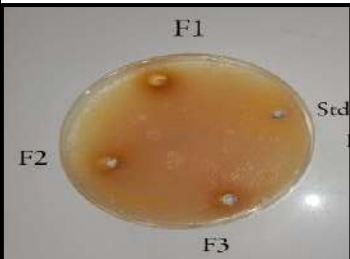
Anti- Microbial test:

Table no.7: Antimicrobial Activity of Herbal Toner

For E. coli				
Conc.(µg/ml)	Formulation			Standard (Ampicillin)
	F1	F2	F3	
Zone of Inhibition				
100	15 mm	14 mm	18 mm	21 mm



For S. aureus				
Conc.(µg/ml)	Formulation			Standard (Ampicillin)
	F1	F2	F3	
Zone of Inhibition				
100	13 mm	14 mm	11 mm	22 mm



DISCUSSION

In the present work, tulsi, lemon grass, cucumber which gives anti-inflammatory, anti-microbial activity and provides calmness. The formulation F2 & F3 showed the best result, may be because of constituents present in tulsi, lemon grass and cucumber. Lemon grass is known for its anti-microbial activity and tulsi is known for its anti-inflammatory activity that may aid in infections and small quantities of cucumber have inhibitory effect on bacteria. At present it emerges as a very convenient product for removing acne, reduces

inflammation, gives cooling and soothing effect with some therapeutic uses. Liquid toner is used for minimizing of pores, balancing and correcting of pH, removing makeup and remove any last traces of dirt and impurities Based on the findings of the present study, the relevance of tulsi, lemon grass and cucumber are safe and effective for cleansing, cooling, soothing and relieving activity is clearly reported. For our research study we have formulated three batches among them the optimum batch which found to be appropriate is F2 batch

which possess good quality of toner which helps us to perform further studies.

CONCLUSION

The herbal formulation has certain advantages like easy application and no any side effect and its mostly preferred. The liquid form of the herbal toner can be used topically for the improving health and rejuvenation of dried skin. It was also found that the lemongrass and mint gave the best result for the antioxidant and astringent activity. The study aimed to formulate and develop herbal toner using Tulsi, Lemongrass, Cucumber in combination. The formulation F1, F2 & F3 were prepared by varying the composition & evaluated for their physicochemical properties. The study shows that formulation F2 having all three extracts of Tulsi, Lemongrass, Cucumber was found to be of highest stability.

REFERENCES

1. Venu S. Agrawal, "Formulation and Evaluation of Herbal Toner by Using Leaves of *Azadirachta Indica*: A Review", *IJARST*, Vol.2, ISSN:2320-2882, August 2023.
2. Miss. Sapana Mhaske, "Formulation and Evaluation of Herbal Face Toner", *IJARST*, Vol. 2, ISSN: 2581-9429, June 2022.
3. P.P. Sharma, "Cosmetics- Formulation, Manufacturing and Quality Control", Published by Vandana Publication Pvt. Ltd, Edition 4th, ISBN:978-81-905957-0-4, January 2008.
4. Shivtej Patil, "Formulation and Evaluation of Herbal Toner Prepared Using Various Herbal Entities", *IJRT*, Vol. 9, ISSN:2349-6002, May 2023.
5. Mr. Tejas Rajendra Paigude, "Formulation and Evaluation of Alum Toner Spray for Anti-Acne Effect", *IJCRT*, Vol.11, ISSN: 2320-2882, 5 May 2023.
6. Monali Parbhane, "Formulation and Evaluation of Herbal Toner", *WJPPS*, Vol .11, ISSN: 2278-4357, 25 June 2022.
7. Vibhavari M. Chatur, "Formulation and Evaluation of Basic Parameters of Herbal Toner Mist for Skin", *IJPPR*, Vol. 21, ISSN: 2349-7203, May 2021.
8. A.S. Gawali, "Scientific Cultivation of Lemon Grass – A Potential Aromatic Crop", *Research Gate*, Vol.19, ISSN: 0972-5210, January 2019.
9. Sharmila Dharmadeva, "In vitro anti-inflammatory activity of *Ficus racemose* L. bark using albumin denaturation method", *PMC*, Dec 2018.
10. Chandrakant Kokare, "Pharmaceutical Microbiology experiments and techniques", Published by career publication, 3rd edition, ISBN 13: 978-81-88739-81-3, September 2010, page no.:68-72.
11. Dr. K. R. Khandelwal, "Practical Pharmacognosy", Published by Nirali Prakashan, 26th edition, February 2016.
12. Daniel Anokwah, "Evaluation of the anti-inflammatory and antioxidant potential of the stem bark extract and some constituents of *Aidia genipiflora* (DC.) dandy (rubiaceae)", *Science direct*, 21 July 20

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