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Formulation and evaluation of herbal cream enriched with natural oils for dermal therapy

Vaibhavi Bhujbal[1], Pratiksha Belhekar[1], Pratiksha Bhalerao[1], Swanandi Bhalerao[1], Akshata S Patil[2*]

[1] Department of Pharmacy Genba Sopanrao Moze College of Pharmacy, Wagholi, Pune, Maharashtra, India
[2] Professor, Department of Pharmaceutics, Genba Sopanrao Moze College of Pharmacy, Wagholi, Pune, Maharashtra, India

Abstract
The research aimed to focus on the formulation and evaluation of an herbal cream enriched with almond oil and sesame oil to treat various skin conditions. In this research, sesame oil and almond oil were incorporated as active pharmaceutical ingredients (active pharmaceutical ingredients) due to their known benefits in reducing dryness, wrinkles, rashes, irritation, and acne as per their moisturizing, anti-inflammatory and anti-bacterial properties. The developed cream was subjected to in *vitro* evaluation, including tests for ph, viscosity, spreadability and physical appearance, to assess its stability and suitability for topical application.

Keywords: Herbal cream, skin diseases, natural oils, sesame oil, almond oil.

Introduction

Creams are versatile semi-solid mixtures made for use on the skin. They can be either oil-inwater or water-in-oil emulsions, depending on how they are formulated. To keep them stable and effective, emulsifying agents are added. These creams are designed not just to hydrate and moisturize the skin, but also to protect it and help deliver active ingredients more efficiently [1].

Herbal creams have been used for centuries as natural remedies for different skin problems and beauty care. Made from natural ingredients, they take a more holistic approach to skincare using the healing power of botanical extracts to nourish, protect, and refresh the skin [1].

These conditions usually happen due to a mix of reasons: pollution, allergies, stress, a weak immune system, or even overuse of harsh chemical products. While there are many creams and treatments available, most rely on synthetic ingredients that may bring quick relief but can damage the skin over time especially if used regularly.

That's why more and more people are choosing natural, herbal alternatives. Using herbal creams for skin concerns isn't just about finding a remedy it's about placing trust in nature's gentle healing. It's about caring for your skin in the most nurturing way possible.

These creams are made with extracts from medicinal plants, known for their anti-inflammatory and antioxidant properties. They can help soothe common skin condition like wrinkles, redness, rashes, irritation, inflammation, dry skin.

Natural Ingredients: This formulation uses natural ingredients like sesame oil and almond both oil carefully selected for their gentle yet effective skin-healing properties [2].

Therapeutic Benefits: Sesame oil is loaded with antioxidants and has natural antiinflammatory qualities, making it ideal for calming irritated skin and supporting the healing process [3]. Almond oil, rich in vitamins E and A, deeply hydrates and softens the skin, helping to reduce dryness and soothe inflammation. When combined, these oils not only help address skin concerns but also keep the skin nourished, balanced, and healthy [4].

Physiology of skin

The epidermis is the outermost layer of the skin and serves as the body's first shield of protection. It's made of layers of tough, dead skin cells that cover us from damage caused by the terrain [5]. Although the epidermis doesn't have its own blood force or jitters, it gets nutrients from the fluid in the subcaste below it the dermis [6]. The dermis sits right under the epidermis and gives the skin its strength and inflexibility. It contains connective tissue, collagen, and elastic fibers that help keep the skin firm, strong, and stretchy. [6] This subcaste also holds important cells like fibroblasts, macrophages, and mast cells, and has both loose connective towel and some fat towel, especially in its deeper corridor. [7] Also set up in the skin are sebaceous (oil painting) glands, which come from skin cells near hair follicles. These glands make sebum and unctuous substance which helps to protect to skin. [7]

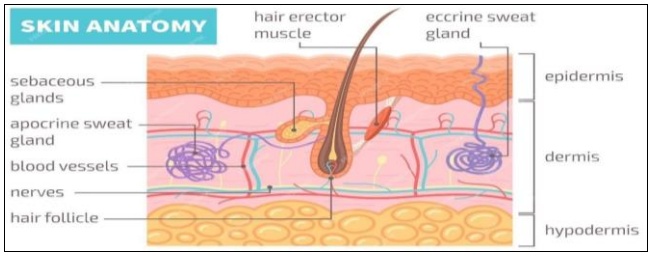

Fig 1

Types of skin diseases

1. Eczema

Eczema also known as atopic dermatitis is a common and stubborn skin condition that causes a lot more than just a little itching. It usually shows up as dry, red, flaky, or cracked skin, and it can be uncomfortable even painful at times. Eczema is a chronic inflammatory skin condition that affects people worldwide, causing symptoms such as redness, itching, and skin lesions. While conventional treatments are commonly used, concerns about their side

effects and longterm effectiveness have led to growing interest in alternative and complementary therapies particularly those involving medicinal plants. [8] These treatments are often rooted in the belief that nature offers a rich source of bioactive compounds with anti-inflammatory, antimicrobial, and skin-soothing effects. By exploring scientifically and validating these traditional approaches, we may uncover promising natural options for eczema treatment. [9]

2. Psoriasis

Psoriasis is a long-lasting skin condition that can affect people at any stage of life. It is linked to inflammation in the body and can cause discomfort and distress for individuals across the globe. Psoriasis can appear at any age, but it most commonly develops in people between 50 and 69 years old. It affects over 100 million individuals worldwide, with prevalence rates varying from 0.09% to 11.43%. Given how widespread it is, psoriasis represents a significant global health concern. [10] People with psoriasis often develop plaques of different sizes and colours due to abnormal growth and development of skin cells called keratinocytes. [11] These plaques are typically covered with silver-white scales and commonly appear on areas like the knees, elbows, scalp, belly button, and lower back. [12]

3. Acne

Acne is a long-term inflammatory condition that affects the skin's hair follicles and oil glands, also known as pilosebaceous units. It has multiple causes, but two main types of bacteria Propionibacterium acnes and Staphylococcus epidermidis play a key role in triggering and worsening acne. Acne symptoms can range in severity and are generally classified as mild, moderate, or severe. The milder, non-inflammatory types include whiteheads (closed comedones) and blackheads (open comedones). More serious, inflammatory forms of acne involve red or swollen spots such as papules, pus-filled pustules, and deeper, often painful cysts or nodules [13] Acne rosacea and acne vulgaris are the two main types of acne that can affect a person. Acne rosacea, much like adult acne, is a common and long-lasting skin condition, but it can be managed effectively with proper medical treatment. [14]

4. Rosacea

Rosacea is a long-term inflammatory skin condition that mainly affects the central areas of the face, such as the forehead, nose, cheeks, and chin. [15] It impacts over 5% of the global population. [16] While both men and women can develop rosacea, women often experience symptoms earlier, typically between the ages of 30 and 50. [15,17] However, men are more likely to develop a more severe form known as rhinophyma, [17] which causes thickening of the skin on the nose. Ethnicity also plays a role, with fair-skinned individuals being the most affected, followed by people of Asian descent and those with darker skin tones. [18]

5. Dry skin

Dry skin, often called xerosis is a common issue that can happen to anyone, no matter their age.

It just means your skin isn't holding onto enough moisture, which can make it feel rough, tight, or flaky. Several factors can trigger dry skin, such as cold weather, low humidity, or too much sun exposure. Hot showers and harsh soaps can also strip away the skin's natural oils, making it even drier. As we age, our skin produces less oil, which can make older adults more vulnerable to dryness. Certain health conditions, like eczema, psoriasis, diabetes, and kidney disease, can also contribute to dry skin, as can jobs that require frequent handwashing or exposure to chemicals.

Typical symptoms include dry, scaly patches, skin that feels tight or itchy, and in some cases, redness or cracks that may bleed. Dry skin commonly affects areas like the hands, arms, legs, and lower back. [19]

Materials and Methodology

Procedure

(Oil Phase Preparation)

1. Melt beeswax in double boiler.
2. Add liquid paraffin, almond oil, sesame oil.
3. Stir well until completely melted and blended.

(Water Phase Preparation)

1. Warm rose water in a separate vessel.
2. Dissolve borax and methyl paraben fully.

Emulsification

- Slowly add the water phase to the oil phase while continuously stirring.
- Keep stirring until a smooth, creamy consistency forms.

Storage condition

Herbal creams are best kept in a cool, room-temperature environment to maintain their quality and effectiveness. The natural oils used rich in nutrients like vitamin E and antioxidants can be sensitive to heat, which may cause them to break down over time. This can reduce the cream's healing properties and lead to spoilage. Storing the cream properly helps ensure it stays fresh, safe to use, and effective in soothing and treating various skin issues.

Materials

1. Almond Oil

- Botanical name: (Prunus Amygdalus).
- Family: Rosaceae.
- Synonym: Sweet almond oil, Badam tail, Prunus dulcis oil.
- Biological Source: Almond oil is obtained from the dried kernels (seeds)of Prunus Amygdalus var. dulcis (sweet almond) or Prunus Amygdalus var. amara (bitter almond)

Chemical constituents

- Fatty acids: Oleic acid (≈ 62-86%), Linoleic acid (≈ 20-30%), Palmitic acid (≈ 49%)
- Vitamins: Vitamin E (tocopherols), Vitamin A
- Phytosterols: Beta-sitosterol, Campesterol
- Proteins & Amino Acids
- Minerals: Magnesium, Calcium, Potassium
- Medicinal uses: Skin barrier repair, Itch and irritation relief, Anti-inflammatory action.

Sesame Oil

- Botanical name: Sesamum indicum.
- Family: Pedaliaceae
- Synonym: Gingelly oil, Til oil, Benne oil
- Biological Source: Sesame oil is obtained from the seeds of sesamum indicum.

Chemical constituents
- Fatty Acids: Oleic acid (35-50%), Linoleic acid (35-45%), Palmitic acid (7-12%), stearic acid (3-6%)
- Antioxidants: Sesamin, Sesamol, Sesamolin.
- Vitamins & Minerals: Vitamin E, B-complex vitamins, Calcium, Magnesium, Phosphorus.
- Phytosterols: Beta-sitosterol, Campesterol.
- Lecithin & Proteins.
- Medicinal uses: Deep hydration and skin barrier support, Anti-inflammatory relief, Healing and repair Detoxifying and cooling effect.

Borax
- Common name: Borate of soda.
- Source: It is a natural mineral collected from dry lake beds and boron-rich regions like Tibet, Turkey, and parts of the USA.
- Main components: Contains sodium, borate ions, and water molecules.
- Chemical formula: $Na_2B_4O_7 \cdot 10H_2O$
- Medicinal uses: Used as a mild antiseptic in skin preparation & used in small amounts in traditional medicine like Ayurveda

Beeswax
- Common name: Cera Alba, Cera flava.
- Source: Beeswax is a natural substance secreted by the glands of worker honeybees.
- Main components: It contains myricyl palmitate, Cerotic acid, Hydrocarbons, Esters and free fatty acids.
- Medicinal uses: Beeswax is widely used for its soothing and protective properties in treating minor skin irritations. It also works as a natural thickening agent and emulsifier in creams and ointments, helping to stabilize and improve texture.

Rose water
- Common name: Gulab Jal, Rose hydrosol
- Source: It is a fragrant liquid obtained by steam distillation of rose petals.
- Main Components: Citronellol, Geranoil, Phenyl ethyl alcohol, Flavonoids and volatile oil.
- Medicinal uses: Helps reduce skin inflammation and irritation & cooling and soothing agent for skin.

Cocoa butter
- Common name: Theobroma oil.
- Source: Fatty substance obtained from the seeds of the cacao plant
- Main components: Stearic acid, Oleic acid, Palmitic acid, Triglycerides (fats)
- Medicinal uses: Used in cosmetics for moisturizing dry skin & soothes irritated or chapped skin.

Liquid paraffin
- Common name: Paraffinum liquidum
- Source: purified oil derived from petroleum.
- Main constituent: Saturated alkanes (mainly C15–C40 range)
- Medicinal uses: It's widely used in skincare as a base ingredient in creams, lotions, and ointments.

Methyl paraben
- Common name: Methyl paraben, Nipagin.
- Source: Synthetic, though small amounts occur naturally in fruits like blueberries
- Main Components: Derived from para-hydroxybenzoic acid (PHBA)
- Medicinal uses: Prevents the growth of bacteria and fungi & commonly in creams, ointments, syrups, and lotions.

Formulation Table

Table 1: Formulation Table

Sr. No	Name of Ingredients	Quantity (30gm) (F1)	Quantity (30gm) (F2)	Quantity (30gm) (F3)	Role
1)	Bees wax	3 gm	3 gm	3 gm	Thickener & Emulsifier
2)	Coco butter	3 gm	2.5 gm	2.5 gm	Emollient
3)	Liquid Paraffin	3.5 ml	3 ml	3 ml	Moisturizer
4)	Almond oil	4 ml	6 ml	3.5 ml	Nourishing
5)	Sesame oil	4 ml	3 ml	5.5 ml	Conditioning
6)	Borax	0.3 gm	0.3 gm	0.3 gm	Stabilizer
7)	Rose water	12 ml	12 ml	12 ml	Hydrating base
8)	Methyl paraben	0.2 gm	0.2 gm	0.2 gm	Preservative

Ingredients

1. Almond Oil

Almond oil has moisturizing, anti-aging, and skin-conditioning properties. It helps soothe dry skin, eczema, and psoriasis, and is rich in vitamin E, a powerful antioxidant. It supports skin barrier and healing in skin conditions, improves skin tone and texture [20]

2. Sesame oil

Sesame oil possesses anti-inflammatory, antimicrobial, and antioxidant properties, contributing to its therapeutic potential in dermatological applications Composed of bioactive compounds such as linoleic acid, vitamin E, and phytosterols.

3. Borax

Borax is a versatile ingredient in cosmetics, acting as an emulsifier, preservative, and cleansing agent in creams, lotions, shampoos, and bath products. Its alkaline and antiseptic properties enhance skincare formulations, while its ability to remove grease makes it useful in hand soaps. It is also used in making "slime" due to its viscoelastic nature [22].

4. Beeswax

Beeswax creates a protective layer on the skin, helping to guard against environmental pollutants and harsh weather conditions. This quality makes beeswax particularly beneficial for people with sensitive or acne-prone skin as a natural humectant; beeswax draws moisture to the skin,

helping to keep it hydrated. Additionally, its exfoliating properties facilitate the removal of dead skin cells, contributing to a smoother complexion. Its raw form can be utilized in the formulation of personalised skincare products, including moisturizers and lotions [23].

5. Rose Water

Rose water provides a mild yet effective solution for maintaining skin hydration. It helps strengthen the skin's barrier and reduces moisture loss, making your skin feel soft and refreshed. Known for its ability to improve complexion, rose water also helps calm redness and irritation. Thanks to its anti-inflammatory properties, it can soothe swelling and ease the discomfort caused by acne. Plus, it helps restore your skin's natural pH balance, counteracting the effects of harsh products. (24)

6. Cocoa Butter

Cocoa butter in herbal creams works as a natural moisturizer, forming a protective barrier that locks in hydration. It reduces inflammation, supports skin healing, and fights oxidative stress with its antioxidant content. Additionally, it improves the cream's texture and helps absorb herbal extracts into the skin. (24)

7. Liquid paraffin

Liquid paraffin, a highly refined mineral oil, exhibits potent emollient and occlusive properties, contributing to its efficacy in dermatological applications. By forming a hydrophobic barrier on the stratum corneum, it minimizes trans epidermal water loss (TEWL) and enhances skin hydration. Due to its ability to maintain skin moisture, it is widely used in the management of xerosis (dry skin), eczema, psoriasis, and ichthyosis. (24)

8. Methyl paraben

Methylparaben acts as a preservative in herbal creams, helping to stop the growth of harmful microbes. It's effective against bacteria, yeast, and mold is commonly used in skincare products for acne, eczema, and psoriasis. Methyl paraben is commonly added to herbal creams as a preservative to inhibit microbial growth, enhance product stability, and prolong shelf life, helping to keep the formulation safe and effective (24)

Evaluation Test

Organoleptic evaluation

The herbal cream in (Formulation 1) exhibited some lumps, affecting its appearance, resulting in a less smooth texture. In contrast, (Formulations 2 and 3) demonstrated a smooth, lump-free appearance, with a white to off-white colour. Both formulations had a mild, pleasant herbal scent and a non-greasy, soft, and smooth texture, ensuring comfortable application [25].

Table 2: Organoleptic Evaluation

Parameter	F1	F2	F3
Appearance	lumpy	Smooth	Smooth
Color	Off-white	White	White
Odour	Sweetly floral	Mild & Pleasant	Mild & Pleasant

Spreadability

The spreadability test measures how easily and evenly the herbal cream can be distributed over the skin. This is done by placing a small amount of the cream between two glass slides and applying a weight on the top slide. The distance the cream spreads is then measured. In (Formulation 1), the presence of lumps negatively affected spreadability, making the application less smooth. However, (Formulations 2 and 3) showed good spreadability, with the cream spreading easily and evenly with minimal effort [26, 27].

Table 3: Spreadability

Formulation	Time of spreading	Ease of spreading
F1	6-7 sec	Difficult to spread
F2	4-5 sec	Easily spread
F3	5-6 sec	Slightly spread

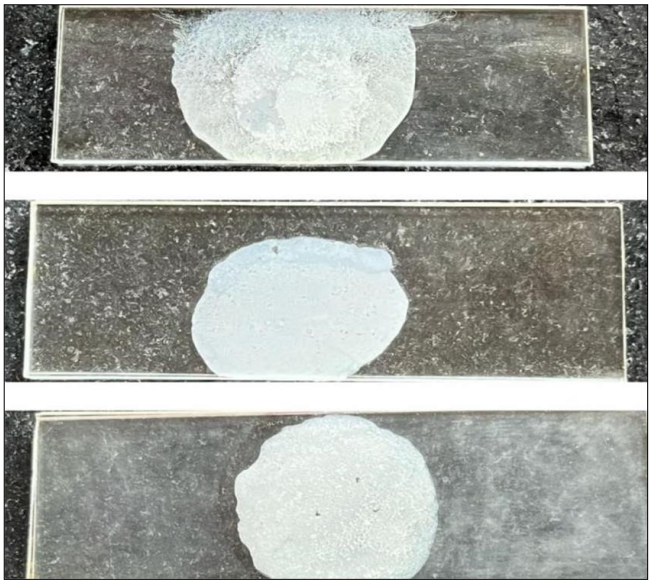

Fig 2: Spreadability test

Homogeneity

Homogeneity was checked by looking and feeling the cream; it should be smooth, even in colour, and without any lumps or separation. At 24 hours, all formulations looked fine. But after 20 days, Formulation 1 showed phase separation, meaning it wasn't stable over time.

Phase Separation Test

The cream was stored in covered containers away from direct light and monitored for stability. Formulation 1 showed phase separation after 20 days, likely due to being stored in a transparent bottle exposed to sunlight. In contrast, Formulations 2 and 3, stored in amber bottles, remained stable with no separation.

When tested at different temperatures 25°C and 40°C Formulation 1 again showed separation and contained lumps, suggesting poor stability. Meanwhile, Formulations 2 and 3 stayed smooth and stable across all conditions.

Table 4: Phase separation test

Formulation	After 24 hours	After 20 days
F1	No phase separation	Phase separation
F2	No phase separation	No phase separation
F3	No phase separation	No phase separation

Ph Test

The pH of the cream was detected using pH paper. A small amount of the cream was mixed with distilled water to prepare a solution, into which the pH paper was then immersed. The colour change was compared to a pH chart to find the pH level. pH range: 4.5 - 6.0 (slightly acidic). (30).

Table 5: Ph Test

Formulation	pH
F1	4.5
F2	6.0
F3	5.7

Fig 3: Ph Test

Result and Discussion

The formulated herbal cream, incorporating almond and sesame oils, is theoretically expected to maintain a pH in the range of 5.5-6.5, aligning well with the natural pH of healthy human skin. This pH compatibility suggests minimal risk of irritation, making the cream suitable for regular topical application.

The presence of natural emollients contributes to a medium viscosity and favorable spreadability, allowing for easy application and efficient skin absorption without leaving a greasy residue. These properties are essential for user comfort and product acceptance. Furthermore, the rich antioxidant profile of the oils primarily vitamin E from almond oil and sesamol from sesame oil is anticipated to enhance the formulation's stability by preventing oxidative degradation and enhance shelf life.

Collectively, the formulation is predicted to offer effective moisturization, support the skin barrier function and making it a promising candidate for addressing dry, irritated skin conditions.

Fig 4: Formulated cream

Objective

The objective of this research is to formulate and evaluate an herbal cream enriched with natural oils, specifically sesame and almond oils, to treat various dermatological conditions. These oils were selected for their well-documented therapeutic properties, such as moisturizing, antiinflammatory, and antimicrobial effects, which are beneficial in treating skin conditions like eczema, psoriasis, rosacea, acne, dry skin. The aim is to develop a product that not only provides symptomatic relief from these conditions but also promotes overall skin health without the harsh side effects typically associated with synthetic chemical-based treatments. The formulation focuses on the use of these natural oils due to their deep nourishing properties, with almond oil contributing to the repair of the skin barrier, and sesame oil offering antiinflammatory and healing benefits. These ingredients, the cream is expected to soothe irritation, reduce redness and inflammation, promote skin hydration, and support healing processes, making it suitable for those with sensitive or problem-prone skin.

Additionally, the research involves comprehensive in vitro evaluation to assess the cream's stability, pH level, spreadability, and physical properties, ensuring it remains effective and safe for topical use. By testing for microbial activity, the study aims to demonstrate the cream's potential in preventing bacterial growth, further enhancing its suitability for managing mild skin infections and promoting overall skin health. Ultimately, the goal of this research is to provide a holistic, natural skincare solution that can be trusted for the long-term care and treatment of various skin conditions.

Conclusion

The formulated Herbal cream seems to have a positive impact on the skin physical appearance. The F2 formulation is more stable and does not separate, while the Formulated Herbal cream has a smooth consistency and semi-solid state. This in *vitro* evaluation suggests that the herbal cream formulated with almond and sesame oils possesses desirable physicochemical properties, including stability, appropriate pH, and favourable texture for topical use.

Formulation 2, which contains almond oil and sesame oil in a herbal cream base, shows potential as a therapeutic option for the treatment of skin diseases. Its natural composition and observed effects suggest it may be a safe and effective alternative for managing various dermatological conditions.

Overall, the formulation appears to be both skin-compatible and functionally effective, indicating its promise as a natural, plant-based alternative for managing conditions such as dryness, irritation, and minor skin problems.

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References

1 Badwaik C, Lade U, Agarwal T, Barsagade P, Nandgave M. Formulation and evaluation of herbal face cream. International Journal of Pharmaceutical Research and Applications,2022:2249–7781.

2 Uganda RE, Deivi KS, Formulation evaluation of natural palm oil-based vanishing cream. Int J Pharm Sci Res,2013:4(9):3375–80.
3 Ahmad Z. The uses properties of almond oil. Complement Ther Clin Pract,2010:16(1):10-12.
4 Ogawa S Takada M, Miyamoto S, Nagamachi H, Kitagawa K, Tsukada K. Effects of sesame oil on human health. Juntendo Medical Journal,2015:61(3):208-215.
5 Kanitakis J. Anatomy, histology immunohistochemistry of normal human skin. Eur J Dermatol,2002:12(4):390-401.
6 Kolarsick, Paul AJ, BS, Kolarsick, Maria Ann MSN. ARHP-C Goodwin, Carolyn APRN-BC, FNP. Anatomy Physiology of the Skin. Journal of the Dermatology Nurses' Association, July,2011:3(4):203-213
7 Bensouilah J, Buck P. Aromadermatology Aromatherapy in the Treatment and Care of Common Skin Conditions (1st ed.). Routledge, 2006, 65-75
8 Dr. Rakesh Gupta, Siddappa Naragatti Case Study On Patient With Atopic Dermatitis (Eczema) A Case Report, International Journal Of Research Analytical Review, 2022, 9(2).
9 Bhowmik, Debjit Chiranjib B. Sampathkumar KP, Recent trends in treatment and prevention of eczema. Journal of Global Pharma Technology,2010:2:12-21.
10 Al Qassimi S. Albrashdi S. Galadari H. Hashim MJ, Global burden of psoriasis– comparison of regional global epidemiology, to Int J Dermatol,1990:59:56671
11 Grän F. Kerstan A. Serfling E. Goebeler M. Muhammad K. Current developments in the immunology of psoriasis. Yale J Biol Med,2020:93: 97-110.
12 Owen CM, Chalmers RJ, O'Sullivan T, Griffiths CE. Antistreptococcal interventions for guttate and chronic plaque psoriasis. Cochrane Database Syst Rev, 2000. CD001976.
13 Telange-patil pv, Nan Aware pv. "Formulation and evaluation of anti-acne and anti-oxidant cream". int j create res thoughts,2022:10(10):79-86.
14 Machi My, Chaudhari Mv, Pawar ma, Marathe mg, mail formulation evaluation of natural anti-acne cream containing lemon grass extract. international journal of all research writings,2021:203(11):18-26.
15 Korting HC, Schöllmann C. Current Topical Systemic Approaches to Treatment of Rosacea. J. Eur. Acad. Dermatol. Venereol,2009:23:876–882.
16 Gether L, Overgaard LK, Egeberg A, Thyssen JP. Incidence prevalence of rosacea a systematic review meta-analysis. Br J Dermatol,2018:179(2):282-289.
17 Rosacea A. Systematic Review Meta Analysis Br, J. Dermatol,2018:179:282– 289.
18 Scheinfeld N, Berk TA. Review of the Diagnosis Treatment of Rosacea. Postgrad. Med,2010:122:139–143
19 Wollina U, Verma SB. Rosacea Rhinophyma Not Curse of the Celts but Indo Eurasians J. Cosmet. Dermatol,2009:8:234–235.
20 Haftek M. Stratum corneum. Ann Dermatol Venereol,2002:129:117–122.
21 Uddandu S, Aduri PR, Rajitha K, Sravani B. Vanitha, B. Formulation evaluation of cream containing plant extracts. World Journal of Pharmacy Pharmaceutical Sciences,2018:7(5):851.
22 Sonalkar MY, Nitave SA. Formulation evaluation of polyherbal cosmetic cream Dr, JJ, Magdum Trust s. Anil Alias Pintu Magdum Memorial Pharmacy College, Dharangutti, Maharashtra, India,2016:5(2):772-779
23 Saraf S, Kaur CD. Phytoconstituents as photoprotective novel cosmetic formulations. Pharmacognosy reviews,2010:4(7):1–11.
24 Nair, Sujith Mathew, Molly. International journal of Pharmaceutical and chemical sciences Formulation and Evaluation of Herbal Cream containing Curcuma longa. Research Journal of Pharmaceutical, Biological and Chemical Sciences,2021,25-30
25 Sharma A. Banyal M, Gupta J, Joshi S. Formulation evaluation of herbal cold cream. International Journal of Advance Research and Innovative Ideas in Education (IJARIIE),2023:9(3);2578–2589.
26 Lad V, Patil S, Patil M. Formulation evaluation of vanishing herbal cream of crude drugs. Indo American Journal of Pharmaceutical Sciences,2018:5(5):4512–4518.
27 Sahu AN, Jha SB, Dubey SD. Formulation evaluation of curcuminoid based herbal face cream. Indo-Global Journal of Pharmaceutical Sciences,2011:1(1):77–84.
28 Reynolds T, Dweck AC. Aloe vera leaf gel a review update. Journal of ethnopharmacology,1999:68(1-3):3–37.
29 Aswal A, Kalra, Mohini Rout A. Preparation evaluation of polyherbal cosmetic cream. Der Pharmacia Lettre,2013:5:83-88.
30 Kharat N, Shylaja H, Viswanatha GL, Lakshman K. Anti-inflammatory analgesic activity of topical preparation of root extracts of Ichnocarpus frutescens (L.) R. Br. International Journal of Applied Biology and Pharmaceutical Technology,2010:1(3):1101– 1106.