



PREPARATION AND EVALUATION OF MOISTURIZING CREAM

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ABSTRACT:

Moisturizing creams play a crucial role in skincare by enhancing hydration and promoting skin health. This study aimed to formulate a novel moisturizing cream using natural ingredients known for their skin-beneficial properties. The cream was prepared using aloe vera extract, glycerine, castor oil, cucumber extract, rose water, and vitamin c capsules. Each ingredient was selected for its moisturizing, soothing, and antioxidant properties, which are essential for maintaining skin hydration and combating oxidative stress. The formulation process involved blending these ingredients in precise proportions to achieve a stable and effective cream. Physicochemical characterization, including pH, viscosity, spreadability, and stability tests, was conducted to assess the quality and shelf-life of the cream. Furthermore, the cream's moisturizing efficacy was evaluated through hydration studies using instrumental techniques and sensory evaluations by human volunteers. Results demonstrated that the formulated cream exhibited desirable characteristics such as suitable pH, optimal viscosity for easy application, good spreadability, and stability over time. Moreover, it significantly improved skin hydration levels compared to baseline measurements, as evidenced by instrumental assessments and positive feedback from users. Overall, this study highlights the potential of natural ingredients in skincare formulations and underscores the importance of effective moisturizing creams in maintaining skin health and beauty.

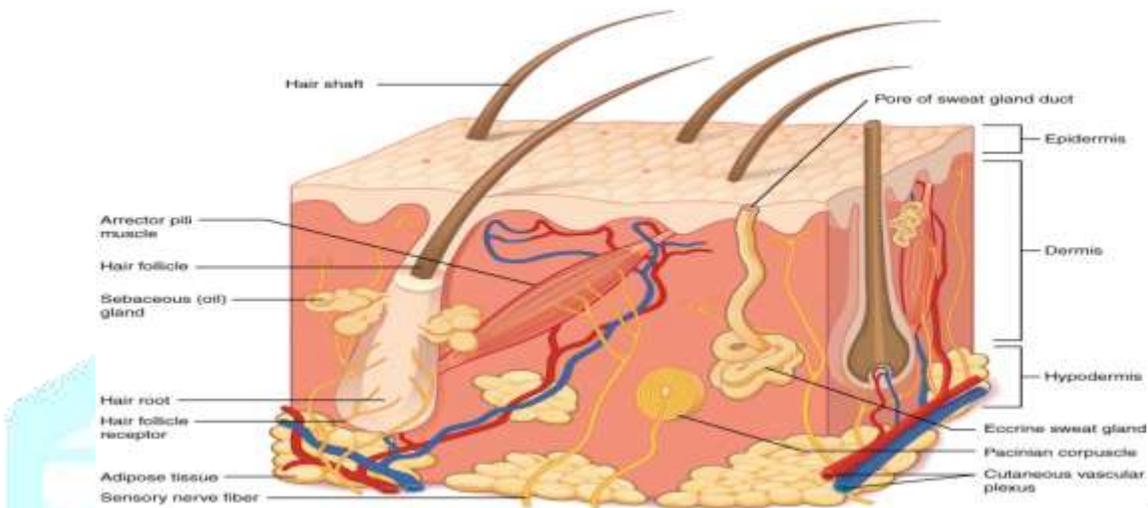
Keywords: Herbal, moisturizing, Hydrating, Nourishing, Skin-rejuvenating, Soothing

INTRODUCTION:

The word "cosmetics" comes from the Greek verb "kosmestikos" which means "to beautify". Since then, any substance used for aesthetic enhancement or advertising is called a cosmetic. The term "cosmetics" originates from ancient Rome. The term "cosmetics" originated from the fact that they were usually made by female slaves, "cosmetics". Cosmetics are used to improve appearance. Make-up has been used for millennia. The Egyptians are known to be the first people to use makeup to enhance their appearance. Back then, makeup simply consisted of eye color or body color. The Ayurvedic system of medicine was one of the most important systems that uses herbal plant and extract of the treatment of management of various Diseases state. Aloe vera gel contains no Antraquinone. Which are Responsible for the strong laxative affects of aloes. However, total leaf extract may

contain Antraquinone. Aloe vera contains 75 potentially active constituents like Vitamines, Enzymes, Minerals, Sugars, Saponis, Amino acids. Amla, Synonyms Emblica Officinalis. Family- Euphorbiaceae. Which also known as Indian gooseberry. It contains Vitamin C considered important to slow the ageing radicals. Vitamins C is a Scavenger of free radicals which break them down. And also contain Amino acid like glutamic acid, proline, And Aspartic acids etc. Protein, Minerals. Amla having show Antioxidant, Anti-cancer, Antibacterial Activity. Aloe Vera is herbal ingredient, Aloe Vera also relieves itching and also helps in the treatment of blisters. Aloe contains vitamins B1, B2, B6, B12 and C, which soothe and make the skin pleasant.

PHYSIOLOGY OF HUMAN SKIN :



Epidermis : The epidermis is the most superficial layer of the skin and is composed of stratified keratinised squamous epithelium, which varies in thickness in different parts of the body. It is thickest on the palms of the hands and soles of the feet. There are no blood vessels or nerve endings in the epidermis, but its deeper layers are bathed in interstitial fluid from the dermis, which provides oxygen and nutrients, and drains away as lymph.

Dermis : The dermis is tough and elastic. It is formed from connective tissue and the matrix contains collagen fibres interlaced with elastic fibres. Rupture of elastic fibres occurs when the skin is overstretched, resulting in permanent striae, or stretch marks, that may be found in pregnancy and obesity. Collagen fibres bind water and give the skin its tensile strength, but as this ability declines with age, wrinkles develop. Fibroblasts, macrophages and mast cells are the main cells found in the dermis. Underlying its deepest layer there is areolar tissue and varying amounts of adipose (fat) tissue.

Subcutaneous gland: These consist of secretory epithelial cells derived from the same tissue as the hair follicles. They secrete an oily substance, sebum, into the hair follicles and are present in the skin of all parts of the body except the palms of the hands and the soles of the feet. They are most numerous in the skin of the scalp, face, axillae and groins. In regions of transition from one type of superficial epithelium to another, such as lips, eyelids, nipple, labia minora and glans penis, there are sebaceous glands that are independent of hair follicles, secreting sebum directly onto the surface.

CREAMS :

Creams are the topical preparations which can be applied on the skin. Creams are defined as “viscous liquid or semi-solid emulsions of either the oil-in-water or water-in-oil type” dosage forms which consistency varies by oil and water. Creams are used for cosmetic purposes such as cleansing, beautifying, improving appearances, protective or for therapeutic function. These topical formulations are used for the localized effect for the delivery of the drug into the underlying layer of the skin or the mucous membrane. These products are designed to be used topically for the better site specific delivery of the drug into the skin for skin disorders. Creams are considered as a pharmaceutical product as they are prepared based on techniques developed in the pharmaceutical industry; unmedicated and medicated creams are highly used for the treatment of various skin conditions or dermatoses. Creams can be ayurvedic, herbal or allopathic which are used by people according to their needs for their skin conditions. They contain one or more drugs substances dissolved or dispersed in a suitable base. Creams may be classified as o/w or w/o type of emulsion on the basis of phases. The term ‘cream’ has been traditionally applied to semisolid formulated as either water-in-oil (e.g.: cold cream) or oil in-water (e.g.: vanishing cream).

TYPES OF SKIN CREAMS :

They are divided into two types:

Oil-in-Water (O/W) : creams which are composed of small droplets of oil dispersed in a continuous phase, and an emulsion in which the oil is dispersed as droplets throughout the aqueous phase is termed an oil-in water (O/W) emulsion.

Water-in-Oil (W/O): creams which are composed of small droplets of water dispersed in a continuous oily phase. When water is the dispersed phase and an oil the dispersion medium, the emulsion is of the water-in oil (W/O) type.

CLASSIFICATION OF CREAMS : Types of creams according to function, characteristic properties and type of emulsion:

1. Make-up cream (o/w emulsion):

- a) Vanishing creams.
- b) Foundation creams.

2. Cleansing cream, Cleansing milk, Cleansing lotion (w/o emulsion)

3. Winter cream (w/o emulsion):

- a) Cold cream or moisturizing creams.

4. All-purpose cream and general creams.

5. Night cream and massage creams.

6. Skin protective cream.

7. Hand and body creams.

Advantages:

1. The main advantage of herbal moisturizer is that it enhances the Skin Dryness without any side effects.
2. It reduces the further chances of skin problems.
3. This moisturizer helps to fight wrinkles
4. Less greasy compared to other ointments
5. Moisturizing help your skin stay young.
6. With small quantity they are very effective as compared to synthetic cosmetics

Disadvantages:

1. Herbal drugs have slower effects as compare to Allopathic dosages form Also it requires long term therapy.
2. Manufacturing process are time consuming and complicated.
3. Most of herbal drugs are not easily available.
4. They are difficult to hide taste and odor.
5. Less stable as compare to ointment.

The benefits of moisturizing cream are:

- Moisturizing cream is a water-oil emulsion suitable for the winter season.
- Moist cream provides a longer contact time at the time of use compared to other semi-solid dosage forms or formulations.
- They give the skin elegance and it is not so greasy.
- Thanks to the oil phase, it softens the skin.³
- The function of a moisturizing cream is to restore moisture to dry skin.
- It can be used to remove impurities from the pores and also to cool the body.
- It is easy to wash off with water.
- They are non-irritating when applied to the skin.

Drug and profile :

1)Aloe vera:

Aloe Vera Aloe Vera is a sensitized or very short stem plant that grows to a height of 60-100 centimeters. The leaves are thick and fleshy, grey green. Aloevera is a species of aloe known primarily for its medicinal properties. Aloe species are common on the continents of Eastern Europe and spread almost everywhere in the world.

Synonyms: Aloe, Musabbar, Kumari.

Biological source: Aloes are the dried juice obtained by transversely cut leaves of various species of

- *Aloe barbedensis* Miller,
- *Aloe perryi* Baker ,
- *Aloe spicata* Baker and *Aloe Africana* Miller.

Family: Liliaceae

Chemical constituents: Anthracene glycosides, Barbaloin, Isobarbaloin, aloemodin and aloesone. Resins (resinotannol + cinnamic acid or coumaric acid). Also contains Aloetic acid, homonataloin etc.

Uses : Purgative, Laxative , Used for Ulcers and burns, Aloe found many uses in cosmetics nowadays like, Hair conditioner, Hand and body lotion, Moisture base cleanser, Shampoo and facewash



2) Cucumber:

Cucumber are great for dehydrated skin due to its hydrating properties and oily skin due to its astringent properties. They are also suitable for sensitive or irritated skin. Fresh cucumbers can be used directly on your skin to tighten it. Cucumber extract is anti-inflammatory and soothes skin. It may also help with dark circles and puffiness around the eyes. Rich in minerals like potassium, it may help firm skin which can help reduce some of the signs of aging.

Synonym: cucumber, Khira

Biological source : it is fruit which is obtained from plant *cucumis sativus*.

Family: cucurbitaceae

Chemical constituents : water (95%) and small amounts of protein (0.6%), lipids (0.1%) and carbohydrates (2.2%).

Uses :

Hydration, Cancer removal, Bad breath problem, Arthritis and gout pain, Diabetics and hypertension, Weight loss, Hair and nail growth.

3) Rose water:



- Rose water can calm your skin
- It has anti aging property
- Rose water makes great facial mist

- It can be used to create fragrance
- Rose water is a powerful ingredient in a facial treatment
- May hydrates the skin
- May help balance skin pH level

4) Glycerine:



Glycerine is a humectant, which means it attracts moisture to the skin. It helps to keep the skin hydrated by drawing water from the air into the skin's outer layer. Glycerine also forms a protective layer on the skin, preventing moisture loss and keeping the skin soft and supple.

5) Vitamin C tablet:

Vitamin C is a powerful antioxidant that helps to brighten the skin, fade dark spots, and even out skin tone. It also boosts collagen production, which helps to firm and plump the skin, reducing the appearance of fine lines and wrinkles. Vitamin C oil can also protect the skin from environmental damage and UV radiation.

6) Castor Oil:

Biological source :derived from castor bean plant seeds, belonging to family Euphorbiaceae .

Chemical constituents : Approximately 90% of the fatty acid content in castor oil is made up of ricinoleic acid.

Castor oil is a vegetable oil pressed from castor beans. It is a colourless or pale yellow liquid with a distinct taste and odour. Castor oil's anti-inflammatory properties make it an excellent massage oil for arthritic joints, sore muscles, and inflammation of your nerves. The ricinoleic acid that castor oil contains possess the ability to boost anti-inflammatory properties within the body and is considered a safe remedy for arthritis pain.



Material and methodology:

Sr. No.	Ingredients	F1	F2	F3
1	Aloe vera gel	30 ml	25 ml	20 ml
2	Cucumber extract + glycerin	10 ml	15 ml	20ml
3	Castor oil	1ml	1 ml	1 ml
4	Rose water	2 ml	2 ml	2 ml
5	Vitamin C tablet	2 tablet	2 tablet	2tablet

Methodology:

1. The moisturizer was prepared by using Aloe vera , Cucumber , Glycerin , castor oil , Rose water , Vitamin E capsule , Vitamin C tablet, etc.
2. Different slab techniques and methods were used to mix all different kinds of excipients, particularly herbal extracts.
3. By using extraction, we filtrate pure gel of Aloe vera from Aloe vera leaves and by using slab techniques we developed three different batches of our herbal cream.
4. The various types of batches designed as F1, F2, & F3.
5. The formulation as well as evaluation for each batch done separately.
6. By using parameters like pH, Viscosity, Irritancy, Phase separation etc. we evaluated all formulations of herbal cream .

Formulation development :

1. In order to create a herbal cream, we must first gather various glassware items, such as beakers, spatulas, measuring cups, petri dishes, or other tools, such as stirrers and mixers.
2. After that we have to extract pure Aloe vera gel from leaves of Aloe barbadensis miller.
3. Take 10 min distilled water in a beaker and placed into the water bath. When water is start to warm, add agar agar into it until completely dissolve. after which three separate formulations, designated F1, F2, and F3, must be made.
4. For F1, we used 30 ml of aloe vera gel, 10 ml of cucumber-glycerin extract, 2ml Rose water, 1 ml of castor oil, tablets of vitamin C.
5. For F2, we used 25 ml of aloe vera gel, 15 ml of cucumber-glycerin extract, 2ml Rose water, 1 ml of castor oil, 2 tablets of vitamin C.
6. For F3, we used 20 ml of aloe vera gel, 20 ml of cucumber-glycerin extract, 1ml castor oil , 2ml Rose water, 2 tablets of vitamin C.

Evaluation Test For Herbal Moisturizing cream:

- 1) **Physical evaluation:** This mostly serves to evaluate the cream's colour, odour, texture, and stability.
- 2) **Viscosity:** Basically, the purpose of this test is to determine how the ingredients in cream will behave in real life. Its primary purpose is to evaluate efficacy.

3) Washability: The quality of cream is also tested using this method. In this first of all we have to add small amount of cream which was applied on the hand. We must then wash with tap water after that.

4) Irritancy: The cream was applied on left hand dorsal side surface of 1 sq.cm and observed in equal intervals up to 24hrs for irritancy, redness and edema. The did not produce any irritation or redness on skin.

5) Spreadability: The spread ability test showed that the formulated cream has good spreadable property.

6) Greasiness: This test is mostly used to determine whether cream is greasy or oily in nature. We can conclude from the results that none of the formulations were greasy.

7) pH test: Basically, this is talking about how acidic different compounds are. The pH (cream)) range is often between 4 and 7. Either a digital pH metre or pH paper was used to measure the results of this test.

Procedure:

1. Before use, rinse the electrode with distilled water.
2. Calibrate the pH meter by using buffer solutions of 4.01, 7, and 10.01.
3. The electrode was transferred to the test solution.
4. The pH was recorded for 3 samples respectively.

8) Phase separation: Generally, this test is checked every 24 to 30 hours. For this, cream must be heated to between 30 and 80 °C in a covered container. Keep this mixture out of the light.

Result and Observations:

After formulation and evaluation of herbal moisturizing cream, we observed following various types of results –

1. Result of physical evaluation:

Sr.no.	Parameters	F1	F2	F3
1	Colour	Light Green	Light Green	Light Green
2	Odour	Organic	Organic	Organic
3	Texture	Smooth	Smooth	Smooth
4	State	Semisolid	Semisolid	Semisolid

2. Result of Irritancy, pH, Phase Separation:

Sr.No.	Formulations	Irritancy	pH	Phase Separation
1	F1	Nil	5.7	No phase separation
2	F2	Nil	5.2	No phase separation
3	F3	Nil	5.6	Phase separation

3. Result of washability ,Greasiness, spreadability:

Sr.no.	Formulations	Washability (seconds)	Greasiness	Spreadability
1	F1	8	No greasy	Spreadable
2	F2	9	No greasy	Spreadable
3	F3	12	Slightly greasy	Spreadable

Discussion:

When various evaluation criteria were applied to created moisturizer compositions, the findings fell within the parameters indicated in the previous result. All of the formulations had a smooth texture and a yellowish colour. The pH of the formulation varied from 4.9 to 6.5. The formula's washability varies from 8 to 12 seconds, as does its viscosity. The formulations are proven to be less oily and to not irritate skin .

Conclusion :

In conclusion ,herbal moisturizing cream offer a natural and gentle solution to moisturize and nourish the skin. Thanks to botanical ingredients, they effectively retain moisture without harsh chemicals, so they are suitable for sensitive skin types. Using the power of nature, creams offer a refreshing alternative to achieve soft, supple and rejuvenated skin. Aloe Vera Facial Moisturizer offers a natural and soothing solution to moisturize and nourish the skin. Thanks to its moisturizing and anti-irritant properties, it can be a useful addition to skin care routines, especially for those with sensitive or dry skin. Regular use can make your skin look healthier and brighter. Moisturizing face cream with cucumber extract provides a refreshing and moisturizing experience for the skin. Its natural properties help to soothe and rejuvenate, making it an excellent choice for maintaining healthy and glowing skin. Plant-based moisturizer with vitamin C oil provides a powerful blend of antioxidants and nourishing ingredients to rejuvenate skin. Thanks to the combined benefits of vitamin C , it protects against environmental stressors while boosting collagen production and overall skin health. Adding this cream to your skin care routine can make your skin look brighter, smoother, and younger. Herbal moisturizer with rose water, glycerin combines the moisturizing properties of rose water, the moisture-locking properties of glycerin and the skin nourishing properties. jojoba oil to create an effective formula to moisturize and soften the skin. Thanks to natural ingredients, this cream offers a gentle and effective solution to maintain healthy and slim skin, leaving it fresh and rejuvenated.

5. Reference:

- [1]. MV Vishvanathan, PM Unnikrishnan, Kalsuko Komatsu, Hirotohi Fushimi. A brief introduction to Ayurvedic system of medicine and some of its problems. *Indian J Traditional Knowledge* 2003;2:159-69.
- [2]. Newall CA, Anderson LA, Phillipson JD. *Herbal medicines. A guide for health-care professionals*. London: The Pharmaceutical Press, 1996.
- [3]. Atherton P. Aloe Vera revisited. *Br J Phytotherapy* 1998; 4: 176-183.
- [4]. Krishnaveni M, Mirunalini S. Therapeutic potential of *Phyllanthus emblica* (amla): The Ayurvedic wonders. *J Basic Clin Physiol Pharmacol* 2010; 21:93-105.
- [5]. Patel SS, Goyal RK. *Embllica Officinalis Geart: A Comprehensive Review on Photochemistry, Pharmacology and Ethno medicinal Uses*. *Res J Med Plant* 2012;6:6-16
- [6]. Chandrashekhar B. Badwaik, Mr. Sharad Manapure, Dr. Suhas Padmane, Dr. Sheelpriya Walde. EVALUATION OF INVITRO ANTIOXIDANT ACTIVITY OF ERAGROSTIS PILOSA. *WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES*.2021; 10(7):1025-1032.
- [7]. Chandrashekhar Bhojraj Badwaik, Dr.Suhas padmane, Dr.Sheelpriya Walde, Mr.Sharad Manapure. NATURAL PRODUCTS IN ANTICANCER THERAPY. *International Journal of Advances in Engineering and Management (IJAEM)*.2021;3(4):605-607.
- [8]. Chandrashekhar B. Badwaik*, Updesh B. Lade, Prachi Barsagade, Santosh N. Ghotefode. Madhuri S. Nandgaye, GOUT-A REVIEW ON PATHOPHYSIOLOGY, ETIOLOGY, AND TREATMENT. *Journal of Emerging Technologies and Innovative Research (JETIR)*.2022;9(1):d688-d694.
- [9]. Madhuri S. Nandgaye, Ajay Dongarwar, Upadesh B. Lade, Santosh N. Ghotefode, Tikesh Agrawal, Chandrashekhar B. Badwaik. "Phytochemical Screening and Evaluation of Antibacterial & Antifungal Activity of Terminalia Bellerica Bark". *Journal of Emerging Technologies and Innovative Research (JETIR)*.2022;9(1):d170-d182.
- [10]. Sheila John , Priyadarshini S ,Sarah Jane Monica ,Sivaraj C ,Arumugam P.IN VITRO ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES OF CUCUMIS SATIVUS L. PEEL EXTRACTS. *INTERNATIONAL RESEARCH JOURNAL OF PHARMACY*. 2018, 9 (1):56-60.
- [11]. Tanweer S., Ahmad S., Albert H. Burns. 24(6):539-551. Seyed A., Seyed H., Mohammad A. (1996). Management of psoriasis with Aloe vera extract in a hydrophilic cream: a placebo controlled, double,blind study. *Tropical Medicine & International Health*. 1(4):505-509
- [12]. Talal A., Feda M. (2003). Plants used in cosmetics. *Phytotherapy research*. 17(9):987 – 1000.
- [13]. Glaser D. (2003). Anti-aging products and cosmeceuticals. *Facial Plastic Surgery Clinics of North America*. 12(3):363 – 372.
- [14]. Fulton J.E. Jr. (1990). The stimulation of postdermabrasion wound healing with stabilized aloe vera gel-polyethylene oxide dressing. *J Dermatol Surg Oncol*. 16(5):460-470.
- [15]. Dennis P. (2003). Evaluation of aloe vera gel gloves in the treatment of dry skin associated with occupational exposure: *Devices and Infection, AJIC: American Journal of Infection Control*. 31(1):40-42

- [16]. Bozi A., Perrin C., Austin S., Arce Vera F. (2007). Quality and authenticity of commercial Aloe vera gel powders. *Food Chemistry*. 103(1):22-30.
- [17]. Hermans M.H.E. (1998). Results of a survey on the use of different treatment options for partial and full thickness. *Burns*. 24(6):539-551.
- [18]. Somboonwong J., Thanamitramanee S., Jariyapongskul A., Patumraj S. (2000). Therapeutic effects of Aloe vera on cutaneous microcirculation and wound healing in second degree burn model in rats. *J Med Assoc Thai*. 83(3):417-425.
- [19]. Rawlings A.V., Harding C.R. (2004). Moisturization and skin barrier function. *Dermatologic Therapy*. 17(1):43-48.
- [20]. Dal'Beló S.E., Gaspar L.R., Berardo P.M., Campos G.M. (2006). Moisturizing effect of cosmetic formulations containing Aloe vera extract in different concentrations assessed by skin bioengineering techniques. *Skin Research and Technology*. 12(4):241-246.
- [21]. Montgomery D., Parks D. (2003). Tattoos: Counseling the adolescent. *Journal of Pediatric Health Care*. 15(1): 14-19.
- [22]. Jacobs G. (2002). Anthocyanins in vegetative tissues: a proposed unified function in photoprotection. *New Phytologist*. 155(3): 349-361.
- [23]. Edmund D.P. (2001). What every facial plastic surgeon must know. *Herbal Therapy*. 13(1):27-132.
- [24]. Ernst E. (2000). Adverse effects of herbal drugs in dermatology. *British Journal of Dermatology*. 143(5):923-929.
- [25]. Formulation and evaluation of post laser herbal cream by Sakshi Sharma, Neeru Vasudeva, Sumitra Singh, Sneha Das. Department of Pharmaceutical Sciences, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India.
- [26]. Development and evaluation of herbal cream containing Curcumin from *Curcuma longa* (2020) by Melak Mohammed Al-Busaid, Md. Sohail Akhtar, Tanveer Alam, Wegdan Aly Shehata. *Pharmacy & Pharmacology International Journal*
- [27]. Formulation and Evaluation of Herbal Fairness Cream Comprising Hydroalcoholic Extracts of *Pleurotus ostreatus*, *Glycyrrhiza glabra* and *Camellia sinensis* by Nirmala Gupta*, Aditi Dubey, Pushpa Prasad, Amit Roy. *UK Journal of Pharmaceutical and Biosciences*. Vol. 3(3), 40-45, 2015.
- [28]. Formulation and evaluation of herbal body lotion: A review (2022) by Dip Banerjee Dr. Sayantan Mukopadhyay. Mahitkumar (2022). *International Journal of Health Sciences*, 6(S2), 13342-13349
- [29]. Assessment of viscoelasticity and hydration effect of herbal moisturizers using bioengineering techniques (2010) by Shweta Kapoor, Swarnlata Saraf. Institute of Pharmacy, Pt. Ravishankar Shukla University, Raipur (C.G), 492010, India.
- [30]. Formulation and Evaluation of Herbal Fairness Cream Comprising Hydroalcoholic Extracts of *Pleurotus ostreatus*, *Glycyrrhiza glabra* and *Camellia sinensis* by Nirmala Gupta*, Aditi Dubey, Pushpa Prasad, Amit Roy. *UK Journal of Pharmaceutical and Biosciences*. Vol. 3(3), 40-45, 2015.
- [31]. Formulation and evaluation of herbal body lotion: A review (2022) by Dip Banerjee, Dr. Sayantan Mukopadhyay. Mahitkumar (2022). *International Journal of Health Sciences*, 6(S2), 13342-13349.

[32]. Development and evaluation of herbal cream containing Curcumin from *Curcuma longa* (2020) by Melak Mohammed Al-Busaid, Md. Sohail Akhtar, Tanveer Alam, Wegdan Aly Shehata. *Pharmacy & Pharmacology International Journal*

