



Formulation and evaluation of herbal moisturizing cream.

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Abstract.

Herbal moisturising cream is a pure mixture that hydrates skin. A herbal cosmetic is a preparation meant to enhance one's own beauty. Our primary goal is to create a herbal cream that has multiple uses, such as both a moisturiser and an acne reducer. Aloe vera, neem, jasmine, passion flowers, and coconut oil are among the several natural ingredients included in the formulation; each one has special qualities that improve the health of the skin. Aloe vera is well-known for its calming and restorative properties, while neem has antibacterial and anti-inflammatory properties. Jasmine is prized for both its scent and its ability to soften skin. When combined, these ingredients provide a powerful mixture that leaves the skin feeling smooth and protecting it from environmental assaults in addition to moisturising. There is some extraction required to obtain the essential oil from the plant material.

Key word. Herbal moisturiser, cosmetics, extraction.

I. Introduction.

The global cosmetics Greek word "kosmetikos," which meaning "skilled in adornment" or "pertaining to dressing," is the source of the English word "cosmetics." Cosmetics are materials or items that are used to improve or change the way the face, body, or scent appear. As per the D & C Act 1940 and its regulations in 1945, cosmetics refer to any item that can be applied, rubbed, poured, sprinkled, sprayed, or introduced into any part of the human body for the purpose of cleaning, beautifying, enhancing attractiveness, or changing appearance. This also includes items that are meant to be used as constituents of cosmetics. Herbs are used in Ayurvedic cosmetic formulations for beautifying and protecting from external effects. Herbal cosmetics are beauty products that contain

herbal elements renowned for their beneficial physiological effects, such as healing, smoothing appearance, enhancing, and conditioning characteristics. The natural phytoconstituents in these products don't have any negative effects on the body. These products are made with a variety of botanical sources that influence skin processes and supply vital nutrients for skin health. Many people choose them over synthetic products because of their natural origins and lower side effects. Natural or botanical cosmetics, sometimes known as herbal cosmetics, are cosmetics made mainly of plant-based materials. These ingredients could include extracts, essential oils, and other materials made from the fruits, seeds, roots, bark, flowers, and leaves of various plants. The marketing of herbal cosmetics often emphasises its naturalness and gentleness compared to synthetic chemical-containing cosmetics. These goods frequently have antibacterial, anti-inflammatory, antioxidant, and moisturising qualities without the use of artificial colouring, scents, or preservatives. Herbal elements included in cosmetics include Neem, aloe Vera, passion flower, and Megara.

Cream.

An oil and water emulsion that is semi-solid is referred to as cream. Oil-in-water (O/W) creams consist of tiny oil droplets scattered throughout a continuous water phase, while water-in-oil (W/O) creams are made up of tiny water droplets scattered throughout a continuous oily phase. Because water-in-oil creams create an oily barrier that prevents water loss from the stratum corneum, the skin's outermost layer, they are also more moisturising.

In everyday skincare routines, creams are essential because they give advantages that protect the skin



from external stresses, assist maintain skin health, and provide the desired aesthetic impact.

Types of cream.

They are divided into twotypes.

- **Oil in water (O/W):** -creams consisting of small oil droplets dispersed in a continuous phase, and an emulsion in which the oil is dispersed in the form of droplets through the water phase is called oil in- water (O/W) emulsion.
- **Oil in water (O/W):** -Creams consisting of small water droplets dispersed in a continuous oil a step If the dispersed phase is water and the dispersion medium is oil, the emulsion is water-in- oil (W/O) type.

Classification of cream: -

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 cream.

Moisturiser.

Herbal moisturizers have gained significant popularity in skincare due to their natural ingredients sourced from plants, which offer a range of benefits beyond basic hydration. These moisturizers typically harness the power of botanical extracts, oils, and other plant-derived components known for their moisturizing and healing properties. One of the key functions of herbal moisturizers in skincare is to provide hydration by restoring the skin's moisture barrier, preventing loss of water, and retaining moisture within the skin. This contributes to maintaining the skin's smoothness, elasticity, and youthful appearance. In contrast to certain synthetic moisturizers that may contain potentially harsh chemicals, herbal moisturizers are often milder on the skin, rendering them appropriate for a wide array of skin types, including sensitive and reactive skin. Moreover, natural antioxidants like vitamins C and E found in herbal moisturisers help protect the skin from environmental damage caused by free radicals. These antioxidants can help prevent

premature ageing, reduce the appearance of wrinkles and fine lines, and promote a more radiant complexion. Furthermore, many herbal ingredients have anti-inflammatory and soothing properties, which makes herbal moisturisers particularly beneficial for people with eczema or rosacea or other sensitive or irritated skin disorders. Herbal moisturisers frequently contain ingredients like chamomile, aloe Vera, calendula, and green tea extract because of their calming and restorative properties for the skin. Herbal moisturisers allow people to take advantage of the healing properties of natural ingredients while also hydrating their skin. These moisturisers provide a more comprehensive approach to skincare by minimising the risk of negative responses frequently linked to synthetic components and enhancing the general health and vitality of the skin.

Mechanisms of herbal moisturiser cream: -

Water regularly evaporates from the deeper layers of the skin of the human body, a phenomenon known as transepidermal water loss. Human skin naturally maintains a dry, easily shed surface as a barrier against viruses, debris, or harm by managing its water content, while also keeping itself from drying out and becoming brittle and inflexible. The ability of corneocytes to retain moisture is determined by the lipid bilayer that exists between them. Moisturisers alter the rate of water loss, with active substances falling into one of two categories: occlusives and humectants.

Occlusives generate a layer on the skin's surface that prevents moisture from escaping. The more occlusive the formulation, the stronger the effect. Ointments are more occlusive than aqueous creams, which are more occlusive than lotion. Water loss through the skin is normally about 4-8 g/(m²-h). Petrolatum can minimise that loss by 50-75% for several hours when applied to normal skin. The human body naturally produces oils that moisturize using the same process.

Humectants take up moisture. When the humidity is above 70%, they can absorb this water from the air and moisturise the skin, but more frequently, they suck water from the dermis into the epidermis, drying up the skin. Water is a common ingredient in moisturizers, serving as both a brief hydrating agent and a conduit for the absorption of some ingredients and the evaporation of the moisturizer.



Advantages: -

1. Herbal moisturisers have the primary benefit of improving skin dryness without causing any negative side effects.
2. It lessens the likelihood of future skin issues.
3. This hydrator aids in the battle against wrinkles.
4. Not as oily as some other ointments
5. Keeping your skin moisturised keeps it youthful.
6. Compared to synthetic cosmetics, they are highly effective when used in modest quantities.

Disadvantages: -

1. Herbal medications require long-term therapy and have slower effects than allopathic dose forms.
2. The manufacturing process is intricate and time-consuming.
3. The majority of natural medications are difficult to find.
4. Taste and smell are hard to disguise.
5. Not as stable as an ointment.

Topical Drug Delivery: -

Drugs have been administered to the human body by a variety of routes throughout the past few decades, including oral, sublingual, rectal, parental, topical, inhalation, etc., to cure illnesses. Topical delivery is the application of a drug-containing formulation to the skin to treat a cutaneous disorder or the cutaneous manifestations of a general disease (such as psoriasis), with the goal of containing the pharmacological or the effect of the drug to the surface of the skin or within the skin. Semisolid formulations in all their variety predominate the system for topical delivery, but foams, spray, medicated powders, solutions, and even medicated toothpaste can also be used

Benefits Of Using Topical Drug Delivery: -

1. Easy to use and quite convenient.
2. Avoid the first-pass metabolism.
3. As an alternative to oral dosage.
4. Decreased likelihood of experiencing digestive issues.
5. Less chance of abuse.

Basic Structure Human Skin: -

The skin is the largest organ of the body, making up 16% of bodyweight, with a surface area of 1.8m². There are three structural layers to the skin: the epidermis, the dermis and subcutis. Hair, nails, sebaceous, sweat and apocrine glands are regarded as derivatives of skin. The epidermis is the outer layer, serving as the physical and chemical barrier between the interior body and exterior environment; the dermis is the deeper layer providing the structural support of the skin, below which is a loose connective tissue layer, the subcutis or hypodermis which is an important depot of fat.

1) Epidermis: -

The epidermis is the skin's most superficial layer, made up of stratified keratinized squamous epithelium that varies in thickness across the body. It is thickest on the palms of the hands and the soles of the feet. The epidermis lacks blood vessels and nerve endings, but its deeper layers are soaked in interstitial fluid from the dermis, which gives oxygen and nutrients and drains away as lymph. Moving from the lower layer upward to surface, the four layer of epidermis are: Stratum basal (basal or germinativum cell layer) Stratum spinosum (spinous or prickle cell layer) Stratum granulosum (granular cell layer) Stratum corneum(horny layer)

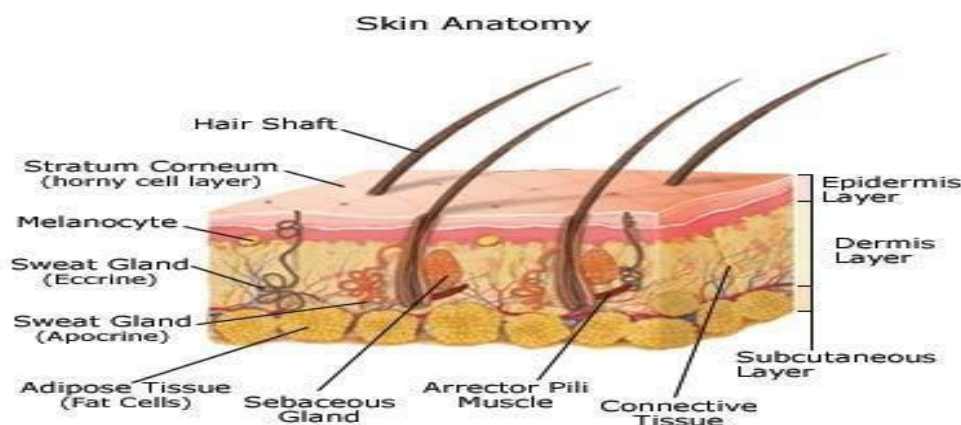


Fig .1: -structure of skin.



2)Dermis: -

The dermis is tough and elastic layer varies in thickness, ranging from 0.6 mm on the eyelids to 3 mm on the back, palms and soles. It is found below the epidermis and is composed of although, supportive cell matrix. Two layers comprise the dermis: A thin papillary layer A thicker reticular layer The dermis is made up of fibroblasts, which produce collagen, elastin and structural proteoglycans, together with immune competent mast cells and macrophages. Collagen fibres make up 70% of the dermis, giving it strength and toughness. Elastin maintains normal elasticity and flexibility while proteoglycans provide viscosity and hydration. fibroblast, macrophages and mast cells are the cells found in dermis.

3)Subcutis (Hypodermis): -

This is made up of loose connective tissue and fat, which can be up to 3 cm thick on the abdomen. It protects the body from external trauma and insulates from cold. It acts as a main storage site for fat and therefore energy. There are many blood and lymphatic vessels and nerves passing through the subcutis.

Functions of skin: -

1. Keeps moisture from escaping.
2. Offers a safeguard against harmful materials and mechanical, thermal, and physical harm.
3. Protection from chemicals and infections.
4. Safeguarding against radiations of ultraviolet light.
5. Sustaining a normal body temperature
6. Getting input from the external environment.
7. Consumption and disposal.
8. Water storage and nutrients.

II. Material And Method.

Collection of herbs: -

The Herbs including Aloe vera, Neem, Megara, are collected from the areas of the college and Passionflower are collected from garden of my home. Methyl paraben, bees wax, powder borax

and coconut oil are collected from pharmaceutical lab.

1) Aloe vera: -

Used for centuries in medicine, cosmetics, health, and skin care. It also goes by the name "miracle plant." These days, dermatologists utilise aloe vera for a variety of purposes, including treating acne, achieving glowing skin, moisturising the skin, and more.



Fig. 2:- aloe vera

Synonyms - Aloe, Musabbar, Kumari.

Family -Liliaceae.

Biological source:aloes are dried juice obtained by transversely cut Leaves of various species of
. Aloebarbadense Miller.
. Aloe perryi Baker.
Aloe spicata Baker and Aloe Africana Miller.

Chemical constituents: - Anthracene glycosides, Barbaloin, Isobarbaloin, aloe-emodin and aloesone. Resins 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 etc.

2)Jasmine: -

Jasminum is a small shrub or vine growing up to 0.5 to 3 m (1.6 to 9.8 ft) in height. It is a fragrant and ornamental flowering plant. Arabian jasmine extracts are an effective cure for many skin troubles and acne-prone, dry, and itchy skin. The essential oil extracted from jasmine can keep your skin moisturised and hydrate.



Fig 3: - Jasmine

Synonyms: -Jasminum sambac.

Biological source: it is a genus of shrubs and vines in the olive family of Oleaceae.

Family: -Oleaceae.

Chemical constituents: -The main chemical constituents are benzyl acetate, linalool, benzyl alcohol, indole, benzyl benzoate, cis-jasmone, geraniol, methyl anthranilate.

Uses: - it is widely used in perfumery, aromatherapy, tea blends, due to its intense fragrance, soothing properties. Its oil has been used in aromatherapy and in cosmetics product due to its antibacterial and anti-inflammatory properties that can help to fight acne and other skin infections.

3) Neem: -

The utilization of neem as a medicinal plant is quite prevalent. Neem leaves and their derivatives are commonly employed due to their antibacterial, anti-inflammatory, antioxidant, and therapeutic properties. This remarkable herb is rich in fatty acids, vitamins, and minerals essential for the maintenance of healthy skin and hair. Active constituents such as nimbidin, nimbolide, and azadirachtin, known for their medicinal efficacy, are present in neem and can be beneficial in addressing various skin and hair problems.



Fig. 4: - Neem

Synonyms: –Neem, Nimtree, Margosa.

Family: –Meliaceae.

Biological source: –It is consisting of Leaves and other aerial parts of Azadirachta indica.

Chemical constituents: –Azadirachtin, Nimbin, Nimbidin, Nimbidol, Salannin, Quercetin, etc.

Uses: –anti fungal, anti-bacterial, anti-inflammatory, antiarthritic, antipyretic, hypoglycaemic, antigastric Ulcer, and antitumour activities, etc.

2) Passion flower: -

Passiflora comes from Latin word “Passio” that was first time discovered by Spanish discoverers in 1529 and was described as a symbol for “Passion of Christ”. Passion flower (Passiflora incarnata) is a climbing vine with yellow and purple fruit. These gorgeous blooms are three to five inches wide with a wavy fringe over five petals. The plant height is about 1.5 feet.



Fig.5: -Passion Flowers with fruit.

Synonyms: -Passion fruit, grenadelle, grenadine, passionflower, purple granadilla, purple passion fruit.

Family: -Passifloraceae.

Biological source: -passifloraendulis is also known as passion fruit, or purple passion fruit native



Native to southern Brazil paraguay to northern Argentina.

Chemical constituents: -it contains polyphenols like Hesperidin, Trans-caftaric acid, rutin, it also contains amino acid, and carotenoids.

Uses: - passionflowers having anti-anxiety property, Due to its calming effects, passionflower is also used to improve sleep quality, they also have antioxidants and anti-inflammatory properties, and protect skin cells from the aging effects of the sun. the fruits hydrates and nourishes the skin. it helps improving skin tone.

III. Material and Method.

- **Extraction of Aloe-Vera Gel.**

Choose a thick, healthy aloe vera leaf from the outer section of the plant. These leaves tend to contain more gel. use a sharp knife to cut the leaf off at the base. Rinse the leaf under cool water to remove any dirt or debris. place the leaf cut-side down in a container and let it drain for about few minutes to allow the yellow resin (aloin) to drip out. this discharge contains latex, which may cause allergic reactions in some people. Once drained, lay the leaf flat on a cutting board. Use the knife to cut off the spiky edges on both sides of the leaf. Carefully slice through the top layer of skin lengthwise from one end of the leaf to the other. Open the leaf to expose the gel inside. scoop out the clear gel from inside the leaf. for a smoother consistency, you can place the gel in a blender and blend for few seconds.

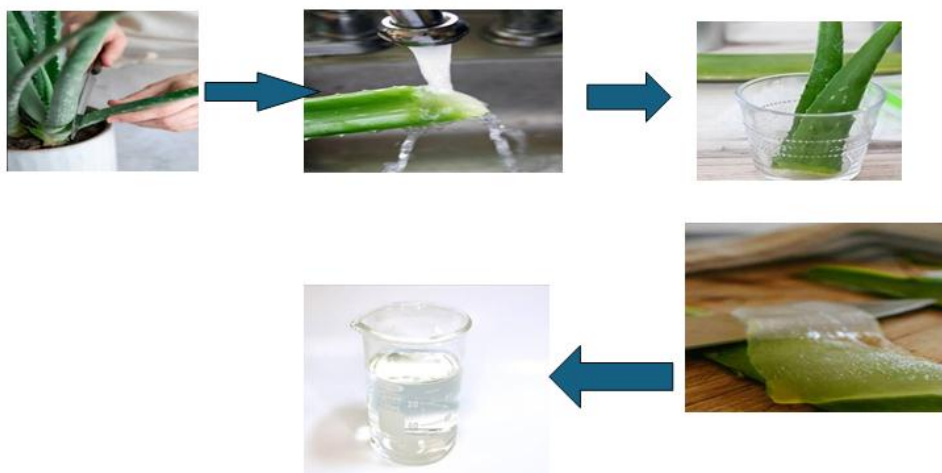


Fig. 6:- Extraction of Aloe-Vera Gel

- **Neem extraction.**

Take a neem leaves and dry them in an oven at 50 C until they are completely dry grind the dried leaves into a fine powder. mix the powdered leaves in a ratio 1:2. heat the mixture to 60-70C which is a safe temperature range that allows for efficient extraction without damaging the active compounds.

Maintain this temperature and stir the mixture continuously for about 30 to 60 minutes. After heating, strain the mixture through a Whatman filter to separate the liquid extract from the solid residue. Store the liquid extract in a clean airtight container.

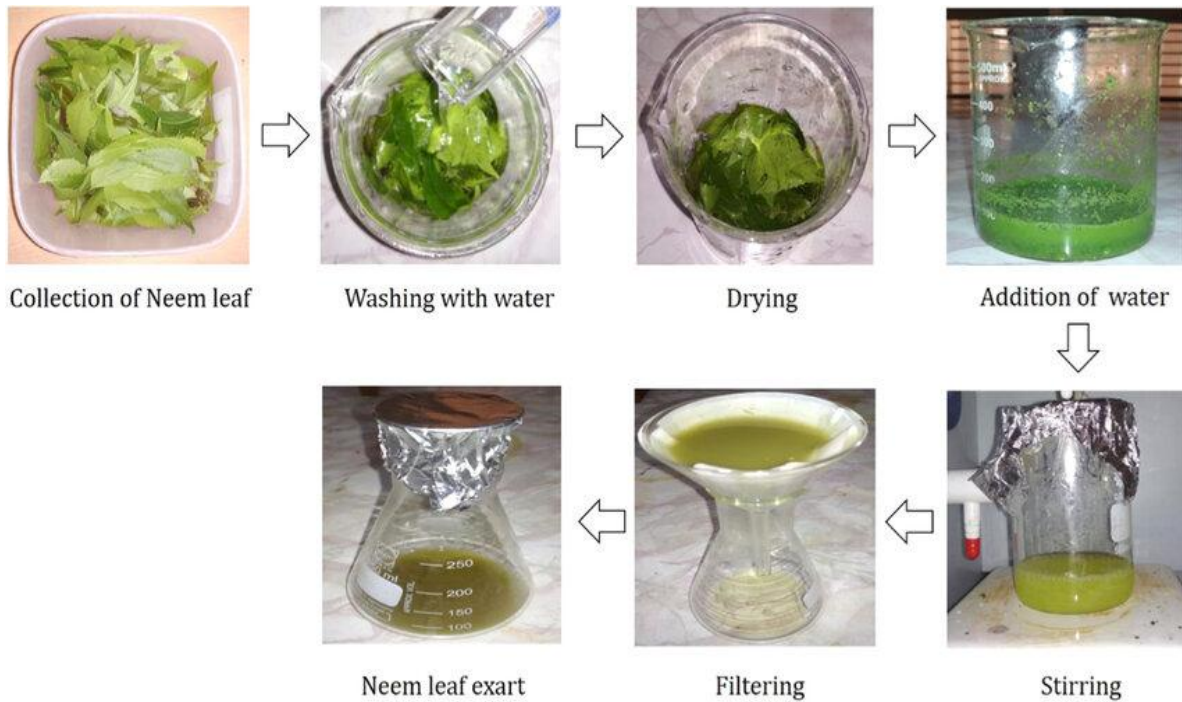


Fig. 7: - neem extraction.

• **Extraction of Jasmine.**

Separate the petals from the rest of the flower as only the petals are used in the extraction process. Use a Clevenger-type apparatus or a similar hydrodistillation setup. Fill the distillation flask with water and add the jasmine petals. The typical flower-to-water ratio is between 1:1 to 1:5. Heat the water to generate steam at temperatures 110°C. Allow the steam to pass through the jasmine petals, which will carry the volatile oils from the petals. The steam and volatile oils are then cooled in a condenser, allowing them to condense into a liquid phase. Collect the condensed liquid in a separator. The oil, being less dense than water, will float on top. After typically 4 hours of extraction, you can collect the essential oil.



Fig. 8: - hydro distillation.

• **Extraction of passion flower.**

Start with passion fruit seeds that are freeze-dried. Grind the seeds into powder and sieve them to get a uniform size of 6 mm. Place 4 g of the seed powder into the Soxhlet extractor's thimble. Fill the round bottom flask with 100 mL of hexane. Heat the Soxhlet extractor and allow it to run for 8 hours until the hexane becomes colourless, indicating that the oil has been extracted. Transfer the hexane-oil mixture to a



rotary evaporator. Heat at 60°C to evaporate the hexane, leaving behind the oil.

Formulation of Cream.

Take bees wax and heat in a borosilicate glass breaker at 75°C and maintain that heating temperatures (oil phase). In other beaker, dissolve borax, methylparaben, vitamin E in distilled water

by maintaining temperatures 75°C with water bath. Stir the solution with glass rod until all solid particles get dissolve (Aqueous phase). The gently add heated oily phase in heated aqueous phase with continue stirring.after mixing both phases, immediately add aloe-vera gel, Neem extract, Coconuts oil,Jasmine oil, and passion flower oil with continuous stirring.

Table 1. formulation table.

Sr.no.	Ingredients	F1	F2	F3	Uses
1)	Bess wax	6 gm	10gm	15 gm	Stabiliser
2)	Vit. E	1.5 gm	1.5 gm	1.5 gm	Antioxidant
3)	Powder borax.	4 gm	4 gm	4gm	Alkaline Agent
4)	Methyl paraben.	0.2 gm	0.7gm	1 gm	Preservative
5)	Aloe vera gel	5 ml	5 ml	7ml	Moisturizing Agent
6)	Neem extract	9 ml	6 ml	6ml	Antiseptic, Antiacne
7)	Jasmine oil	8 ml	8 ml	8ml	Fragrance
8)	Coconut oil	5 ml	1ml	1 ml	Emollient
9)	Passion flower oil	7.5 ml	7.5 ml	6 ml	Skin Whitening
10)	Distilled water.	Q.S.	Q.S.	Q.S.	Vehicle

• EvaluationTest.

we was prepare three batches of formulation F1, F2, F3 evaluation test are performed for all formulation.Evaluation of herbal cream was following. Physical Evaluation Formulated herbal creams was further Evaluated by using the following physical parameter physical parameter colour, odour, consistency, and state of the formulation.

a) Colour: The colour of the cream was observed by visual examination.

b)Odour: The odour of cream was found to be characteristics.

c)State: The state was cream was examined visually.

d) consistency; The formulation was examined by rubbing cream on hand manually. The cream having smooth.

- **Washability test:** -Wash ability test was carried out by applying a small amount of cream on the hand and then washing it with help of tap water.
- **Irritancy Test:** -This is used to check the quality of materials as well as chemicals and whether it is harmful to skin / mucosal or not. First of all, we have to mark area on left hand (dorsal surface). After we have to applied formulation of cream to that area and time was

noted. Then we have to leave formulation for few minutes by this we can check for irritancy.

- **PH Test:** -Take 0.5 g of cream and dispersed it in 50 ml distilled water. Then Check it's phby using digital pH meter.
- **SpreadabilityTest:** - The spread ability test show thatthe formulated cream has good spread ability or not. The less time take for the separation of both the slide better the spread ability.
- **Phase Separation.** -Prepared cream is kept in tightly closed container at Room temperature away from sunlight and observed for 24 hours for phase.
- **stability test:** - Stability testing was carried out for batch 3 i.,e F3 bykeeping formulationat 45°C and at room temperature. It was checked for any visual disturbances and phase separation from time to time over a period of 1 month.

Result and discussion.

The various quality control parameters Like Physical Appearance/Visual Inspection, PH, Irritancy, Washability, Viscosity, After Feel Phase Separation, Spread Ability, Greasiness, Stability



Test. All parameter gives favourable result. The result obtained on present study shows that the active ingredients of these drugs when incorporated in Herbal cream gives more stable products with good aesthetic appeal.

1) Evaluation test.

The Formulation prepared was evaluated for the Colour, Odour and Consistency. The Colour of the

cream was observed by visual examination which is faint green in Colour. The Odour of cream was found to be pleasant. The State was cream was examined visually. The cream was semisolid in nature. The formulation was examined by rubbing cream on hand manually. The cream having smooth Consistency. Results are listed in Table2.

Table 2. physical evaluation test

Sr.no	Parameters	F1	F2	F3
1)	Colour	green	Faint green	Faint green
2)	Odour	Pleasant	Pleasant	Pleasant
3)	consistency	oily	Smooth	Smooth
4)	State	Semisolid	Semisolid	Semisolid

2) Washabilitytest.

Formulation F1 was found to not be washable, indicating it could not be removed with effort. Formulations F2 and F3 were easily washable, suggesting better user convenience and less likelihood of residue on the skin. This characteristic is important for daily-use products to ensure cleanliness and comfort. Results are listed in Table3.

Table 3. washability test.

Sr.no	Formulation	Washability
1)	F1	Washable
2)	F2	washable
3)	F3	Easily washable.

3) Irritancy test.

Herbal Cream formulation was evaluated for the non-irritancy test. Preparation shown no redness, Edema, inflammation and irritancy. Observation of the state was done for 24 h. Results were shown in Table4.

Table 4. irritancy test.

Sr. no	Formulation	Irritancy effect	Erythema	Edema
1)	F1	Nil	Nil	Nil
2)	F2	Nil	Nil	Nil
3)	F3	Nil	Nil	Nil

4) PH test.

The pH balance of the product is important as it affects skin and surface on which there are used. The pH of our Formulated face cream falls with the ideal pH range of the cream. this ensure that the cream maintain the skin natural ph .The results were shown in Table 5.

Table 5. Irritancy test.

Sr.no	Formulation	PH
1)	F1	6.8
2)	F2	5.8
3)	F3	5.6



Fig.9: - PH Test.

5) Phase separation test.

The prepared cream was transferred in a suitable wide mouth container. Set aside for storage the oil phase and aqueous phase separation were visualizing after 24h. F1 and F2 exhibit phase separation and F3 does not exhibit any type of phase separation. The results were shown in Table 6.

Table 6. Phase separation test.

Sr no .	Formulation	Phase separation.
1)	F1	Slight phase separation
2)	F2	No phase separation
3)	F3	No phase separation.

6) Spreadability test.The spreadability result show that the F3 has the good spreadability among the formulation, making it easier to apply and more effective in covering larger areas with less product. the result show in table 7.

Table 7. Spreadability test.

Sr. No	Formulation	Spread Ability test
1)	F1	Spreadable
2)	F2	Spreadable
3)	F 3	Easily spreadable

7) Stability test.

Formulation was stored at room temperature and 25C temperature for a month and observed for physical stability like colour, consistency. There is no separation occurs at both temperature so it is found to be stable. Results were shown in table 8.

Table 8. Stability Test.

Formulation Batches	Parameters	Temperature. 25C	Room Temperature.
F1	Change in colour, odour, phase separation	No change	Slight Phase separation.
F2	Change in colour odour, phaseseparation.	No change	Phase separation.
F3	Change in colour odour and in phase separation	No change	No phase separation

IV. Conclusion.

Formulation and evaluation of herbal moisturising cream by using herbal ingredient was successfully developed. By using jasmine, neem, aloe vera, passion flower, etc. The cream shows best moisturisation effect and all herbal ingredient were used showed different significant activity. Based on the result we can say that F3 formulation stable at

the room temperature and can be safely used on the skin. Therefore, according to the statement F3 is better formulation than F1 and F2. the formulated herbal cream showed good physical appearance with faint green colour, smooth consistency, pleasant odour and semisolid state. Since the cream was prepared by using simple ingredient and simple method so cream is also economic. The cosmetic



formulation is safe to use and it gives provision barrier to protect skin. The outcomes of various cream tests indicate that the F3 formulation may be applied topically to moisturise and shield the skin from harm. Because natural medicines are thought to be safer and have less adverse effects than synthetic ones, they are more widely accepted

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