



Formulation And Evaluation Of Multipurpose Herbal Face Cream

¹Ms. Sayali M Deth, ²Shruti S Chordiya, ³Rohan R Kaswa

¹ Assistant Professor, ² Student, ³ Student

¹ Department of Pharmaceutics,

¹ Rasiklal M. Dhariwal Institute of Pharmaceutical Education and Research Late Dhodiba Detter Patil Marg,
MIDC, Chinchwad, Pune, Maharashtra 411019

ABSTRACT: Herbal cosmetics are the product employed to make every individual look better. Cream is a semisolid emulsion which is oil in water (o/w) or water in oil (w/o) form and these semisolid emulsions are to be used for external purpose. It is put on the outside of skin and its principal property is to stay longer at the place where it is applied. Medicinal creams contain a range of ingredients from cosmetic use like cleansing beautifying changing the look softening to shield the skin from bacteria, fungal infections to heal cuts, burns and wounds on the skin. The demand of cosmetics because of the availability of herbal cosmetics is growing tremendously. Herbal preparations are gaining more focus in public due to their superior quality properties and fewer side effects. Moreover, it also supplies the skin with essential nutrients and needed moisture. The aim of research was to formulate a herbal cream for moisturizing, nourishing, whitening and anti-aging. The natural materials selected for preparation of herbal cream are aloe vera, cucumber peels, curry leaves, orange peel, glycyrrhiza glabra are some herbal drugs which are traditionally used from ancient years in various herbal medicines like Ayurveda, siddha and homeopathic.

KEY WORDS–Aloe Vera, Cucumber peels, Orange Peel, Curry Leaves

1. INTRODUCTION

Demand for herbal cosmetics due to the availability of new components and financial prices to develop successful products and maintain quality standards. Cosmetics are products used on relevant parts of the body. Face cream is used as cosmetics for soft and cleaning action. The ayurveda system of the drug was one of the most important systems that use the herbal plant for treating various diseases. Unlike synthetic yogas that often contain chemicals and preservatives, herbal creams are made from natural plant extracts and essential oils, providing a safe and milder alternative for skin care. The purpose of these creams is to nourish, protect and improve the skin's general health by addressing various skin problems such as dryness, aging, acne and pigmentation. The formulation and evaluation of herbal cream involves a careful selection of active ingredients that are entitled to therapeutic properties such as antioxidants, anti-inflammatory and antimicrobial effects. In addition, these creams are often chosen for their ability to increase skin hydration, maintain elasticity and support skin regeneration, making them highly in demand by consumers who target them for healthy younger skin.

- **Herbal face cream** is considered far better than other cosmetic products because of their natural structure and general approach to skin care. Unlike traditional cosmetics, which often contain synthetic chemicals, artificial aroma and preservatives, herbal cream depends on plant -based materials, which are soft on the skin and reduce the risk of irritation or allergic reactions. Herbal creams are environmentally friendly and often atrocity -free, and correspond to durable and moral practice. Their medical properties not only increase skin health, but also provide a soothing experience, making them a complete alternative on synthetic cosmetics.
- **Cream:** Cream is a semi -solid preparation, o/w creams for oil and water are made of small drops of oil spread in a constant water stage. The o/w type is more comfortable and more acceptable when it comes to beauty with low oil, easily washed with water. W/o creams are made of small drops of water spread by a constant oil phase. W/o types is more difficult to handle because they provide a bold barrier that reduces water loss in the stratum corneum. Face cream is used to soften as cosmetic and have cleansing effect. The arrangement of non-cosmetic moisture comes in the form of cream, oil, lotion and gels. Softening helps the skin feel relaxed. The refreshing action offers a protective film for a patient with conditions such as eczema or psoriasis. Softening is an important part of skin care. Additional action applies to skin beauty such as lipstick, cosmetics and other cosmetic products.

1. ACNE:

Acne is a not unusual pores and skin situation that happens when hair follicles (pores) become clogged with oil (sebum), lifeless skin cells, and bacteria. It can lead to diverse sorts of pores and skin lesions, inclusive of pimples, blackheads, whiteheads, cysts, and nodules. Acne normally appears on regions of the pores and skin with a excessive density of oil glands, which include the face, chest, lower back, and shoulders. Herbal face creams are extensively utilized in pimples treatment because they provide a natural and mild technique to restoration the pores and skin even as minimizing facet effects. These creams incorporate plant-based components that have antibacterial, anti-inflammatory, and soothing properties. Here's a detailed clarification of how they help in acne remedy. Acne is a skin condition that reasons blemishes which includes whiteheads, blackheads, acne, and cysts. Acne can appear at the face, chest, back, shoulders, neck, arms, legs, and buttocks.

1.1 SYMPTOMS:

- Whiteheads: Clogged pores that aren't infected and have a white pinnacle
- Blackheads: Clogged pores that aren't infected and have a top this is black from exposure to air
- Papules: Small, smooth, red bumps
- Pustules: Pimples which are crimson on the bottom and feature pus at the top
- Nodules: Solid, painful lumps underneath the surface of the skin
- Cysts: Deep, pus-crammed lumps that may wreck open and form abscesses
- Redness: Redness around the skin eruptions
- Scarring: Skin that has been scarred

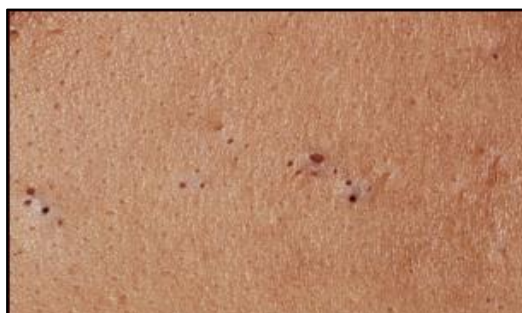


Figure 1

1.2 CAUSES:

- Acne happens whilst tiny holes at the floor of the skin become clogged. These holes are called pores.
- Each pore opens to a follicle. A follicle incorporates a hair and an oil gland. The oil launched by way of the gland facilitates put off antique skin cells and maintains your pores and skin gentle.
- The glands can emerge as blocked with an aggregate of oil and pores and skin cells. The blockage is known as a plug or comedone. If the top of the plug is white, it's far referred to as a whitehead. It is called a blackhead if the top of the plug is dark
- If bacteria grow to be trapped inside the plug, the frame's immune machine can also react to it, inflicting zits.
- Acne this is deep for your skin can motive difficult, painful cysts. This is referred to as nodulocystic acne.
- Acne is most not unusual in teenagers, however everybody can get acne, even babies. The trouble has a tendency to run in families.
- Hormonal changes that make the pores and skin oilier. These can be related to puberty, menstrual intervals, being pregnant, start control tablets, or pressure.
- Greasy or oily cosmetic and hair products.
- Certain drugs (consisting of steroids, testosterone, oestrogen, and phenytoin). Birth control gadgets, such as some drug-containing IUDs, can make acne worse.
- Heavy sweating and humidity.
- Excessively touching, resting on, and rubbing the skin.

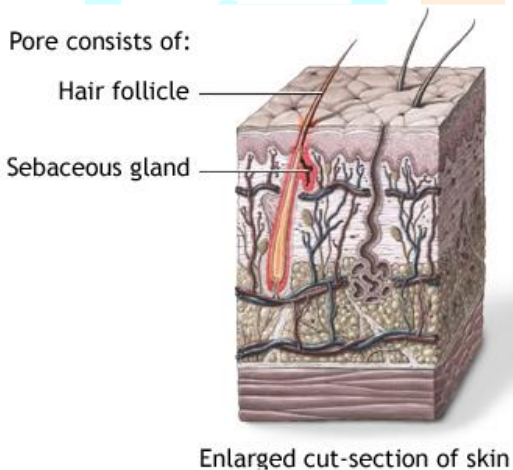


Figure 2



Figure3

1.3 HOW ACNE DEVELOPS:

1. Excess Sebum Production: Overactive sebaceous (oil) glands produce more sebum than vital.
2. Clogged Pores: Dead skin cells mix with sebum and block the hair follicles.
3. Bacterial Growth: Bacteria, particularly: *Propionibacterium acnes* (now called *Cutibacterium acnes*), thrive in clogged pores and motive inflammation
4. Inflammation: The immune device responds to bacterial growth, main to redness, swelling, and pus formation.

Advantages of using Herbal Face Creams for Acne:

- Gentle on Skin: Ideal for touchy skin types.
- Fewer Side Effects: Unlike artificial treatments, herbal ingredients are less in all likelihood to reason dryness or irritation.
- Holistic Benefits: Nourishes and heals the skin while treating pimples.
- Eco-Friendly: Often free of dangerous chemicals and greater sustainable.

2. WRINKLES:

Wrinkles are visible lines, creases, or folds that expand on the skin due to natural ageing, environmental elements, and lifestyle alternatives. They are a commonplace signal of skin ageing and can appear on diverse elements of the frame, however they're most noticeable on the face, neck, arms, and regions uncovered to the sun. Herbal face lotions are an effective and herbal method to reducing wrinkles, as they are enriched with plant-based totally ingredients that promote pores and skin repair, hydration, and rejuvenation.



Figure 4



Figure 5

2.1 HOW HERBAL FACE CREAMS HELP TREAT WRINKLES:

- 1. Boosts Collagen and Elastin Production:** Ingredients like gotu kola (*Centella asiatica*) and ginseng stimulate collagen synthesis, improving pores and skin elasticity and decreasing wrinkle intensity.
- 2. Provides Antioxidants:** Green tea, diet C (from citrus extracts), and pomegranate combat free radicals, which damage skin cells and accelerate getting older.
- 3. Deep Hydration:** Natural moisturizers like aloe Vera, shea butter, and hyaluronic acid (plant-derived) plump the skin and easy out exceptional strains.
- 4. Improves Skin Texture:** Exfoliating retailers like papaya extract or fruit enzymes remove lifeless skin cells, revealing smoother, younger-searching skin.
- 5. Reduces Inflammation:** Chamomile, liquorice root, and aloe Vera soothe infection and calm pores and skin, making it extra resilient.
- 6. Stimulates Skin Renewal:** Herbal extracts like retinol (from rosehip oil) promote cellular turnover, which allows fade wrinkles and improves skin tone.
- 7. Sun Protection:** Ingredients like carrot seed oil and zinc oxide offer herbal UV safety, stopping similarly sun harm.

2.2 TYPES OF WRINKLES:

- 1. Dynamic Wrinkles:** Caused by way of repetitive facial actions (e.g. smiling, frowning and squinting). Examples: Crow's toes (around the eyes), forehead traces, and giggle strains.
- 2. Static Wrinkles:** Present even if the face is at rest. It is caused by means of a loss of elasticity, collagen breakdown, and environmental factors.
- 3. Fine Lines:** Small, shallow creases that seem on the surface of the skin. Commonly visible across the eyes and mouth
- 4. Deep Wrinkles:** More reported strains that shape through the years. Found at the brow, between the brows, and around the mouth.

2.3 SIGNS AND SYMPTOMS OF WRINKLES:

- **Fine Lines:** Small, shallow creases on the pores and skin, frequently performing across the eyes (crow's toes), mouth (smile traces), and brow.
- **Deep Furrows:** Deeper grooves or folds within the skin, usually visible on the brow, among the eyebrows (frown strains), and alongside the nasolabial folds.
- **Skin Laxity:** Loss of skin firmness and elasticity, making the wrinkles more stated.
- **Thin Skin Texture:** The skin turns into thinner, in particular on the face, neck, and arms, enhancing the visibility of wrinkles.
- **Dry Skin:** Dry, dehydrated pores and skin might also highlight nice strains and wrinkles extra prominently.

2.4 CAUSES OF WRINKLES:

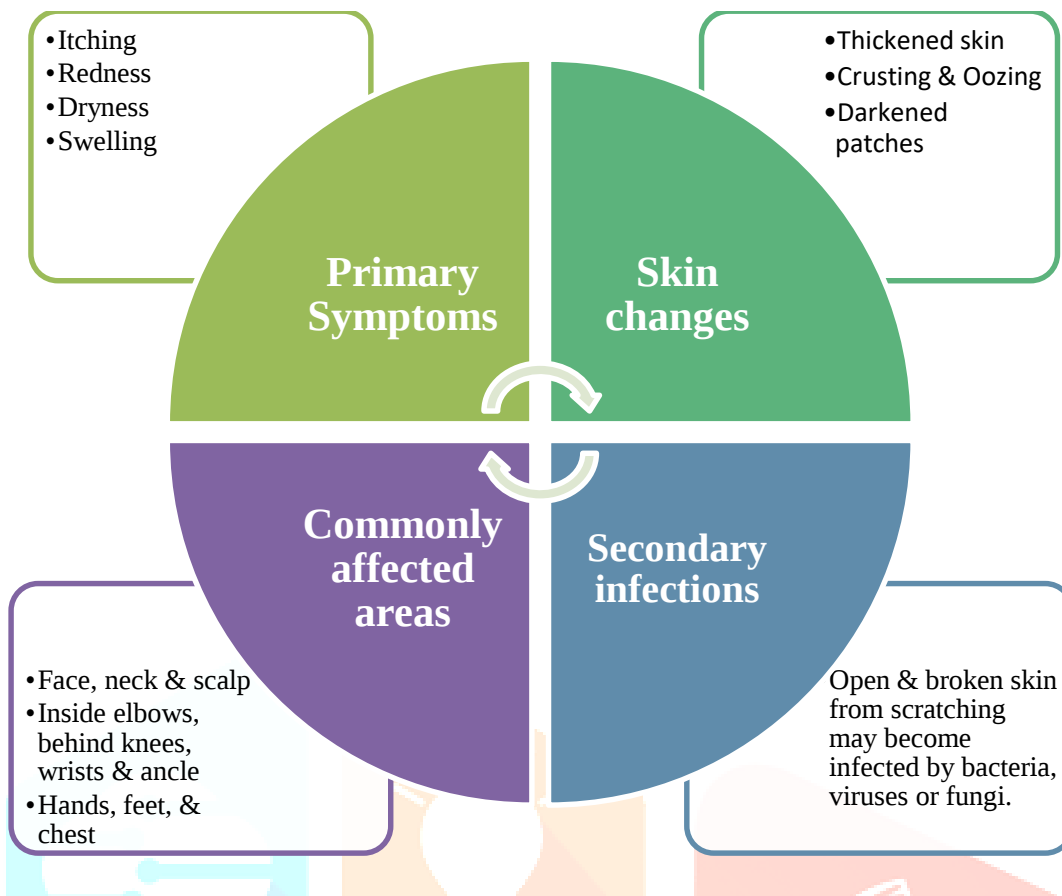
1. **Aging:** Decreased production of collagen and elastin weakens skin shape. Slower cell turnover and decreased oil production cause dryness and satisfactory lines.
2. **Sun Exposure (Photo growing older):** UV radiation breaks down collagen and elastin fibers, accelerating pores and skin growing old.
3. **Facial Expressions:** Repeated movements, including smiling, frowning, or squinting, can cause dynamic wrinkles.
4. **Lifestyle Factors:** Smoking, pressure, and negative weight loss plan make a contribution to premature skin growing older.
5. **Genetics:** Some humans are genetically predisposed to growing wrinkles earlier.

3. ECZEMA:

Eczema, additionally referred to as atopic dermatitis, is a persistent inflammatory skin situation that reasons purple, itchy, and infected patches of pores and skin. It can have an effect on humans of all ages but is more commonplace in children. Eczema is not contagious but tends to be linked to genetic and environmental elements. It often occurs in people with a records of allergic reactions, asthma, or hay fever. Causes of Eczema: Eczema is a end result of a mixture of genetic and environmental elements that disrupt the skin's natural barrier feature.

1. **Genetic Factors:** Mutations inside the filaggrin gene (FLG) have an effect on the skin's potential to preserve moisture and shield against irritants.
2. **Immune System Dysregulation:** An overactive immune response triggers infection within the pores and skin.
3. **Environmental Triggers:**
 - **Allergens:** Dust mites, pet dander, pollen, and mold.
 - **Irritants:** Harsh soaps, detergents, perfumes, and positive fabric.
 - **Climate:** Dry or bloodless weather can get worse symptoms.
 - **Heat and Sweat:** Triggers itchiness and flare-ups.
4. **Lifestyle and Emotional Factors:** Stress and tension can exacerbate eczema symptoms.
5. **Food Allergies:** Certain ingredients, such as dairy, eggs, nuts, or gluten, can act as triggers in some people.

3.3 SIGNS AND SYMPTOMS OF ECZEMA:



3.4 BENEFITS OF HERBAL FACE CREAMS FOR ECZEMA:

1. **Soothing Itchiness and Redness:** Ingredients like chamomile, calendula, and aloe Vera have anti-inflammatory and cooling residences that reduce infection.
2. **Restoring the Skin Barrier:** Shea butter, coconut oil, and jojoba oil replenish lost lipids and prevent moisture loss.
3. **Reducing Inflammation:** Herbal extracts like turmeric, liquorice root, and gotu kola calm the immune response and reduce swelling.
4. **Hydrating Dry Skin:** Hyaluronic acid, glycerin, and honey deeply hydrate and lock in moisture.
5. **Healing and Repairing:** Ingredients like rosehip oil, evening primrose oil, and nutrition E promote mobile regeneration and restore damaged skin.
6. **Protecting Against Infections:** Antimicrobial dealers inclusive of tea tree oil, neem, and Manuka honey help prevent secondary infections.

4. MATERIALS AND METHOD

4.1 INGREDIENTS OF MULTIPURPOSE HERBAL FACE CREAM:

4.1.1 ALOE VERA:

(Aloe Barbadensis) belong to Family- Liliaceae, which having 300 species. Aloe Vera is cactus like plant that develops without problems in hot, dry climates and cultivated in large quantities. Cosmetics and a few medicinal products are made up from the mucilaginous tissue in the center of aloe vera leaf and called Aloe Vera gel. Aloe Vera has effect of soothe sunburn, antibacterial properties that can helps to control and reduce acne-causing bacteria. Aloe Vera includes 75 doubtlessly lively constituents like enzymes, amino acids, vitamins, and minerals.

4.1.2 CUCUMBERS:

(*Cucumis sativus* L.) belong to the Cucurbitaceae family including melon, watermelon, pumpkin and zucchini. It is widely consumed sparkling in salads or fermented (pickles) or as a cooked vegetable. They are broadly used for various skin issues inclusive of swelling below the eyes and sunburn. It is believed that they possess cleaning, cooling, healing, calming, moisturizing, anti-ageing and anti-itching properties for irritated skin. *Cucumis sativus* L., commonly known as cucumber, has a remarkable nutrient profile with its high water content (96.4%), it's excellent for hydration. Its modest contributions of protein (0.4%), fat (0.1%), and carbohydrates (2.8%), calcium (0.01%), phosphorus (0.03%), iron (1.5 mg per 100 g), and vitamin B (30 IU per 100 g). The bioactive compounds from cucumber consists of cucurbitacins, cucumegastigmanes I and II, cucumerin A and B, vitexin, orientin, isoscoparin 2''-O-(6'''-(E)- p-coumaroyl) glucoside, apigenin 7-O-(6''-O-pcoumaroyl)glucoside).

4.1.3 GLYCYRRHIZA GLABRA:

Liquorice belongs to circle of relatives fabaceae additionally called Leguminosae and includes lively constituent called glycyrrhizin and treats skin situations which includes eczema, skin inflammation and itching. It is having anti-oxidant, skin-soothing and anti-microbial homes. It also lightens the skin.

4.1.4 ORANGE PEEL:

The orange fruit that comes from the *Citrus sinensis* tree belongs to the circle of family Rutaceae. They are high in Vitamin C, can efficiently lessen the appearance of wrinkles, satisfactory lines, and hyperpigmentation. They can also without difficulty promote the creation of collagen, as a way to provide you with company, plump pores and skin. Orange peel is a great way to preserve your skin clean of pollution. The appropriate skin care regimen and the important vitamins are essential in this case. And Vitamin C is the only excellent thing you constantly need for pores and skin that looks better and brighter. Vitamin C is a crucial component of beauty merchandise for the pores and skin treatment.

4.1.5 CURRY LEAVES:

Murraya koenigii commonly called Meethi neem, curry Patta, Linn (Rutaceae) is a fragrant, mostly deciduous shrub or small tree which could develop up to 6 meters in peak. It may be found all at some point of India and may reach elevations of as much as 1500 meters. It is grown for its aromatic leaves. It is used as an antiemetic, Antioxidant, anti-diarrheal, dysentery, febrifuge, blood cleanser, tonic, stomachic, and flavoring component in curries and chutneys inside the traditional medical system. The oil is applied externally for blisters, eruptions.

4.2 METHODS:

It involves following steps:

- Collect all the ingredients like aloe Vera, cucumber peels, orange peel, glycyrrhiza glabra, curry leaves from the local areas.
- Sterilize all the ingredients by using hot air oven.
- Dry all the ingredients & make its powdered form.
- Extraction of the herbal crude drugs from the ingredients. Extraction is done by using soxhlet separately, with the solvent ethanol and petroleum ether with the ratio of 40:60. Once they are extracted dry in the hot air oven in the controlled temperature, cool it and preserve it.
- Phytochemical screening of essential crude drug.
- Preparation of the oil phase & the aqueous phase.

4.2.1 OIL PHASE:

1. Take the porcelain dish.
2. Add bees wax, propylene glycol, white soft paraffin according to their melting point in ascending order.
3. Now stir the oil phase.

4.2.2 AQUEOUS PHASE:

1. Take the extract of cucumber peel and curry leaves.
2. Extract of glycyrrhiza glabra & orange peel.
3. Add aloe Vera extract to the further mixture.
4. Also add methyl paraben, zinc oxide, borax, sodium benzoate.

4.3 FORMULATION OF CREAM: (shown in fig.6)

1. Beeswax, Propylene glycol, White soft paraffin was taken in first beaker
2. Then heat on a water bath for uniform mixing
3. After few minutes oil phase was formed.
4. Aloe Vera extract and cucumber peel extract, distilled water, and glycerine, zinc oxide, sodium benzoate was taken in second beaker.
5. Mixing all the ingredients by heating on a water bath, the aqueous phase was formed.
6. Oil phase was added into aqueous phase and continuous stirring was done until semisolid mass was formed.



Figure 6

4.4 METHODOLOGY:

Content of the formulated herbal face cream:

Table 1:

Ingredients	Properties	F1	F2	F3
Curry leaves	Antioxidant	1.2gm	1gm	1.5gm
Cucumber Peel	Anti-ageing	0.8gm	1gm	0.9gm
Glycyrrhiza glabra	Skin-soothing	0.5gm	0.8gm	0.7gm
Orange Peel	Fights Acne	1gm	1gm	0.5gm
Menthol	Cooling agent	0.2ml	0.1ml	0.2ml
Aloe Vera	Soothe sunburn	1.5 gm	1.5gm	2gm
Methyl paraben	Preservative	0.3ml	0.2ml	0.1ml
Zinc oxide	Antimicrobial	0.7gm	0.8gm	0.7gm
Sodium benzoate	Antimicrobial	0.1gm	0.1gm	0.1gm
Beeswax	Skin-softening	3.2gm	3gm	3.1gm
Propylene glycol	Moisturizing agent	1ml	0.5ml	1ml
White soft paraffin	Occlusive agent	9ml	8ml	8.5ml
Borax	Alkaline agent	2.5gm	3gm	2.7gm
Distilled water	Vehicle	Qs	Qs	Qs
Glycerine	Vehicle	1ml	2ml	1ml
Rose oil	Fragrance	Qs	Qs	Qs

5. RESULT AND DISCUSSION

5.1 PHYSICOCHEMICAL TEST:

Evaluation parameters of herbal cream were followed:

5.1.1 PHYSICAL EVALUATION

Herbal creams were evaluated by using physical parameters like colour, odour, consistency, state of formulation.

- a) **Colour:** Colour of the cream was observed by visual examination as shown in table 3.
- b) **State:** The state of cream was examined visually. The cream was solid in state.
- c) **Odour:** The odour of cream was found to be characteristic, as shown in table 3
- d) **Consistency:** The cream having smooth consistency which was examined by rubbing cream on hand manually.
- e) **pH:** pH of a prepared herbal cream was measured by using digital pH meter. The solution of a cream was prepared by using 100ml of distilled water & set aside for 2hrs. pH was determined in thrice for the average value to be calculated, results are shown in table 3.
- f) **Spredability:** Formulated herbal cream was placed in between two slides then compressed to uniform thickness by placing a definite weight for definite time. The specified time required to separate the two slides was measured as spredability. Lesser the time taken for separation of two slides more the spredability result found to be better. Spredability was calculated by using following formula. Result were shown in table 3.

$$\text{Spredability (S)} = \frac{\text{Weight tide to upper slide(W)} \times \text{Length of glass slides(L)}}{\text{Time taken to seprateslide(T)}}$$



Figure 7

- g) **Washability:** Formulation was applied on skin & then ease extend washing with water was checked. Results shown in the table 3.
- h) **Non-irritancy test:** Evaluation for non-irritancy test was shown, no red ness & irritancy. Results shown in the table 3.
- i) **Viscosity:** Viscosity of cream was done by using Brooke field viscometer at the temperature of 25C. Results was shown in the table 3.
- j) **Phase separation:** Prepared cream was store in a wide mouth container the oil phase & aqueous phase separation was visualizing after 24hrs, results were shown in the table 3.3
- k) **After feel:** Emoliency slipperiness & amount of residue left after application of the fixed amount of cream was found to be better. Observation shown in table 3.
- l) **Anti-microbial test:** The bacterial stock culture 'Macconkey' was obtained and culture was grown overnight. Inoculate it and make the round well, in agar plate punched 4mm deep and 16mm diameter for utilizing sterile plug-borer and the prepared formulation is added. Incubate agar plates at 370°C for 24 hours in an incubator. The diameter of bacterial inhibition zones around each well was recorded.



Figure 8

5.1.2 PHYTOCHEMICAL SCREENING

Table 2:

Phytochemical Constituents	Curry Leaves	Orange peel	Aloe Vera	Cucumber peel	Glycyrrhiza glabra
Alkaloids	+	+	+	-	-
Tannins	+	+	+	+	+
Flavonoids	+	+	+	+	+
Saponins	+	+	+	+	+
Carotenoids	+	-	-	-	+

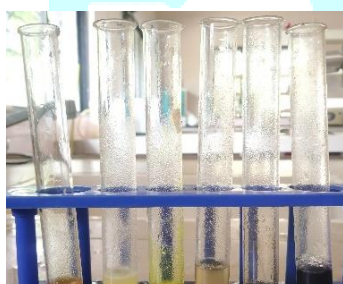


Figure 9



Figure 10

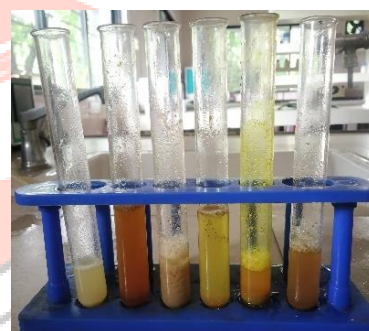


Figure 11

5.2 RESULT:

The present research was the formulation and evaluation of polyherbal face cream. The evaluation parameters were coming under results, like the physical evaluation of polyherbal face cream, pH of the cream, spreadability, washability, non-irritancy test, viscosity and phase separation of the polyherbal face cream. Maximum antibacterial activity was shown. Analysis of variance showed significant difference between zone diameter.

Table 3:

Sr no.	Parameters	Results
1	Colour	White green
2	Odour	Characteristics
3	State	Semisolid
4	Consistency	Smooth
5	Ph	6-May
6	Spredability	5.4 g.cm/cm
7	Washability	Easy washable
8	Non- irritancy test	Non-irritant
9	Viscosity	39015
10	Phase separation	No phase separation
11	After feel	Emollient

5.3 DISCUSSION:

The present work was the formulation and evaluation of polyherbal cream. This cream formulation was o/w type of emulsion; hence this formulation was easily washed with plane water after application. The prepared formulation was good spreadability. Viscosity and PH of the cream was good. Cream does not show any type of phase separation during storage. The cream was non-greasy in nature and easily removable after application. The formulation was Non-irritant and not harm to the skin.

5.4 CONCLUSION:

Formulation of cream was done by slab method and further evaluated by various evaluation parameters such as physical properties, PH, spreadability, washability, non-irritancy test, viscosity and phase separation of cream and gives good results.

6. REFERENCES:

- [1] M. Varinia Michalun and Joseph C. DINARDO , SKIN CARE AND COSMETIC INGREDIENTS DICTIONARY , 2015, 2010, 2001, 1993 Milady, a part of Cengage Learning , Fourth Edition.
- [2] Meyer R. Rosen, Harry's Cosmeticology, Chemical Publishing Company, 2015 September, Third Volume, Ninth edition
- [3] Meyer R. Rosen, Harry's Cosmeticology, Chemical Publishing Company, 2015 May, Volume One.
- [4] Meyer R. Rosen, Harry's Cosmeticology, Chemical Publishing Company, 2007 February, Second Volume.
- [5] Stephen Barton, Allan Eastham, Amanda Isom, Denise McLaverty and Yi Ling Soong, 2020 September, Discovering Cosmetic Science, CPI Group (UK) Ltd.
- [6] <https://www.savvyhomemade.com/lavender-and-aloe-face-cream/> [Visited on 9 October 2021]
- [7] <https://www.healthline.com/health/orange-essential-oil-uses#benefits> [Visited on 23 October 2021]
- [8] <https://www.netmeds.com/health-library/post/geranium-essential-oil-a-highlynderratednatural-infusion-for-smooth-skin-and-mental-health> [Visited on 3 November 2021]
- [9] <https://www.netmeds.com/catalogsearch/result?q=orange+essential+oil> [Visited on 14 November 2021]
- [10] <https://www.netmeds.com/catalogsearch/result?q=orange+essential+oil> [Visited on 28 November 2021]
- [11]<https://www.webmd.com/diet/healthbenefitscocoabutter#:~:text=Cocoa%20butter%20is%20a%20decent,brain%2C%20skin%2C%20and%20blood.&text=Cocoa%20butter%20contains%20a%20hig,primary%20ingredient%20in%20skin%20cream> [Visited on 7 December 2021]
- [12] https://www.nutraceuticalsworld.com/issues/Beauty-IO2018/view_features/foundations-for-formulating-skin-care-products/ [Visited on 24 Formulation and evaluation of herbal face cream Project work ApeejayStya University December]

- [13] <https://www.glenbrookfarm.com/pages/make-your-own-face-creams> [Visited on 3 January 2022]
- [14] <https://formulabotanica.com/organic-face-cream-formulation-xyliance/> [Visited on 27 January 2022]
- [15] <https://rjptonline.org/HTMLPaper.aspx?Journal=Research%20Journal%20of%20Pharmacy%20and%20Technology;PID=2020-13-1-43> [Visited on 15 February 2022]
- [16] https://www.researchgate.net/publication/358662530_Formulation_and_Evaluation_of_Herbal_Face_Cream [Visited on 25 February 2022]
- [17] <https://www.ncbi.nlm.nih.gov/pmc/?term=formulation+and+evaluation+of+herbal+face+cream> [Visited on 9 March 2022]
- [18] <https://www.sciencedirect.com/search?qs=formulation%20and%20evaluation%20of%20herbal%20face%20cream> [Visited on 21 March 2022]
- [19] <https://www.botanylibrary.com/herbal-cosmetics/list-of-raw-materials-used-for-preparing-herbal-cosmetics-botany/16058> [Visited on 4 April 2022]
- [20] <https://rjtcsonline.com/AbstractView.aspx?PID=2013-4-1-1> [Visited on 13 May 2022]

