



Formulation and Evaluation of Herbal Vanishing Cream for Anti-Melanin Effect

Mr. Kunal Anil Suryawanshi¹, Miss. Bhagyashri Vijay Saindane², Mr. Shahid R. Quraishi³

¹(Masters in Pharmacy) MGV's Pharmacy College, Panchavati, Nashik

²(Masters in Pharmacy) K.B.H. Pharmacy College, Malegaon, Nashik

³MGV's S.P.H. Pharmacy College, Malegaon, Nashik

Email: kunalsuryawanshi12901@gmail.com

ABSTRACT:

The purpose of present study was to formulate and evaluate the herbal vanishing cream. Vanishing cream offers several advantages over other creams. Herbal vanishing creams have fewer side effects and they give a fairness look to the skin. Method carried out to prepare the herbal vanishing cream was very simple. Firstly, oil phase was prepared by mixing of stearic acid, potassium hydroxide, methyl paraben and propyl paraben after melting at 70°C. Secondly aqueous phase was prepared by mixing of alcoholic extracts of Turmeric powder, aqueous extracts of Liquorice powder, Tulsi leaf powder, Pomegranate juice, glycerin and water which were also heated at 70° C. Then aqueous phase was added into the oil phase at 70° C with continuous stirring. Now, once the mixing was completed it was allowed to come at room temperature all the while being stirred. Perfume was added at last just before the finished product was transferred to the suitable container. The formulation was evaluated as per the guidelines given and found good results

Key words: Vanishing cream, Tulsi, *Lavandula angustifolia*, *Coffea arabica*

Introduction:

Now a days, herbs are widely used as remedial agents because of their easy access at less cost. The herbs are used from traditional time for cleansing, beautifying and also the treatment of varied dermatological problems.

Creams:

In pharmaceutical practice creams are viscous, semisolid emulsion meant for external application or use. Usually contain water soluble base due to which they can be easily removed from skin. Generally, there are O/W type and W/O emulsified type of creams.

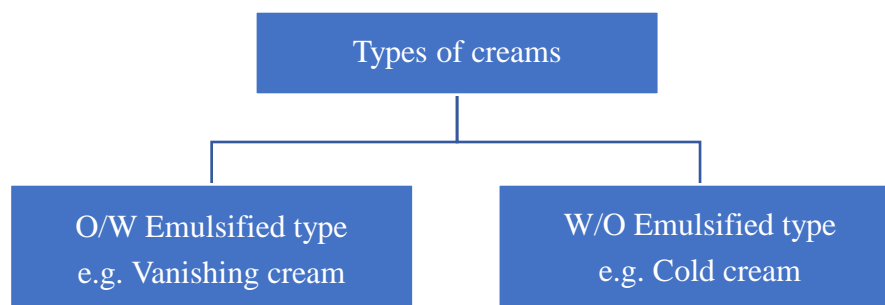


Chart No. 1

Description:

The skin is that the major part of the body however some common skin diseases are skin disorders, black head, wrinkles, dark circles, tan are seen in youngsters. According to Ayurveda, skin issues are usually due to environmental factors and free beauty radicals in blood. In Ancient times, the ladies were terribly acutely aware regarding their beauty and treat the skin issues through the medicated herbs like as- aloe Vera, Orange peel, rose, Turmeric⁽¹⁰⁾. The main benefits of herbal cosmetic are it is pure and doesn't have any side effects on the to skin and turn out glow on skin⁽⁵⁾. The various kinds of

skin Conditions are would like differing types of herbal skin cream because some creams don't seem to be suit for the particular type of skin ⁽⁶⁾. The vanishing cream increases the blood Circulation of veins of the skin and supply the required Nutrients to the skin for growth of recent cells and Healthy ^{(7) (8)}.

Even today, people particularly in rural areas and mountainous regions choose the natural remedies like plants extracts for varied cosmetics purposes like aloe Vera, Turmeric orange peel, aq. extract of green tea and liquorice, rose etc. Herbal cosmetics are the product that is used to purify and beautify the skin. The most advantage of using flavourer cosmetic is that it's pure and doesn't have any adverse effects on the human. People have rough skin and once they don't take enough care, then the skin turns dark due to overexposure to the sun, different pollutants etc. ⁽¹⁰⁾. In this article we've developed vanishing cream to whiten, lighten and brighten the skin naturally for men and women. This cream has natural skin lightening property and can be simply marked at laboratory scale ⁽¹¹⁾. Vanishing cream with natural constituents are made in very important constituents that are essential for the health and glow of the skin. These substances are tried to be useful for skin in many ways. They increase the circulation of the blood inside the veins of the skin, thereby increasing the liveliness of the skin.

A good vanishing cream should provide necessary nutrients to the skin, applied topically for the external purpose. It will be penetrating deep down the hypodermic tissues to gement the speed of sebum discharge from fat glands and fight the harmful bacterium present within disease of the skin lesion. The left-over marks of skin may be reduced by incorporation of curcumin and pomegranate juice herbal vanishing cream are today being employed on an oversized scale because of the varied edges of them over chemical-based cream. They're non-toxic, non-allergic and non-habit forming. They're natural in each facet, having larger shelf life they need no accessorial preservatives. They will be easily developed and hold on over a bigger span of your time Present analysis article deals with herbal vanishing cream for glowing skin by exploitation natural materials alcoholic extract of turmeric, aq. Extracts of green tea, coffee and liquorice , pomegranate juice. etc.

Herbal vanishing cream is simply applied on the skin and spread it gently without applying force and friction. The main constituents from cream like pomegranate, coffee, turmeric reaches to the veins and help to decrease the melanin production from the part of skin.

Herbal vanishing cream is primarily additives delivering some further benefits. Differing types of herbal vanishing creams are used for different types of skin. Herbal vanishing cream is helps to remove wrinkles, tan from skin, skin disease and dark circles. Additionally, increase the fairness and smoothness of skin. It additionally helps somebody to spice up their confidence. Piece of writing is that the most helpful and in means for achieving this purpose.

Aim:

The aim of this work is to formulate and evaluate a herbal vanishing cream for anti-melanin effect and for glowing skin by using natural ingredients.

Objective:

The main objective of this work is to formulate and evaluate a herbal vanishing cream for anti-melanin effect and for glowing skin by using natural ingredients in varying concentration, ingredients such as Liquorice, Turmeric, Cucumber, Pomegranate juice, Coffee, Green tea etc. Further this cream works as fairness expert by removing aging signs in daily life. It also contains nutritional value which provides nutrients to the skin.

Materials and Methods:

The crude drugs used in this study were procured from the nearby local area. Chemical constituents are extracted from all the ingredients used in these formulations by various process and methods. The following ingredients were used for the preparation of this polyherbal vanishing cream formulation.

Liquorice (Glycyrrhiza glabra):

Liquorice or licorice is the common name of glycyrrhiza glabra; the Liquorice plant is an herbaceous perennial legume native to Western Asia, North Africa, and south Europe. The main chemical composition of glycyrrhiza glabra is glycyrrhizin, glycyrrhetic acid, glabridin, isoliquiritin shows various activities. Like glycyrrhizin is a powerful antioxidant, glycyrrhiza glabra root, which is what you'll find as the key ingredient in our brightening serum. Glycyrrhiza glabra contain glabridin is act as UV fighting super ingredients.

In the formulation of herbal vanishing cream aq. Liquorice extract is used. The aqueous Liquorice extract was prepared by maceration process.



Fig 01: Licorice powder



Fig. 02: Aqueous extract of Licorice

Turmeric (Curcuma longa):

Turmeric is considered one of the most crucial skin whitening ingredients in Ayurveda. Turmeric also identified as *curcuma longa*, is an Ayurvedic skincare remedy used for over 4000 years now. The name turmeric derives from the Latin word *Terra merita* (meritorious earth), referring to the color of ground turmeric, which resembles a mineral pigment. Turmeric is principally applied to rejuvenate the skin. It is used to cure of skin disorder like wrinkles and black spot, and has also different properties like antibacterial, antiseptic and anti-inflammatory. Its best supply of blood purifier, mostly, it's employed in the treatment of disease of the skin because of its antiseptic and antibacterial properties that provide effects against pimples and breakouts to supply a youthful glow to your skin. It also reduces black spots dark circles and controlled the melanin production and the oily secretion by the sebaceous gland.

The various topical benefits of turmeric are in wounds, crush. Concentrated curcumin gel was applied every 5 min to the crushed fingers), Sunburns and photo-damaged skin.



Fig 03: Turmeric powder



Fig. 04. Alcoholic extract of Turmeric

Aloe-vera (Aloe Barbadensis miller):

The Aloe vera plant has been known and used for centuries for its health, beauty, medicinal and skin care properties. The name Aloe vera derives from the Arabic word "Alloeh" meaning "shining bitter substance," while "vera" in Latin means "true." 2000 years ago, the Greek scientists regarded Aloe vera as the universal panacea. The Egyptians called Aloe "the plant of immortality." Today, the Aloe vera plant has been used for various purposes in dermatology. the botanical name of Aloe vera is *Aloe Barbadensis miller*. It belongs to Asphodelaceae (Liliaceae) family, and is a shrubby or arborescent, perennial, xerophytic, succulent, pea- green color plant. It grows mainly in the dry regions of Africa, Asia, Europe and America. In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu.

The various benefits of the aloe vera is to provide moisturizing and antiaging effect. Aloe vera contains mucopolysaccharides and it also contain salicylic acid that possesses.



Fig 05: Aqueous extract of Aloe-vera

Pomegranate (Punica granatum):

The pomegranate (*Punica granatum*) is a fruit bearing deciduous shrub in the family Lythraceae, subfamily Punicoideae that grows between 5 and 10m (16 and 33 ft) tall. One of the pomegranate benefits for skin is that it acts like an antimicrobial. This tackle and treat acne, combats future breakouts, reduces scarring and soothes irritations. It also helps to balance out your skin oil level. A good exfoliation can do wonders for the face, and if you cannot find something that you absolutely like, just grind some pomegranate seeds, add some rose water to them and then apply them to the face in circular motions. Be gentle in your application and then wash your face with regular water when you are done. There are 3 types antioxidants like tannins, anthocyanin, ellagic acid. The other benefits of pomegranate are to prevent from sun damage, detox the skin, reduced wrinkle and anti-ageing activity.



Fig 06: Pomegranate juice

Coffee:

Caffeine is a naturally occurring methylxanthine alkaloid, with numerous molecular properties that make its application to the field of dermatology promising. A person can use it to exfoliate, treat acne, increase blood flow, and balance pH levels. Coffee is used for skin as below. Exfoliation: Coffee grounds make a great exfoliate. The grounds do not dissolve in water, which makes them good at scrubbing away dead skin cells. Caffeine has potent antioxidant properties. It helps protect cells against the UV radiation and slows down the process of photo aging of the skin.



Fig 07: Coffee powder



Fig. 08: Aqueous extract of coffee

Green Tea:

Green tea contains vitamin E that is known for its ability to nourish and hydrate the skin. It not only moisturizes the skin, but also brightens and repairs it. This ingredient helps to reverse sun damage and fades dark spots, pimple spots, and other skin irritations caused by environmental aggressors. Green tea is also anti-inflammatory, which can be helpful for people with acne-prone skin. Green tea contains polyphenols, which are plant compounds that have anti-inflammatory and antioxidant properties. This means that they can help reduce inflammation and protect the skin from damage caused by external culprits.



Fig 09: Green tea powder



Fig 10: Aqueous extract of green tea

Tulsi powder:

Tulsi benefits the skin by providing it with a deep cleansing agent. It not only thoroughly removes dirt and impurities but also the excess oil. If you have oily skin, then this aromatic herb is your best bet. Take a handful of tulsi leaves, crush them and add some water to make a paste. Overproduction of melanin, pollution and the harsh UV rays are the main causes of uneven tone or hyper pigmentation. But, the good news is that tulsi can effectively lighten your skin tone. Its detoxifying effects gives relief from pollution, heat, stress as well as certain skin conditions. Tulsi contains essential oils which help nourish and moisturize the skin and improve the skin complexion. To prepare a mask, mix together some tulsi leaves, gram flour and water. Apply the mixture all over your face and allow it to dry completely. Rinse with cool water. Repeat this regularly for effective results.



Fig 11: Tulsi powder

Lavender oil:

The Latin name for the lavender genus is *Lavandula*. The most commonly used lavender is a hybrid, lavandin, which is a widely used cross between two *Lavandula* species: *L. angustifolia* and *L. latifolia*. Lavender oil is used in cosmetics. It apply topically on the skin. It helps to reduce hyperpigmentation and lighten the skin. Lavender oil is also used to treat skin problems



Fig. 12: Lavender oil

Chemicals and Glass wares:

Sr. No.	Glass wares
1	Soxhlet Apparatus
2	Beaker
3	Thermometer
4	Measuring cylinder
5	Funnel and stirrer
6	Water bath

Sr. No.	Chemicals
1	Ethanol
2	Stearic acid
3	Potassium hydroxide
4	Borax
5	Glycerin
6	Lavender oil
7	Methyl parabens

- **Formulation of Vanishing Cream: (for 10gm cream)**

Table no: 01

Sr. No.	Name of ingredients	Quantity Given	Quantity Taken	Role of ingredients
1	Liquorice extract	2.00%	50mg	Skin whitening agent
2	Turmeric extract	1.50%	30 mg	Lightens Hyperpigmentation
3	Pomegranate extract	1.00%	25mg	Anti-tanning activity
4	Coffee extract	1.20%	15mg	Anti-tanning activity
5	Green tea extract	1.50%	30mg	Photo protective
6	Tulsi extract	1.50%	30mg	Antibacterial
7	Aloe-Vera extract		25mg	Moisturizing, Photo protective
8	Lavender oil	0.3-10%	20mg	Lighten hyperpigmentation
9	Honey	1%	10mg	Moisturizing, skin brightening
10	Stearic acid	24%	4.8gm	Base
11	Potassium hydroxide	1%	0.2gm	Buffering agent
12	Borax	2%	2gm	Emulsifier
13	Glycerin	10%	5ml	Humectant
14	Methyl Paraben	0.2%	0.02gm	Preservative

Method of preparation:

Two beakers were taken and labelled it as A and B

I) Preparation of oil phase

- 1) Stearic acid was taken into beaker A and this mixture was melted at 70°C temperature.
- 2) vitamin-E oil was added in beaker A.

II) Preparation of aqueous phase

- 1) Potassium hydroxide and borax and water were taken in another beaker (B).
- 2) Glycerin was added in the beaker B and heated this mixture at 70°C temperature.

III) Addition of aqueous phase to oil phase

- 1) The aqueous phase was added to the oil phase with continuous stirring at 70°C temperature.
- 2) Now once the transfer was completed it was allowed to come at room temperature, all the while being stirring.
- 3) Perfume (0.5%) was added at last just before the finished product was transferred to suitable container i.e. at lower temperature. Then cream was evaluated for various parameters.

Preparation of Extracts:

1) Preparation of aqueous phase:

- a) Aq. Liquorice extract
- b) Aq. Coffee extract
- c) Aq. Green tea extract
- d) Aq. Tulsi powder

Above ingredients were weighed and added the water in it and heated it for 30min. After heating the mixture was cooled, filtered it and collected the extract in separate beakers.

2) Preparation of alcoholic extract of Turmeric:

Turmeric (40gm) was taken into RBF and 95ml of ethanol and 5ml of water were added to it.

Then RBF was connected with Soxhlet apparatus. Then the mixture was heated at temperature of 70°C till maximum exhaustion of the drug. After that filtered the mixture and used it for formulation.



Fig 14. Soxhlet extraction of curcumin

- **List of Instruments:**

1. pH Meter
2. Viscometer
3. Weighing Balance
4. Hot Air Oven
5. Stage Microscope

6. Soxhlet Apparatus

Evaluation of Vanishing Cream:**1. Morphological Evaluation:**

Some important morphological evaluation parameters are colour, odour, appearance, texture, smoothness etc. it shows the external characters of the formulation.

Table no: 03

Sr. No.	Parameters	Observations
1	Appearance	Smooth
2	Colour	Light yellow
3	Odour	Pleasant
4	Texture	Smooth
5	Smoothness	Smooth

2. Determination of pH:

Accurately weighed 2 g of the sample was dispersed in 30 ml of water. The pH of the emulsion was determined at 27°C using digital pH meter.

Table no: 04

Sr. No.	Parameter	Observation
1	pH	6.8(Near to Neutral)

3. Homogeneity:

It was found that the cream was homogeneous and smooth and consistent in nature.

4. Emolliency:

After application, the cream residue was not found on the skin surface.

5. Type of smear:

It was found that the cream produced non-greasy film on the skin surface.

6. Viscosity:

- The viscosity of cream was determined by Brookfield viscometer.
- Model number = DV-II+ pro
- Measurement unit = Centi-poise or poise.
- The spindle used to measure the viscometer is Spindle number 07(RV-07) at 50 rpm.
- The % Torque was found to be 14% .
- The viscosity of cream was found to be **26401cps or 2.6 poise**.



Fig.15 Brookfield Viscometer

7. Determination of spread ability:

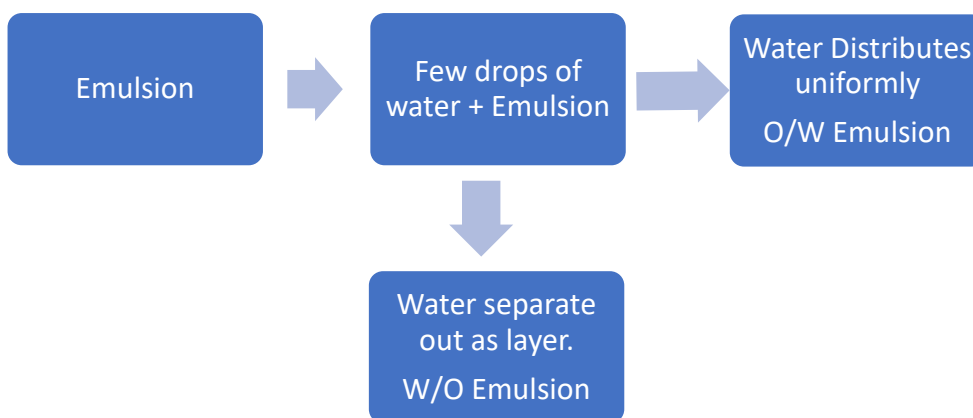
Cream base should spread easily without too much drag and should not produce greater friction in the rubbing process. Spread ability was calculated using the spread ability apparatus made of wooden board with scale and two glass slides having two pans on both sides mounted on a pulley.

Firstly, taken two slides and 1gm sample was applied in between two slides and they were pressed together to obtain uniform film thickness by applying 100 gm of weight for 5 minutes. The time at which the cream is completely spread up to the side end of slide, the time is noted and the spread ability was calculated by using formula:

$$S = m \times \frac{L}{T}$$

Where, S – Spread ability, m- Weight tied to upper glass slide, L- Length moved on a glass slide, T- Time taken.

8. Dilution test:



Observation: Water Distributes uniformly: O/W type of Emulsion

9. Dye solubility test:

This test is used to identify the type of emulsion. Water soluble dye mixed with emulsion. If it becomes red, it means that it is O/W type and vice versa.

Observation: Emulsion became red: O/W type of emulsion

Table no: 05

Sr. No.	Physical parameters	Observation
1	Appearance	Light yellowish
2	pH	6.8 (Near to Neutral)
3	Homogeneity a) By Visual b) By touch	Homogeneous, smooth and consistent
4	Emolliency	No residue left on skin after application.
5	Type of smear	Non- greasy
6	Viscosity	26401cps
7	spread ability	Easily spreadable, 9.33 g.cm/sec
8	Dilution test	O/W type of emulsion
9	Dye solubility test	O/W type of emulsion

10. Irritancy test:

Marked an area (1sq. cm) on the left - hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, were checked if any for regular intervals up to 24 hrs and reported. This formulation is used for external surface. The prepared formulation is showing the absence of Irritation, redness, and swelling during irritancy studies.

Table no: 06

Sr. No.	Evaluation	Observations				
		Day 01	Day02	Day03	Day04	Day05
1	Irritant	Slight irritant	No	No	No	No
2	Erythema	No	No	No	No	No
3	Edema	No	No	No	No	No

11. Stability studies:

The prepared formulation was required for testing of stability by storing at different temperature conditions for period of one month, temperature conditions like, room temperature and at 40°C and were evaluated for physical parameters like colour, odour, pH and consistency etc.

Table no: 07

Sr. No.	Parameters	Observations					
		Room Temperature			38°C – 42°C		
		Batch no.01	Batch no.02	Batch no. 03	Batch no.04	Batch no.-05	Batch no.06
1	Colour	No change	No change	No change	No change	yellowish	Light yellowish
2	Odour	No change	No change	No change	No change	No change	No change
3	Smoothness	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth
4	pH	6.92	6.97	6.89	7.19	7.01	7.01
5	Texture	Slightly smooth	Smooth	Smooth	Smooth	Smooth	Smooth



Standard Cream VS Formulated Cream



Before Application

During Application

After Application

Results of Vanishing Cream

Result and Discussion

1. Physical Parameter:

The different formulation of vanishing cream was prepared and evaluated for physical parameters. The colour of formulation was light yellowish in colour. The odour of prepared formulations was good acceptable which is desired as cosmetic formulations. The pH of all formulations lied near to neutral range i.e. in the range of 6 to 7 pH.

2. Irritancy test:

The results of irritancy were shown in table no. 6. The formulation F1 showed mild irritation because of presence of turmeric powder. The formulation which was prepared by lowering the concentration of turmeric and another formulation do not show redness, edema, inflammation and irritation during irritancy studies. This formulation was found safe to use for skin.

3. Stability studies:

Stability studies showed in table no. 7. There was observed slight change in colour and pH of formulation which was studied at room temperature and at accelerated temperatures i.e. 38 to 48°C temperature and no change were observed in odour.

Conclusion:

Natural remedies are the simplest treatment of any illness, because these are safer than the artificial ones. At a time, people want treatment for varied skin issues without side effects, thus natural remedies are most suitable choice for this. The herbal vanishing cream prepared was applied on the skin to maintain the elasticity of the skin, remove adhered dirt particles and to improve the blood circulation. It is applied for the treatment of inflammatory diseases, marks, and provides a soothing, calming and skin whitening effect on the skin. The natural vanishing cream are used for controlling premature aging to the skin, wrinkles, fine lines and loosing of skin. It will give natural skin tone once using this. It's a really good combination of herbal vanishing cream containing naturally available ingredients like turmeric, aloe vera, Liquorice, coffee, green tea, pomegranate, tulsi and lavender oil.

Acknowledgment:

We are very thankful to our Principal, Dr. S. R. Tambe and Dr. S. K. Mahajan, Vice Principal of our MGV'S S.P.H College of pharmacy Malegaon for their guidance and motivation for doing this project. We are one of those fortunate students whose path has been enlightened by the expertise and guidance by Mr. Rashid Raza Sir and Mr. S.R. Quraishi Sir. We are indebted to them for the co-operation and encouragement. The project could not have been completed without the significant help, motivation and advice from all faculty members of MGV's S.P.H. College of pharmacy, Malegaon. We also very much appreciate the co-ordination and interest taken by the Lab technician Avinash Shewale Sir and Lab attendant Satish Bhandari Sir, Department of Pharmacognosy, librarian and all supporting staff and K.B.H College of Pharmacy Malegaon. We express our sincere thanks to researchers, publishers and authors of different books whose publication have helped us for doing this project. We express our sincere deep gratitude to our parents and colleagues for their love, trust, support and for bearing all kinds of stress.

Thanking You All!

References:

- 1) Mohd. Fahaduddin, Mohd. Kaleem Ullah, Mohd. Aijz Ahmed, Sana Samreen, Hafsa Hbeeb department of pharmaceutics, preparation and evaluation of polyherbal vanishing cream of ethanolic extract of crude drugs, International journal of applied pharmaceuticals science and research volume 4 issue 4 oct. 2019.
- 2) M.B. Bhaltadak, H.A. Navthale, R.R. Thenge, S.A. Shinde, V.S. Adhav, Formulation and comparative standardization of ayurvedic skin cream, Indo American journal of pharmaceutical research pg.no.- 1720-1724.
- 3) Naveed Akhtar, Haji M. Shoaib Khan, Amna Iqbal, Barkat Alikhan, Sajid Bashir Glycyrrhiza glabra extract cream, effect on skin pigment melanin, International conference on Bioscience, Biochemistry and Bioinformatics (ICBBB2011).
- 4) Stephen HSU- Review of effect of green tea on the skin, Journal of American academy of Dermatology July 2005 p.no.-1052-1053.
- 5) Ashwini S. Dhase, Somishawar S. Khadbadi and Shewta S. Saboo, Formulation and Evaluation of vanishing herbal cream of crude drug American journal of ethanomedicine.
- 6) Indian Pharmacopoeia Edition2014, General information about Tulsi p.no.3274-3275
- 7) Indian Pharmacopoeia Edition2014, General information about vitamin-E (Tocopherol acetate) p.no. 2882-2883
- 8) Duangjai A.Utsintong M, Saokaew, coffee (Coffee arabica L.) Pulp extracts as a potential source of Whitening Agents

- 9) Susanne M. Henning Jieping Yang Ru-poo Lee, Jianjun Huang, pomegranate juice and extract consumption increases the resistance to UVB induced National library of medicine National center for biotechnology information.
- 10) Hima Gopinath, Kaliaperumal Karthikeyan department of dermatology, turmeric Condiment cosmetic & Cuse, Reviews article published in 2018.
- 11) Silvia M.F. Bessada, Rita C. Alves and M. Beatriz P.P. Oliveria, Coffee silverskin: A Review on potential cosmetic application.
- 12) Pauline McLoone, Afolabi Oluwadun, Mary Warnock and Lorna Fyfe, Honey: A therapeutic agent for disorders of skin, Central Asian Journal of Global Health.
- 13) Julia Scherer Santos, Guilherme Diniz Tavares and Thai's Nogueira Barradas, vitamin E and Derivative in skin Health Promotion, (Reviewed), 2021
- 14) Aida zarfeshany, sedigheh Asgary, and shaghayegh Hagbjoo Javanmard, Potent health effect of pomegranate (PMC) central, 2014
- 15) Laura Vollono, Mattia Falcopi Roberta Gaziano potential of Curcumin in skin Disorders (PMC Pub central) potential of curcumin. in skin disorders 2019 national library of medicine national center for biotechnology information.
- 16) Prity Rathee, Sunil Kumar, Savita S. Yadav, skin hyperpigmentation and its treatment with herbs: an alternative method, Published: 2021 future Journal of pharmaceutical sciences.
- 17) Mohammad Abid Keen and Iffat Hassan, vitamin E in dermatology, PMID 2016, Indian Dermatology Online Journal.
- 18) Sharmeen Jugreet, Fawzi M Mahomoodally, Gokhan Zengin, Filippo Maggi. Essential oils as Natural Sources of Fragrance and Cosmeceuticals, 2021 (lavender oil) MDPI Journal. Essential Oils as Natural Sources of Fragrance Compounds for Cosmetics and Cosmeceuticals.
- 19) Sujit S. Kakade, Prashant H. Khade, M.S. Trusha, Y. Puttevar, Book of dosage form design edition 2016 p.no.3.1-3.2
- 20) Sujit S. Kakade, Prashant H. Khade, M.S. Trusha, Y. Puttevar, Book of dosage form design edition 2016 p.no.3.21-3.22
- 21) Dr. Zeeshan Afsar, Book of essential of Herbal drug technology Edition 2020, Pee-Vee Publication p.no.53,57,59
- 22) Sukhbir Kaur Herbal drug technology Pee-vee publication Edition 2020 p.no. 56-57
- 23) Sukhbir Kaur Herbal drug technology Pee-vee publication Edition 2020 p.no. 75-76
- 24) Practical handbook outlines the formulation and production of cosmetics, Book of modern cosmetics, Universal publishing corporation p.no.-161-163.
- 25) Dr. E.G. Thomasson Practical handbook outline the formulation and production of cosmetics, Book of modern cosmetics, Universal publishing corporation p.no.-164-173.
- 26) Dr. Anup K. Chakrabarty, Sushma M. Rathod practical in pharmacognosy and phytochemistry-II Pee-vee publication p.no.- 68,69 and 71.
- 27) P.P. Sharma. Cosmetic Formulation. Manufacturing and Quality Control, Vandana Publication, 4th ed, 2008, P.NO - 167-169
- 28) P.P. Sharma. Cosmetic Formulation. Manufacturing and Quality Control, Vandana Publication, 4th ed, 2008, p.no.- 125.
- 29) Mukta M. Abhyankar, Supriya G. Jagtap Natural Drug technology Tech-Max publication, 2016. P.no.-8.4
- 30) Mukta M. Abhyankar, Supriya G. Jagtap Natural Drug technology Tech-Max publication, 2016, P.no.-8.4-8.5
- 31) Mukta M. Abhyankar, Supriya G. Jagtap Natural Drug technology Tech-Max publication, 2016, P.no.-8.6-8.7
- 32) C.K. Kokate. A.S. Gokhale, S.B. Gokhale, Cultivation. of Medicinal plants of Liquorice , 5th edition, 2008, P.NO -7.11-7.14
- 33) C.K. Kokate. A.S. Gokhale, S.B. Gokhale, Cultivation. of Medicinal plants of Aloe, 5th edition, 2008, P.NO -7.38-7.40
- 34) C.K. Kokate. A.S. Gokhale, S.B. Gokhale, Cultivation. of Medicinal plants, 5th edition, 2008, P.NO -7.87-7.89
- 35) Ashawat M.S. Banchur M. 2009, Herbal Cosmetic trends in Skin care of Formulation S.L. Pharmacognosy, vol(2), P.No82-90