

Formulation and Evaluation of Herbal Face Toner

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Abstract

In today's fast world a natural rejuvenation is a necessary step for one's healthy skin. The toner is a Natural freshener as well as a good cosmetic having rejuvenating and cleansing properties on the skin. The study is aimed to formulate a natural and safe skin toner that has a calming, soothing, effect on the facial skin to reduce the facial irritancy and bring freshness, also to enhance the beauty. The Chrysanthemum flower extract used gives excellent results and safety for sensitive skin types and can be used on daily basis. The primary goal of making face toner is to maintain the tonicity of the skin. Its efficacy was tested. The revealed results were within acceptable bounds, no negative effects.

Keywords: *Face toner, skin safety, aloe Averagel*

INTRODUCTION TO HERBAL COSMETICS

Cosmetic is a Greek word which means to "adorn" (addition of something decorative to a Person or a thing). Cosmetics are constituted from a mixture of chemical compounds derived from either natural sources or synthetically created ones.

- Cosmetics designed for skin care can be used to cleanse, exfoliate and protect the skin, as well as replenishing it, through the use of cleansers, toners, serums, moisturizers, and balms, cosmetics designed for more general personal care, such as shampoo and body wash, can be used to cleanse the body

- cosmetics designed to enhance one's appearance (makeup) can be used to conceal blemishes, enhance one's natural (such as the eyebrows and eyelashes), add colour to a person's face
- Cosmetics can also be designed to add fragrance to the body.



Fig. 1

Herbal Cosmetics

Herbal cosmetics refer to beauty and personal care products formulated primarily using natural ingredients derived from plants, herbs, flowers, fruits, and other botanical sources. These products emphasize the use of plant-based extracts, essential oils, and herbal infusions to provide various skincare, haircare, and cosmetic benefits.

Products you apply to your body to clean it make it more attractive or change the way it looks

Cosmetics are mainly classified as

1. Skin cosmetics e.g. powder, lipstick, toner, soap
2. Hair cosmetics e.g. shampoo, conditioner
3. Nail cosmetics e.g. nail polish
4. Teeth cosmetics e.g. toothpaste

Skin, Types and Characteristics

The skin is the body's largest organ. It covers the entire body It serves as a protective shield against heat, light, injury, and infection. Skin takes on different thickness, colour, and texture all over our body. It is described into following types

- Normal Skin
- Oily Skin
- Dry Skin
- Sensitive Skin
- Combination Skin

Normal Skin

Normal skin is balanced-feeling neither too dry not too oily. It is not prone to breakouts, flakiness, or feeling greasy or tight.



Fig. 2

People with normal skin typically have pores that are small, a smooth skin texture, and are less prone to sensitivity or blemishes. However, despite the fact that normal skin doesn't have any specific issues or concerns, it still requires proper skincare to look and feel its best.

Oily Skin

Oily skin produces an excess of sebum that causes the skin to appear shiny and feel greasy especially throughout the T-zone (forehead, nose, and chin).



Fig. 3

Dry Skin

Dry skin generally produces less natural oils than other types of skin. This may cause it to appear dull and become rough, flaky, or even scaly. It often feels tight or less elastic, noticeably dehydrated, and may be prone to showing more visible fine lines. In addition, it may become itchy or irritated.



Fig. 4

Sensitive Skin

Sensitive skin is often referred to as dry sensitive skin, or normal skin type, but it's possible to have oily sensitive skin. Regardless of which type of skin you have, if you have sensitive skin, it may appear red and feel like it's burning, itching, or dry.



Fig. 5

Combination Skin

Combination skin includes areas that are dry as well as oily with the T-zone commonly being oily, and the cheeks being either dry or normal. This skin type can vary during different seasons of the year, and due to various factors, such as stress or hormone fluctuation.

Herbal Toner

- In cosmetics, skin toner or simply toner refers to a lotion or wash designed to shrink the appearance of pores, usually used on the face. It also moisturizes, protects, and refreshes the skin. Toners can be applied to the skin in different ways.
- Toner is an important part of skin care regime. Toners come in the form of lotion or washes & are designed to cleanse the skin by removing dirt & impurities, shrink the pores, and balance the PH level of the skin.



Fig. 6

Herbal Face Toner

Toner is water based totally liquid which contains energetic components to cleanse the skin, keeping skin pH stable, shrink pores and grant an immediately glow Before washing your face, it removes the dirt and impurities which are stuck on pores of skin. When brought to daily routine of skin treatment and used regularly, it having major positive impact on the appearance and ageing skin. It has an antioxidant property which hydrates the skin.

Effect of toner on the skin

- After cleansing of the face, the leftover makeup was eliminated by the tones, act as a secondary cleansing agent, which prepare the skin for nourishment.
- Alcohol-based and non-alcohol based are two category of toner it is used for oily, sensitive and combination type of skin. Toners can be applied to the skin in different ways:
- On a cotton round (This is the most frequently used method)
- Spraying onto the face

- By applying a tonic gauze facial mask-s piece of gauze is covered with toner and left on the face for a few minutes

TYPES OF TONERS

Skin fresheners or bracers

It is moderate form of the toner the toner having water and glycerin (humectant) Humectant moisturize the skin surface Rosewater is the popular example of it li is most suitable for normal, dehydrated and sensitive skin.



Fig. 7

Skin Tonics

Skin tonics are normally stronger and having small amount of alcohol (up to 20%), water and a humectant ingredient. Good example of a skin tonic is rose water. Skin tonics are acceptable for use on the oily skin.



Fig. 8

Acid toner

These are a strong form of toner that typically contains alpha hydroxy acid and or beta hydroxy acid Salicylic acid is the most commonly used beta hydroxy acid best for exfoliating into the deeper layers of the skin.



Fig. 9

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. These can be damaging and irritating to the skin, because they can remove excess protective lipid in the skin, when they uses high amount of alcohol.



Fig. 10

Advantage of Herbal toner

- Toners get rid of such remaining impurities to supply your face an additional and complete cleanse.

- The appearance of pores can minimize by regular use of the toner.
- Toners are helpful to reinstate the pH balance of the skin.
- Toner has a tendency to soak quickly into the skin, giving it an instant boost of hydration they are good humectants since they contain substances like glycerin.
- Removes Oil and Makeup.
- Soothes your skin.
- Reduces the appearance of pores.
- Helps lock in moisture.
- Refreshes and Tightens the skin.
- Serves and Protects.

Disadvantages of herbal skin toner

1. Toners containing alcohol cause the skin to become dry and flaky.
2. When used in excess, it might irritate the skin, i.e. edema and redness.
3. prevents natural oil production causing skin break out and sensitive.

Mechanism of Spray Action

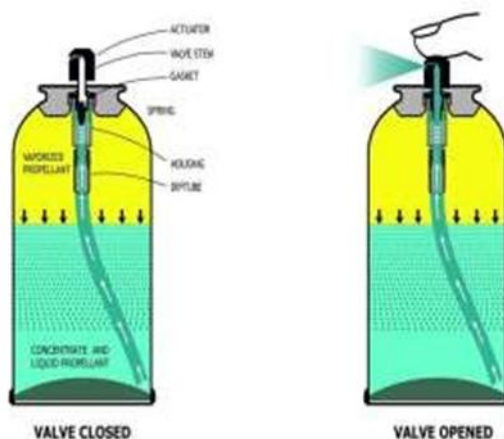


Fig. 11

Mechanism of action of the spray formulation

When the button on the top of the spray bottle is pressed, it pumps the grooved button. This pumping action forces the air from the nozzle to the dip tube. There is a drop in the pressure of top of tube, due to pressing the top button. After this difference pressure falls in the tube

and the liquid is forced up from the tube the liquid leaves the nozzle through the actuator as small mist droplets due to pressure and applied on skin through force penetrating inside skin

In a spray bottle, the dispensing is powered by the user's efforts, as opposed to the spray can, in which the user simply actuates a valve and product is dispensed under pressure.

Materials Used in Preparation of Toner

The materials used for preparation of toner were sourced naturally and was formulated followed by cleaning, drying, filtering and pulverization of required materials. The details of materials used are elaborated below.

Aloevera Gel



Fig. 12

Synonym- aloe, korphad,

Biological Source- Biologically active components in aloe vera vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids. Vitamins. It contains vitamins A (beta-carotene), C and I, which are antioxidants. It also contains vitamin B12, folic acid, and choline

Family- Liliaceae

Uses of aloevera gel on face

- Helps soothe sunburn.
- Helps to moisturize the skin.
- Boosts healing of wounds

Rose water



Fig. 13

Synonym- attar of roses, gulabjal

Composition of rose water

Rose water is a liquid made by steeping rose petals in water or distilling rose petals with steam.

The volatiles consisted mainly of

- 2-phenylethanol (69.7-81.6%),
- linalool (1.5-3.3%)
- citronellol (1.7-7.2%),

Uses of rose water on face

- Provides hydration.
- Replenishes skin cells.
- Drives out makeup residues and pollutants.

Chrysanthemum



Fig. 14

Synonym- Cineraria, Gladiolus

Biological source- Chrysanthemum, also known as Chrysanthemum morifolium, is a flowering plant native to East Asia, particularly China and Japan

family- Asteraceae

Chemical constituents- Flavonoids, Sesquiterpene Lactones, Organic Acids

Uses of Chrysanthemum

1. Ornamental Beauty
2. Aromatherapy
3. Long Blooming Period

Microscopic examination

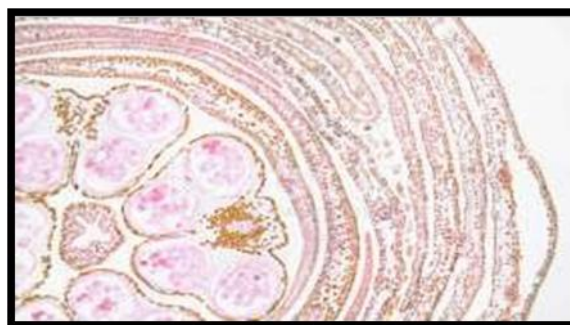


Fig. 14

Pollen Grains: Chrysanthemum flowers produce pollen, which is typically visible under a microscope.

Pistil and Stamen: Their productive organs of the flower, including the pistil (female) and stamen (male), can be observed in detail.

Petals: Chrysanthemum petals exhibit intricate patterns and textures when viewed under a microscope.

Epidermal Cells: Examining the epidermal cells of various flower parts can reveal their shapes, sizes, and arrangements.

Trichomes and Glandular Structures: Some Chrysanthemum species have trichomes (hair-like structures) or glandular structures on their surfaces, which serve various functions such as protection from herbivores or attracting pollinators.

Vitamin E

It is a vitamin that dissolves in fat. It is found in many foods including vegetable oils, cereals, meat, poultry, nuts, and fruits.



Fig. 15

Source of vitamin E sunflower, rose hip, and jojoba oils, and rosemary leaf extract

Uses of vit-E on face

1. Vitamin-E is highly rich in antioxidants that are essential for reducing inflammation, preventing skin damage,
2. prevent skin damage,
3. restore the skin's natural health

Cucumber Gel



Fig. 16

Synonym- Cuke, gherkin,

Biological source- The biological source of cucumber is the cucumber plant itself, scientifically known as *Cucumis sativus*.

Family- Cucurbitaceae

Chemical constituents- Phytonutrients, Cucurbitacins, Carotenoids, Pectin

Uses of cucumber-

1. Hydration
2. Skin Brightening
3. Natural Astringent

Microscopic examination of Cucumber: -

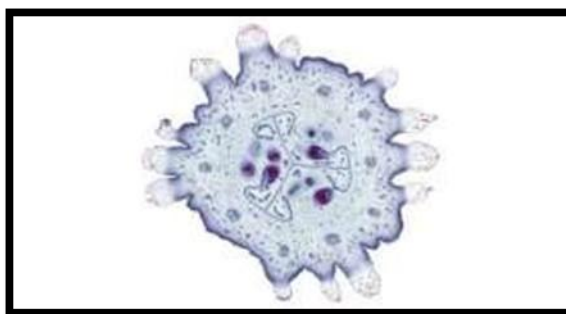


Fig. 17

Epidermis: The outermost layer of the cucumber fruit consists of epidermal cells.

Cuticle: A thin, waxy layer known as the cuticle covers the epidermis of the cucumber fruit. This layer helps reduce water loss and protects the fruit from pathogens and environmental stresses.

Mesocarp: The mesocarp, or flesh, of the cucumber fruit is composed of parenchyma cells filled with water, nutrients, and other compounds.

Vascular Bundles: Cucumber fruits contain vascular bundles that transport water, nutrients, and sugars throughout the fruit.

Seed Coat: Inside the cucumber fruit, you'll find the seeds enclosed in a seed coat.

Lemon Grass-



Fig. 18

Synonym-Cymbopogon, Barbed wire grass,

Biological source- The biological source of lemongrass is the lemongrass plant itself, scientifically known as Cymbopogon citratus.

Family-Poaceae

Chemical constituents- Phytonutrients, Cucurbitacins, Carotenoids, Pectin

Uses of lemon grass on face-

- Treats oily skin.
- Fabulous fragrance.
- Acne –fighting qualities.

Tulsi extract-



Fig. 19

Synonym- Holybasil, tulas

Biological Source- Tulsi consists of fresh and dried leaves and seeds of *Ocimum sanctum* Linn.

Family- Labiatae.

Uses of Tulsi -

- Sun Protection
- Acne Treatment
- Antimicrobial Properties

Microscopic examination of Tulsi:

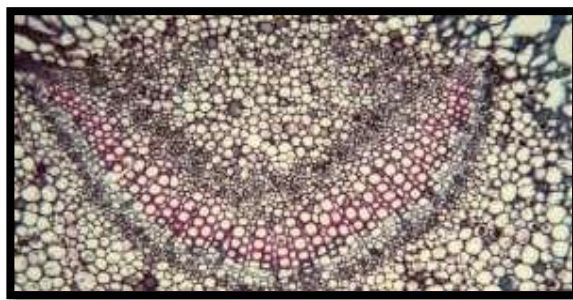


Fig. 20

Trichomes: Tulsi leaves often have glandular trichomes, which are tiny hair-like structures that secrete aromatic oils and other substances.

Epidermal Cells: The epidermis of Tulsi leaves consists of closely packed cells that form a protective layer.

Stomata: Stomata are small pores present on the leaf surface that regulate gas exchange and water vapor loss.

Vascular Tissues: Tulsi stems contain vascular bundles responsible for transporting water, nutrients, and sugars throughout the plant.

Oil Glands: Tulsi leaves contain oil glands that produce aromatic compounds responsible for its distinctive fragrance and medicinal properties.

Sodium benzoate:

Sodium benzoate is an organics odium salt resulting from there placement of the proton from the car boxy group of benzoic acid by a sodium ion. It has a role as an antimicrobial food preservative, adrugallergen.

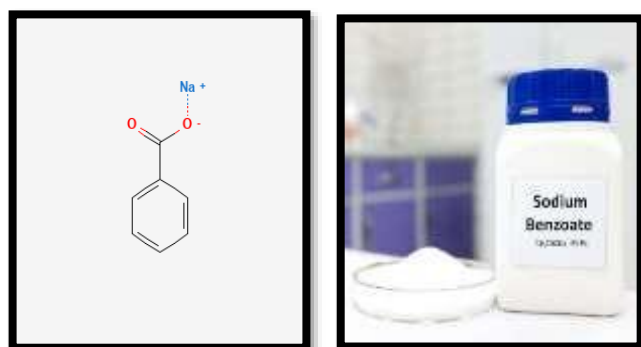


Fig. 21

Synonyms: Benzoic acid, sodium salt.

Molarmass: 144.10 g/mol

Formula: C₆H₅COONa

Appearance: White, granules or crystalline powder, Odourless, Sweetish, astringent taste, Solubleinethanol.

Uses of Sodium benzoate on face:

- Preservation.
- Antimicrobial Properties.
- Stability & Compatibility.

Ingredients:-

Sr. No.	Name of Ingredients	Scientific Name	Quantity
1	Aloeveragel	Aloebarbadensismiller	1 gm
2	Rosewater	RosadamascenemillL	5 ml

3	Chrysanthemum	Asteraceae	8 ml
4	CucumberGel	Cucurbitaceae	5 ml
5	Vitamin E	Alpha-tocopherol	2 ml
6	Lemongrass	Cymbotogon	2 ml
7	Tulsiextract	OcimumsanctumLinn	2 ml
8	Sodiumbenzoate	Sodiumsalt	2 gm
9	Distilledwater	-	q.s.

Table 1 Ingredients and quality for preparation of face tuner

Method of preparation:

Tableno.1ingredientsandqualityforpreparationof facetuner

Methodofpreparation:

Takealoe verageland take2gm ofaloe veragel

Add8mlrosewaterinit,Stir thesolutionconstantlyand dissolvealoevera inrosewater

Add8ml lemon juicein it & stir thesolution

Add22 mlpeppermint teain solution& Add lemongrass 2ml&stirthe solution

Addglycerine8ml &Add 2ml0.54methylparaben aspreservative

Stirthesolution andpreparehomogenousolution

Methodofchrysanthemum extract:-

25g ofdry CIFmixedwith distilled waterin200 ml.

Heated andsimmeredfor 1hr.

Duringthisperiodcontinuousstirringisdone.

After1hr filtrationprocessisperformed.

Thefiltratecontainingthem aincomponentwereextracted.

MethodofTulsiextract: -

Driedleavesand seedsofTulsi plant.

Crushedthenandmakeitpowderformtoeasilygetextract.

The crushed extract is taken in distillation flask for the extractdistillation.

Carryoutthisprocessof extractionof1hr.

Extracted product of Tulsi get filtered and used as naturalherbalingredient in theformulation.

Formulation table-

Sr.no.	Ingredients	F1	F2	F3
1	Aloeveragel	1gm	2gm	2gm
2	Rosewater	5ml	7.5ml	5ml
3	Chrysanthemum	8ml	5ml	8ml
4	Cucumbergel	5ml	8ml	8ml
5	VitaminE	1ml	1ml	1ml
6	Lemongrass	2ml	2ml	1ml
7	Tulsiextract	2ml	1ml	2ml
8	SodiumBenzoate	2gm	1.5gm	1gm
9	Distilledwater	q.s	q.s	q.s
	Total	30ml	30ml	30ml

Method of preparation of herbal toner

Take 2 ml of Tulsi extract then add 2 ml of lemongrass solution.



Then add 8 ml Chrysanthemum Gel and stir.



Add 5 ml of rosewater and stir.



Add 5 ml Cucumbergel & 1 ml Aloeveragel.



Add 1 ml of Vit. E & 2 ml sodium benzoate as preservative and stir.



Add water to make up the volume as per Q.S 30 ml

Container and Storage -To be stored in a well-closed spray container at room temperature

Directions to use-

1. Spray some toner on your clean face or hands
2. Allow the spray sometime to remain as it is on the face or surface of hands.
3. Keep it for 10-20 min Wipeout the spray with soft cotton or cloth if required
4. Use the toner twice a day for better skin rejuvenating results.

Evaluation of toner

pH- The pH of gel formulation was determined by using digital pH meter. Take 1 ml of toner & dissolved in 10 ml of distilled water & kept apart for 2 hours.

Sr.no	Readings
1	5.8
2	5.9
3	5.7
Average	5.8

Organoleptic characteristic - Organoleptic characteristic was accessed from appearance of toner.

Organoleptic character	Observation
Colour	Yellowish
Odour	Pleasant
Consistency	Good

Homogeneity - The prepared toner formulations were tested for homogeneity by visual inspection after the toner have been set in to the container. They were tested for the presence appearance of any aggregates

The formulated face toner has smooth homogeneity.

Viscosity:- The measurement of viscosity of the formulated toner determined by Brook field Viscometer with spindle no. 63 at 25 C The toner was rotated at speed 20rotationsper minute& the corresponding dial reading wat noted.



Fig. 21 Brook Field Viscometer

Table Readings of Brook field viscometer

Measures	Readings
Rpm	20
Torque	07
Spindle	63
Centipoise	5500

Stickiness- prepared toner was applied on face, after 5 min wash the face, toner was removed after washing the face & the mist particles were not found to be much sticky in nature.

Light Exposure- The product is exposed to direct sunlight in its original packaging for 3 hours to see any discoloration off ormulation occurs no discoloration was seen.

Skin Irritation - Small amount of the mist toner was sprayed on left hand dorsal skin and kept for sometime, result was found non-irritant on the skin.

Evaluation of toner

S. no.	Physical character	Description	Result
1	pH	pH is recorded using pH meter.	5.8
2	Organoleptic characteristics	1. Colour	Yellowish

		2. Odour	Pleasant
3	Homogeneity	Visual inspection for appearance of any clog.	No clogs were found.
4	Viscosity	Viscosity is measured by using Brook field Viscometer.	5500
5	Skin irritation	When applied on skin cause irritation or not.	Non-irritable.
6	Stickiness	Does particles of Mist stick or not.	Not much sticky
7	Light exposure technique	Product is placed indirect sunlight in its packaging to check any discoloration occurs.	No discoloration seen.

Results and discussion

The final formulation was subjected to various phytochemical tests all the tests were performed according to every test standard procedure all the routes were recorded and found within standard range the pH viscosity, skin irritation, stickiness, temperature variation and stability were studied thoroughly and were within the range No any discoloration was found after light exposure to the formulation. The formulation was also effective to produce conditioning on the skin and non-irritant in nature. At last, the removability of toner was found to be easily removable.

CONCLUSION

The results from the spray toner formulation were very satisfactory. All the ingredients were procured fresh from the local market and they were economical as well as useful top. The purpose behind the toner formulation was to achieve the cooling and toning effect on the skin

was found to be satisfactory. Similarly, the intention behind formulating it is herbal face toner form was to ease in carrying the formulation and application whenever and wherever needed. And the studied formulation proved to be satisfactory from that perspective as well. After application, there was no irritability, rashes but, some cleansing effect was observed. It is suggested that the prepared formulation is physiochemically stable and possessed characteristics of a standard cosmeceutical formulation for skincare. The spray formulation gave a more effective form to this formulation because spraying smaller particles on the skin with a certain amount of force made the formulation penetrate the small pores of the skin in better way than any other fixes like gel or lotion.

REFERENCES

1. Chaudhari NP, Chaudhari NU, Chaudhari HA, Premchandani LA, Dhankani AR, Pawar SP. A review on herbal lipstick from different natural colouring pigment. *Indian Journal of Drugs*.2018; 6(3):174-9.
2. Dhawan D, Sharma S, Scholar D. Exploration of the nourishing, antioxidant and product development potential of beetroot (*Beta vulgaris*) flour. *International Journal of Health Sciences & Research* (Www. ijhsr. org). 2019; 9(6):280.
3. Esatbeyoglu T, Wagner AE, Schini-Kerth VB, Rimbach G. Betanin—A food colorant with biological activity. *Molecular nutrition & food research*. 2015Jan; 59(1):36-47.
4. Gerardi C, Albano C, Calabriso N, Carluccio MA, Durante M, Mita G, Renna M, Serio F, Blando F. Techno-functional properties of tomato puree fortified with anthocyanin pigments. *Food chemistry*. 2018Feb 1; 240:1184-92.
5. Kale R, Sawate AR, Kshirsagar R, Patil B, Mane R. Studies on evaluation of physical and chemical composition of beetroot (*Beta vulgaris* L.). *International journal of chemical studies*.2018; 6(2):2977-9.
6. Kadu M, Vishwasrao S, Singh S. Review on natural lip balm. *International Journal of Research in Cosmetic Science*. 2015; 5(1):1-7.
7. Fernandes AR, Dario MF, Pinto CA, Kaneko TM, Baby AR, Velasco MV. Stability evaluation of organic Lip Balm. *Brazilian Journal of Pharmaceutical Sciences*.2013; 49:2939.
8. Kukreja BJ, Dodwad V. Herbal mouthwashes-A gift of nature. *Int J Pharma Bio Sci*. 2012Apr; 3(2):46-52.

9. Gediya SK, Mistry RB, Patel UK, Blessy M, Jain HN. Herbal plants: used as a cosmetics. *J Nat Prod Plant Resour.* 2011; 1(1):24-32.
10. Shivanand P, Nilam M, Viral D. Herbs play an important role in the field of cosmetics. *International Journal of Pharm Tech Research.* 2010;2(1):632-9.
11. Kaul S, Dwivedi S. Indigeneous ayurvedic knowledge of some species in the treatmentof human disease and disorders. *International Journal of Pharmacy and Life Sciences (IJPLS).*2010; 1(1):44-9.
12. Basha BN, Prakasam K, Goli D. Formulation and evaluation of gel containing fluconazole anti fungal agent. *Int JDrug DevRes.*2011Oct; 3(4):109-28.
13. Sahar SA S, Manal MEM S. The effects of using color foods of children on immunity properties and liver, kidney on rats. *Food and Nutrition Sciences.*2012 Jun29; 2012.
14. Swati D, Manisha C, Manisha S, Sonia S. Preparation and evaluation of natural lipsticks from Bixaorellana seeds. *International Journal of Pharma and Bio Sciences.*2013; 4(3).
15. Ahmed JK, Salih HA, Hadi AG. Anthocyanins in red beet juice act as scavengers for heavy metals ions such as lead and cadmium. *International journal of science and technology.*2013Mar; 2(3):269-73.
16. Elbandy MA, Abdel fadeilMG. Stability of betalain pigments from red beetroot (*Betavulgaris*). *International Journal ofFood Science.*2008; 36:4960.
17. Kasparaviciene G, Savickas A, Kalveniene Z, Velziene S, Kubiliene L, Bernatoniene J. Evaluation of beeswax influence on physical properties of lipstick using instrumental and sensory methods. *Evidence-based complementary and alternative medicine.* 2016 Nov 23; 2016.
18. Kavitar RS, Rao KJ, Mishra D, Deshmukh GP, Prajapati R, Jadhao SY, Scholar PD. Effect of beetroot extract on colour and sensory quality of flavoured milk. *International Journalof Pure& Applied Bioscience.* 2017; 5(5):1177-82.
19. Marcazzan GL, Mucignat-Caretta C, Marina Marchese C, Piana ML. Unarevisiónde losmétodos para elanálisis sensorial de la miel. *Journal of Apicultural Research.*2018; 57(1):75-87.
20. Mereddy R, Chan A, Fanning K, Nirmal N, Sultanbawa Y. Betalain rich functional extract with reduced salts and nitrate content from red beetroot (*Beta vulgaris L.*) using membrane separation technology. *Food Chemistry.* 2017 Jan 15; 215:311-7.

21. Velasco MV, de Sá Dias TC, De Freitas AZ, Júnior ND. Claudinéia Aparecida Sales de Oliveira Pinto, Telma Mary Kaneko, André Rolim Baby, “Hair fiber characteristics and methods to evaluate hair physical and mechanical properties”. *Brazilian Journal of pharmaceutical sciences*.2009; 45(1):153-62.
22. Rizvi S, Raza ST, Ahmed F, Ahmad A, Abbas S, Mahdi F. The role of vitamin E in human health and some diseases. *Sultan Qaboos University Medical Journal*. 2014 May;14(2):e157