

Formulation and Evaluation of Multipurpose Herbal Cream

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Abstract: *Herbal cosmetics are the preparation use to enhanced human appearance. Semi solid dosage forms that are usually applied topically on skin are called creams. The main dream to current study is to prepare the herbal cream like herbal multipurpose uses. Multipurpose skin cream prepared by using oil in water method. The natural ingredients chosen for preparation of herbal cream are turmeric, Aloe-vera, Neem. The choice of these ingredients is based on their individual properties. Chemical based cosmetics are harmful to the skin and an increased awareness among consumers for herbal products triggered the demand for natural products and natural extracts in cosmetics preparations. The increased demand for the natural product has created new avenues in cosmeceutical market. The natural content in the botanicals does not cause any side effects on the human body; instead enrich the body with nutrients and other useful minerals.*

Keyword: Herbal cream drugs; Aloe barbadensis (Aloe vera leaves), Azadirachta Indica (Neem-leaves), Curcuma longa (Turmeric-rhizomes), Multipurpose cream, cosmetics.

1. Introduction

The concept of beauty and cosmetics is as ancient as mankind and civilization. Indian herbs and its significance are popular worldwide. Cosmetics are products which are used to purify and beautify the skin. These products are of active ingredients purporting to have medical and drug-like benefits. A certain number of women are still using herbal cosmetics to beautify their skin. Cosmetics are the substances intended to be applied to the physical body for cleansing, beautifying, promoting attractiveness, and altering the looks without affecting the body's structure or functions. Cosmetics are products which are used to purify and beautify the skin. These products are of active ingredients purporting to have medical and drug-like benefits. A certain number of women are still using herbal cosmetics to beautify their skin. These products are of active ingredients purporting to have medical and drug-like benefits. A certain number of women are still using herbal cosmetics to beautify their skin. The main aim of our work is to develop an herbal cream which can give as multipurpose effect like Moisturizer, reduce acne and skin irritation, dry skin, wrinkle, rashes, etc. Cosmetic are the products applying on the body. The consumer demand towards herbal beauty products increasing rapidly. Plant components used when Preparing cosmetic should have variety of Characteristics, including antibacterial, Emollient, antiseptic, anti-inflammatory, and antioxidant. Commercially creams are divided into Allopathic creams and herbal creams. Allopathic creams have aesthetic appeal, but they utilize harmful chemicals, dyes, and derivatives, which have proved to Cause various skin diseases and side effects. Herbal creams have Aesthetic appeal but are utilized for fewer skin diseases and side Effects. These are the creams where; herbs are used in crude or extract Form.

Cream:

Cream is described as semi solid emulsions of the water in oil (w/o) or oil in water (o/w) type that are meant to be

applied externally. Cream is divided into two categories: water in oil emulsion and oil in water. Its primary function is to stay longer at the application site when applied to the outer or superficial layers of the skin.

The function of a skin cream is to protect the skin against harshness from the Environment and any dry conditions of the skin. A skin cream should aid the skin in carrying out its normal functions that is, restoring moisture to dry skin, allowing the elimination of waste matter through the pores, and the cooling of the body by evaporation of water (perspiration) and radiation, thus aiding in the maintenance of the normal body temperature.

Herbal Creams:

Herbal creams are emulsions which includes both oil and water. They may contain things like neem, aloe Vera, and Turmeric. Different tinctures, extracts, and essential oils can be found in herbal creams. Vitamins and minerals are natural nutrients found in herbal creams, which are free of Synthetic additives that might be toxic.

Types of Cream:

On the basis of phase

Oil-in-Water (O/W)

Cream that consist of small oil droplets distributed in a continuous phase are referred to as oil-in-water (O/W) creams. Whereas, an emulsion containing oil droplets dispersed across the aqueous phase is referred to as an oil-in-water (O/W) emulsion. e.g.- Fluocinolone acetonide cream

Water-in-Oil (W/O)

Creams Consisting of water combined with oil in a Continuous phase, are referred to as water-in-oil (W/O) creams. The emulsion is considered to be water-in-oil (W/O) type when the dispersed phase is water and the

Dispersion medium is oil. E.g-cold cream

Classification of Cream on the Basis of Function

- Cleansing and cold cream.
- Foundation and vanishing cream.
- Night and massage cream.
- Head and body cream.
- All-purpose and general cream.

Advantages of Herbal Creams:

- 1) **Natural Ingredients:** One of the main advantages of herbal creams is that they are formulated using natural ingredients derived from plants, herbs, and botanical extracts. This can be appealing to individuals who prefer to use products with minimal or no synthetic chemicals, as natural ingredients are often considered gentler on the skin.
- 2) **Potential for fewer side effects:** Herbal creams are generally less likely to cause adverse reactions or side effects compared to products containing synthetic ingredients or harsh chemicals. Natural ingredients in herbal creams are often well-tolerated by a wide range of skin types, including sensitive skin.
- 3) **Holistic Approach:** Herbal creams take a holistic approach to skincare by considering the overall health and well-being of the skin. They often provide a combination of benefits, Such as hydration, nourishment, soothing, and antioxidant protection, contributing to the overall improvement of skin health.
- 4) **Potentially effective for specific concerns:** Many herbal creams are formulated to address specific skin concerns, such as acne, aging signs, dryness, or sensitivity.

Disadvantages of Herbal Creams:

- 1) **Limited Effectiveness:** While marketed for various uses, they may not perform as effectively for specific conditions compared to specialized treatments.
- 2) **Inconsistent Quality:** The quality and concentration of herbal ingredients can vary between brands, leading to unpredictable results.
- 3) **Skin Sensitivity:** Some herbal ingredients may increase skin sensitivity or cause photo sensitivity, making the skin more reactive to sunlight.
- 4) **Potential Contaminants:** Poor manufacturing processes can result in contamination with harmful substances or heavy metals.
- 5) **Lack of Regulation:** Herbal products are often less regulated than pharmaceutical drugs, leading to concerns about safety and efficacy.
- 6) **Short Shelf Life:** Natural ingredients may have a shorter shelf life, affecting the product's potency over time
- 7) **Misleading Claims:** Marketing may exaggerate benefits, leading consumers to have unrealistic expectations.

2. Aims & Objective

The aim of a herbal multipurpose cream is to provide a

natural, chemical-free solution for comprehensive skin care, addressing various skin concerns such as hydration, soothing irritation, improving texture, and promoting overall skin health. It seeks to utilize the therapeutic properties of herbal ingredients to create a safe and effective product suitable for all skin types. It is free from synthetic additives, ensuring it caters to diverse skin conditions like dryness, sensitivity, and acne, and promoting the use of eco-friendly, sustainable skincare alternatives. Additionally, the cream aims to educate consumers about the benefits of herbal ingredients while offering a cost-effective, versatile solution for daily skincare needs.

- **Promote Natural Skincare:** Use natural, plant-based ingredients to provide a gentle and effective alternative to chemical-laden creams.
- **Moisturize and Nourish Skin:** Offer deep hydration and nourishment to keep skin soft, smooth, and supple.
- **Relieve Common Skin Conditions:** Address issues like dryness, inflammation, minor cuts, and irritations with soothing herbal extracts.
- **Provide Antioxidant Protection:** It help to protect the skin from environmental damage using antioxidants from herbs like aloe- vera, turmeric.
- **Versatile Skin Solution:** Serve multiple skin needs, such as hydration, healing, and protection, making it convenient for daily use on different parts of the body
- **Promote Skin Healing:** Speed up the healing of minor cuts, burns.

3. Review of Literature

Chauhan Lalita, et.al (2020) examined that creams were considered an important part of cosmetic product as topical preparations from time immemorial due to their ease of application to the skin and also their removal. From cosmetic purposes, pharmaceutical creams have a variety of applications such as cleansing, beautifying, altering appearance, moisturizing etc. to skin protection against bacterial, fungal infections as well as healing cuts, burns, wounds on the skin. These semi solid preparations are safe to use by the public and society.

Navindgikar Nitin, et.al (2020) investigated cream as semisolid emulsions which are oil In water (o/w) or water in oil (w/o) type and these semisolid emulsions are intended for external application. Cream was classified as oil in water and water in oil emulsion. It is applied on outer part or superficial part of the skin and its main ability was to remain for a longer period of time at the site of application. The function of a skin cream is to protect the skin against different environmental condition, weather and gives soothing effect to the skin.

Aswal Ashish, et.al (2013) investigated that the cosmetic products are used to protect skin against exogenous and endogenous harmful agents and enhance the beauty and attractiveness of skin. The use of cosmetics not only developing an attractive external appearance, but towards achieving longevity of good health by reducing skin disorders.

Dr.Archana, et.al (2019) studied that the herbal cream were the preparations used to improve the individual appearance. The aim of the present study was to prepare the herbal cream for the use of moistening, nourishing and cure of various disease of the skin. Different crude drugs like Aloe barbadensis(Aloe-vera leaves), Azadirachta Indica (Neem-leaves), Curcuma longa (Turmeric rhizomes) and Emblica officinali (Amla) were used to formulate the cream. The selection of ingredients based on the different medicinal properties of the agents. The cream was subjected to various evaluation parameters.

Abhijeet Pandey, et.al (2010) studied that, herbal ointment containing Aloe Vera, Neem and Turmeric was formulated and evaluated to study antibacterial and anti-fungal activity. The evaluation was done using cup plate method for zone of inhibition and twofold dilution method for MIC (Minimum Inhibitory Concentration). The study showed that Aloe ointment was exhibiting broad-spectrum anti-fungal activity and antibacterial activity against E.coli. The overall experiment showed that aloe ointment and Turmeric ointment showed more anti-fungal activity than neem ointment.

KL Satpute, et.al (2019) analysed that many plants seem to have inhibitory effects on the growth of bacteria, fungi and viruses in vitro. However, there were few clinical evidences about the effectiveness and safety of these plants in the treatment of acne and other skin infections. Consumption of alternative and complementary medicine, including medicinal plants, is increasing and is common amongst patients affected by acne and infectious skin diseases. Medicinal plants have a long history of use and have been shown to possess low side effects. This plant is a reliable source for preparation of new drugs. As the herbal formulations of Boswellia oil had shown better anti-acne activity.

Sujith S Nair, et.al (2012) observed that creams were formulated based on the anti-oxidant potential of herbal extracts and its evaluation. Selected plant parts were dried and extracted using 70% alcohol by maceration. The extract was tested for antioxidant activity by super-oxide scavenging activity. Quality evaluation of the product was assessed by using different evaluation methods. No change of the physical properties was observed; the pH was in a proper range (approximately pH6). The marker Cur-cumin was present in the extract; formulation and the peak were comparable with standard Cur-cumin obtained by HPLC.

4. Ingredients

- 1) Herbal constituent
 - a) Aloe Vera
 - b) Turmeric
 - c) Grapes seed oil
 - d) Neem
- 2) Aqueous Phase
 - a) Distilled water
 - b) Borax
 - c) Propyl paraben
- 3) Oil Phase
 - a) Liquid paraffin

- b) Bess wax
- c) White soft paraffin

4.1 Herbal Constituents

1) Aloe Vera

Family: Asphodelaceae.

Biological source: Dried latex of takes off of aloe vera.

Biological Name: Aloe barbadensis miller

Aloe Vera provides moisture to the skin tissue directly. Moisture management and an apparent capacity to absorb UV rays are two further features. It has a modest calming effect on the skin, making it beneficial for sensitive, burnt, and sun-exposed skin. In traditional medicine, aloe Vera was used to treat burns. It's popular in sun preparations for cooling and soothing since it's frequently used in gels to refresh and relax inflamed skin. Furthermore, it has been demonstrated to be useful in emulsions designed to control dry skin. When taken in combination with other anti-inflammatory drugs, aloe Vera appears to have a synergistic impact. Over 50% concentrations have been demonstrated to increase the blood supply to the area of application.

Therapeutic uses: A number of advantageous impacts of aloe vera counting immunomodulatory, wound and burn recuperating, hypoglycemic, anticancer, gastro-protective, anti-fungal, and anti-inflammatory property.

Medicinal Uses:

These polyphenols, beside a few of the other compounds in aloe vera, offer assistance anticipate the Development of certain microscopic organisms that can cause infection in people. Aloe Vera is known for its antibacterial, anti-fungal and antiviral properties. This can be one reason why it makes a difference to mend wounds and remedy skin issues. Aloe Vera is regularly alluded to as a corrective utilized to treat sunburn.

Also, it may give other well-being benefits, basically due to its antioxidant properties. Preparatory investigate proposes that aloe vera may advantage your skin, teeth, mouth and stomach related well-being.

Benefits of Aloe Vera:

- Its relieving properties can lessen agony, growing and trickiness of wounds or wounds.
- It affects rashes or sun related burn.
- It upholds the arrangement and arrival of collagen.
- Aloe-vera is rich in saturating properties.
- Forestall or decrease kinks and dim spots all over.
- Relieves exasperated skin.
- Wipe out indications of maturing.



Figure 1: Aloe-Vera

2) Turmeric

Family: Zingiberaceae

Biological Source: Rhizomes of *Curcuma longa*

Biological Name: *Curcuma longa* L

Turmeric, derived from the rhizome of *Curcuma longa*, is a key ingredient in herbal multipurpose creams due to its versatile benefits. It acts as an antiseptic, promoting wound healing and preventing infections. Its anti-inflammatory properties help reduce redness, swelling, and irritation, while its antioxidant effects protect the skin from free radical damage and slow aging. Additionally, turmeric brightens the skin, reduces pigmentation, and soothes acne-prone skin by controlling oil production. This makes it an ideal component for creams addressing cuts, burns, rashes, acne, and other minor skin issues.

Medicinal Uses:

Natural anti-inflammatory, anti-cancer, powerful antioxidant, protects against heart disease, cures or prevents diabetes, prevents Alzheimer's disease, treats depression, improves skin health, prevents eye degeneration, prevents chronic age-related diseases, Treatment of rheumatoid arthritis, protect your body from free radicals, Help with osteoarthritis.

Benefits of Turmeric

- Improve heart health and prevent Alzheimer's and cancer
- Powerful antioxidant
- Treatment and prevention of diabetes
- Improve skin health
- Add shine to the skin
- Treats depression
- Treats acne
- Reduce dark circles under the eyes
- Could help eczema with psoriasis
- Cleans the skin
- Aids wound healing
- Supports weight loss and protect your body from free radicals



Figure 2: Turmeric

3) Grape's Seed Oil

Family: Vitaceae

Biological Source: Seeds of *Vitis vinifera* Biological Name: *Vitis vinifera* L

The berries of *Vitis vinifera* L. ssp. *sativa* grapes have been of interest worldwide due to the nutritional properties of the natural product (raw and dried fruit) and wine and the pharmaceutical properties of derivatives, such as peel and seed extracts. For instance, grape seed extract (aqueous or alcoholic) has a high antioxidant potential its beneficial effects include the modulation of antioxidant enzyme expression, protection against oxidative damage in cells, ant atherosclerotic and anti-inflammatory effects, and protection against some cancer types, in both humans and animal models.

The interest in grape seed oil as a functional food product has increased, especially because of its high levels of hydrophilic constituents, such as phenolic compounds, and lipophilic constituents, such as vitamin E, unsaturated fatty acids (UFAs), and phytosterols.

Hydrophilic constituents of grape seed oil

Grape seed oil contains a large amount of phenolic compounds, including flavonoids, carotenoids, phenolic acids, tannins, and stilbenes. It has also 59–360 mg of Gallic acid equivalent/kg of phenols, which have been reported to be involved in a wide range of biological activities but are mostly known for their antioxidant properties.

Lipophilic constituents of grape seed oil

Regarding the fatty acid (FA) composition, linoleic acid (LIA) is the most abundant FA in cold-pressed grape seed oils, contributing to between 66.0% and 75.3% of total FA

Benefits and Uses

Grape seed extract is an industrial derivative of grape seeds. It is rich in antioxidants and oligomeric proanthocyanidin complexes and may provide cardiovascular benefits. Grapeseed oil is a popular topical treatment for skin. There are many different formats, such as extracts and liquids. But it may be unsafe for some people. Further research is still needed to fully understand its benefits. Grapeseed oil comes from the pressed seeds of grapes. The oil is a by-product of the process of making wine. It's known for its

- Anti-inflammatory
- Antimicrobial
- Antioxidant properties

These properties, along with the high amounts of omega chain fatty acids and vitamin E contained in grapeseed oil, have made it a popular topical treatment for skin.



Figure 3: Grape seed oil

- Wrinkles
- Skin thickening
- Skin redness



Figure 4: Neem

4) Neem

Family: Meliaceae

Biological Source: Leaves, seeds, and bark of *Azadirachta Indica* **Biological Name:** *Azadirachta Indica* A. Juss.

Neem is a tree *Azadirachta Indica* belonging to Meliaceae family. The bark, leaves, and seeds are used to make medicine. Less frequently, the root, flower, and fruit are also used. Neem leaf is used for leprosy, eye disorders, bloody nose, intestinal worms, stomach upset, loss of appetite, skin ulcers, diseases of the heart and blood vessels (cardiovascular disease), fever, diabetes, gum disease (gingivitis), and liver problems. The leaf is also used for birth control and to cause abortions. Some people apply neem directly

To the skin to treat head lice, skin diseases, wounds, and skin ulcers; as a mosquito repellent; and as a skin softener. Neem is also used as an insecticide

Chemical Composition:

Neem plant contains flavonoids kemferol, quercetin and myricetin. The trunk bark contains nimbin, nimbinin, nimboesterol, tannins and a bitter principle margosin.

Medicinal Uses:

- Acne
- Psoriasis
- Eczema
- Ringworm
- Warts
- Anti-aging effect

Benefits of Neem

They are well-known for their anti-inflammatory, antibacterial, and anti-fungal properties, which help treat acne, soothe eczema, and promote wound healing. Additionally, neem is rich in Vitamin E, which helps nourish and repair damaged skin. It is also used to prevent and treat skin infections, reduce skin dryness, and improve overall skin health. These properties make neem an excellent ingredient for creams aimed at treating a variety of skin conditions, including acne, blemishes, and fungal infections.

Neem was effective in treating the following symptoms of skin aging:

4.2 Aqueous Phase

1) Distilled Water

In every cream procedure, this is the most significant and frequently utilized raw ingredient. These are the most accessible and affordable. Water is a solvent used in skin creams to dissolve other components. Creams are prepared with water, which is devoid of all pollutants, toxins, germs, and other contaminants. Water can also create emulsions the amount of water used in the formulation determines whether the emulsion is called water-in-oil or oil-in-water, dependent on the amounts of water and oil phase employed in the formulation.

2) Borax

Creams made with only beeswax need to be thoroughly mixed and can separate when left to stand. As a result, little amounts of borax were applied after the beeswax. Beeswax's fatty acids were saponified by borax, which made the cream more stable.

3) Propyl paraben

The most common use of propyl paraben is as an antimicrobial preservative in cosmetic products. Preservatives such as propyl paraben are used to prevent the growth of pathogens and stop undesirable chemical changes from occurring.

4.3 Oil Phase

1) Liquid paraffin:

Liquid Paraffin is an emollient (substance that softens or soothes the skin). It works by preventing water loss from the outer layer of skin. This relieves dryness and leaves the skin soft and hydrated liquid Paraffin is used in the treatment of dry skin. It relieves dry skin conditions such as eczema, ichthyosis and pruritus of the elderly.

2) Beeswax:

In skincare, its function ranges from its role as an occlusive, helping to create a semi-occlusive skin barrier that minimizes trans epidermal water loss; as a humectant, locking in hydration; and an emollient to soften and soothe the skin.

3) White soft paraffin:

Act as an emollient, providing a protective barrier to retain moisture and soften the skin.

5. Materials and Methods

5.1 Collection of plant material

Aloe-vera, turmeric, neem were collected from the local botanical garden and grapes seed oil was purchased from local market

5.2 Excipients and herbal ingredients used with their role

Table 1: List of Ingredient

Sr. no.	Ingredient.	Role
1.	Turmeric	Glow your skin and antiseptic, anti-inflammatory
2.	Aloe Vera resins	Anti-ageing, reduce Acne and pimples
3.	Neem.	Relives skin dryness Promote wound Healing
4.	Grapes seed oil.	Moisturizing, antioxidant
5.	Bees wax	Emulsifying agent
6.	Liquid paraffin	Lubricating agent
7.	White soft paraffin	Act as an emollient
8.	Borax	Alkaline agent
9.	propyl paraben	Preservative
10.	Distilled water.	Vehicle
11.	Rose oil.	Fragrance

6. Methodology

1) Turmeric Extract:

Preparation of turmeric extract: Take 1 g turmeric powder in 10 ml distilled water and shaken in 250 ml volumetric flask heated in water bath at 80°C to 100°C for 5 to 10 minutes. Then filtered it and extract was obtained.



Figure 5: Turmeric Extract

2) Neem Extract

Neem leave powder was soaked in 95% Ethanol in a covered 1 L conical flask and placed for 24 h. The whole extract was filtered with filter paper. The obtained filtrate solution was concentrated, and ethanol was evaporated with the hot water bath set at 40 °C to form a paste. The extracted paste was dried further in the oven at 40 °C to get a thicker paste. The crude neem extract obtained was sealed in a Petri plate and at room temperature (28 °C). The percentage of crude ethanol extract yield was calculated based on the

weight of dried and ground neem leaves.



Figure 6: Neem Extract

3) Aloe vera resins

Aloe vera resin is rich in lipophilic (oil-loving) compounds that don't dissolve in water. This includes aloin, a naturally occurring compound which is better dissolved in oil phase. Aloe vera resin needs to be gently heated in an oil base. Paraffin oil is often chosen because of its stability and neutral properties, making it an ideal solvent for aloe resin.

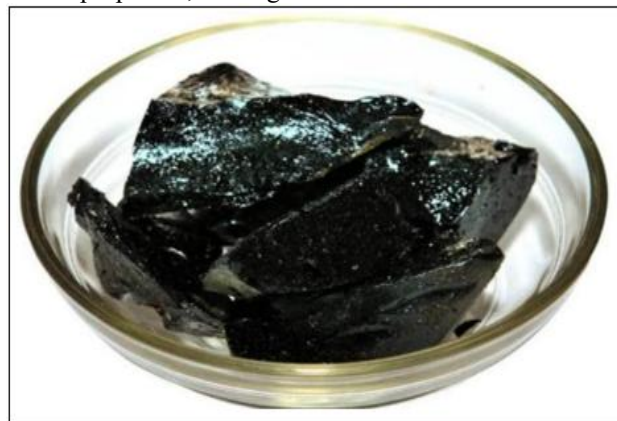


Figure 7: Aloe- Vera resin

4) Grape seed oil





Figure 8: Grape seed

7. Method of Preparation

7.1 Slab Method

Take the liquid paraffin and bees wax in a borosilicate glass breaker at 75°C and maintain that heating temperatures (oil phase). Aloe vera resin needs to be gently heated in an oil base then add grapes seed oil in it. In another beaker, dissolve borax and methyl paraben 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 Aqueous phase in heated oily phase with continue stirring after mixing both phases, immediately add neem extract, turmeric extract into it with continues mixing by glass rod until it forms a smooth cream. When cream is formed, then add rose oil as fragrance. Put this cream on the slab and add few drops of distilled water if necessary and mix the Cream in a geometric manner on the slab to give a smooth texture to the cream and to mix all the ingredients properly. This method is called as slab technique or extemporaneous method of preparation of cream.

7.2 Formulation Table



Figure 9: Slab method

S.no	Ingredients	Formulation Code		
		F1HC	F2HC	F3HC
1	Turmeric	1.5 ml	1 ml	1 ml
2	Aloe vera pulp & resins	2.5 ml	2.4 ml	2.3 ml
3	Grapes seed oil	1 ml	1 ml	1 ml
4	Neem	0.5 gm	1.2 gm	1.3 gm
5	Bees wax	1.2 gm	1.5 gm	1.5 gm
6	White soft paraffin	4 gm	4.5 gm	4 gm
7	Liquid paraffin	4 gm	3 gm	3.5 gm
8	Borax	0.2 gm	0.4 gm	0.2 gm
9	Propyl paraben	0.017 gm	0.017 gm	0.017 gm
10	Distilled water	5 ml	5 ml	5 ml
11	Rose water	qs	qs	qs

Evaluation Parameter

- 1) Physical properties: The cream was observed for the colour, odour and appearance.
- 2) Determination of pH procedure: The PH of cream formulation was determined by using the digital PH meter. Electrodes were completely dipped into the cream formulation and PH was noted.
- 3) Determination of viscosity procedure: The Viscosity of the material was measured by using spindle no. 7 for the cream of Brookfield Viscometer. All the operating conditions were set up viscosity was measured directly at various rpm.
- 4) Determination of spread ability procedure: Spread ability of formulated cream was measured by placing sample in between two slides ten compressed to uniform thickness by placing a definite weight for definite time. The specified time required to separate the two slides was measured as spread ability. Lesser the time taken for separation of two slides result showed better spread ability.
- 5) Irritancy test: Herbal cream formulation was evaluated for the non-irritancy test. Preparation shown no redness, edema, inflammation and irritancy. Mark an area (1sq.cm) on the left- hand dorsal surface. The cream applied to the specified area and not the time.
- 6) Wash ability: Take a small amount of cream applied on hand & washed under running tap water
- 7) Phase separation: Prepared cream is kept in tightly closed container at room temperature away from sunlight & observed for 24 hrs for phase.

8. Results and Discussion

In our work we are prepared three (f1C-f3C) different cream formulation. Among these formulations to choose final selection, the all formulation are tested for further final selection purpose.



F1C



F2C



F3C

Physical properties

Sr.no.	Parameters	F1C	F2C	F3C
1	Colour	Yellow	Light yellow	Faint Yellow
2	Odour	Pleasant	Pleasant	Pleasant
3	Texture	Smooth	Smooth	Smooth
4	State	Semi-solid	Semi-solid	Semi-solid

Irritancy test

Sr.no.	Formulation	Irritation test	Erythema	Edema
1	F1C	Nil	Nil	Nil
2	F2C	Nil	Nil	Nil
3	F3C	Nil	Nil	Nil

**Wash ability 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. All three formulations were easily washable.



Sr.no.	Formulation	Wash ability
1	F1C	Easy washable
2	F2C	Easy washable
3	F3C	Easy washable

Phase separation

Prepare cream is kept in tightly closed container at room temperature away from sunlight and observed for 24 hours for phase.

Sr.no.	Formulation	Phase separation
1	F1C	No phase separation
2	F2C	No phase separation
3	F3C	No phase separation

PH test

Take 0.5 gm of cream and dispersed it in 50 ml distilled water. Then check its pH by using digital pH meter.

Sr.no.	Formulation	PH
1	F1C	7.14
2	F2C	7.04
3	F3C	6.98



F1C



F2C



F3C

Antimicrobial test

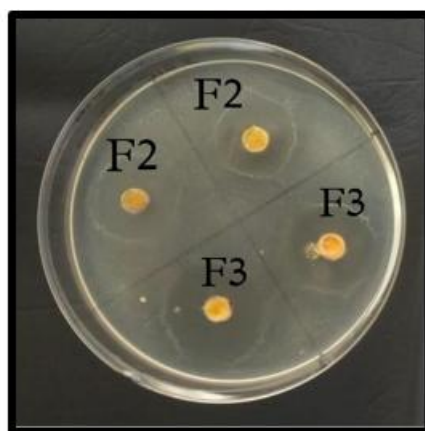
The nutrient agar media & staphylococcus aureus microbial culture were used for testing. Incubation time was set up for 24hrs. Suspend 28g of nutrient agar powder in 1L of distilled water. Mix and dissolved them completely. Sterilize by autoclaving at 121°C for 15 minutes. Pour the liquid into the petri dish and wait for the medium to



F1

solidify. Agar bore well diffusion method adopted.

The antimicrobial studies revealed that the formulation was sterile and no zone of inhibition was observed. Staphylococcus aureus (Gram-positive bacteria) suspension was introduced to each plate, and 40 ml of sterile Nutrient Agar media was poured into each sterilized plate. The plates were agitated carefully to allow a homogenous mixing of the agar with the test organism. The plates were left on the flat solid surface and allowed to harden. 1 cup. 10 mm in diameter, was bored in the medium with a cork borer on each plate. The agar disks were removed by sterilized dissecting needles while careful not to damage the cups. Each plate has an equal amount of cream formulation of the same strength placed in the cup, and the plates are incubated at 37°C± 2°C for 24 hours in the incubator. The entire operation was carried out under aseptic conditions, and a zone of inhibition was calculated



F2 & F3

Formulation code	ZOI (cm)	Test organism
F1	Nil	Staphylococcus aureus
F2	1.5 cm	Staphylococcus aureus
F3	2 cm	Staphylococcus aureus

viscometer using spindle number S-64 at 5,10,20,50 rpm at a temperature at 25 °C. Reading was recorded. The viscosity was found in the range of 20,000-60,000 CP at 10 rpm because 10 rpm commonly used for semi-solid cream.

Viscosity test

Determinations were carried out using a Brookfield



Rpm (speed)	Viscosity (cp) speed		
	F1	F2	F3
5	73,440	85,320	88,440
10	48,020	57,740	49,020
20	20,340	32,830	27,750
50	10,470	19,240	9,264

Evaluating all 3 creams (F1, F2, F3) we conclude that F3 formulation passed all test & it is a proper formulation which is ready for use

Antioxidant test

This herbal multipurpose cream contains neem, turmeric, aloe vera and grapes seed oil which provide excellent antioxidant properties, which are benefiting the skin in numerous way. To check antioxidant property we take one extract that is turmeric for testing.

DPPH Assay:

Demonstrate significant free radical screening activity indicating their potential as antioxidant



DPPH solution

9. Procedure

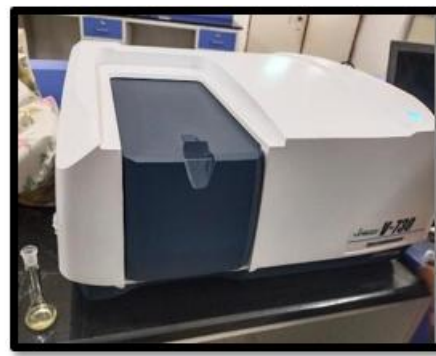
- 1) To prepare DPPH(2,2-diphenyl-1-picrylhydrazyl) solution which is commonly 0.1mm for 0.1mm weigh



Turmeric extract before incubation



After 30 mins incubation in a dark place



Checking absorbance at 517nm

3.94mg DPPH for 100ml.

- 2) Add methanol & stir until DPPH completely dissolved.
- 3) Cover the solution to protect it from light.
- 4) Store in a dark place to prevent from degradation because DPPH solution is light-sensitive.
- 5) Take extract at sufficient amount dilute it with ethanol & make up volume up to 10 ml. then take this 1 ml dilute solution add 2ml DPPH solution.
- 6) After that kept in complete darkness for 30 min.
- 7) Absorbance was therefore determined at 517nm
- 8) Following formula used for % antioxidant :-

$$\% \text{ of antioxidant activity} = \frac{A_c - A_s}{A_c} \times 100$$

AC- Control reaction absorbance AS- Testing sample absorbance

Calculation of antioxidant activity

Control absorbance at 517nm → 0.972

Turmeric

$$\% \text{ of antioxidant activity} = \frac{A_c - A_s}{A_c} \times 100$$

$$\% \text{ of antioxidant activity} = \frac{0.972 - 0.046}{0.972} \times 100$$

$$\% \text{ of antioxidant activity} = 95.25\%$$

Antioxidant activity

Sr.no.	Absorbance	% of antioxidant
Control	0.972	-
Sample (Turmeric)	0.0461	95.25%

10. Application

- 1) Use as a lightweight, nourishing moisturizer that provides hydration, enhances skin texture, and helps prevent dryness. Grape seed oil and aloe vera resin work together to lock in moisture, keeping skin soft and supple.
- 2) Apply on acne-prone areas to benefit from the antibacterial and anti-inflammatory properties of neem and turmeric, which help reduce acne-causing bacteria, soothe inflamed skin, and minimize blemishes.
- 3) The antioxidant-rich formula, especially from grape seed oil and turmeric, helps protect skin from environmental damage, reduces fine lines, and improves skin elasticity, making it an effective anti-aging cream.
- 4) Apply to cuts, burns, and insect bites for natural healing. Aloe vera resin and neem promote quick skin recovery and provide relief from irritation and inflammation.
- 5) Use regularly to reduce dark spots, pigmentation, and uneven skin tone. Turmeric is known for its brightening properties, which can improve skin radiance and clarity over time.
- 6) Grape seed oil and turmeric contain antioxidants that help protect the skin from environmental damage, promoting a youthful appearance. They help improve skin elasticity and reduce the appearance of fine lines and wrinkles.
- 7) Turmeric is known to brighten the skin and reduce hyperpigmentation. Applying the cream as a spot treatment can help fade dark spots and even out skin tone over time.

- 8) Serve multiple skin needs, such as hydration, healing, and protection, making it convenient for daily use on different parts of the body.

11. Conclusion

- 1) By using turmeric, aloe -vera resin, neem, Grapes seed oil cream showed a multipurpose effect and all these herbal ingredients showed significant different activities.
- 2) The formulation were stable at room temperature and can be safely used on the skin.
- 3) Herbal cream has best properties and having nutritional values using less chemical which protects the skin from the various skin problem.
- 4) The cream was prepared by using simple ingredients and simple method so the cream is also economical.
- 5) The herbal cosmetic formulation is safe to use and it can be used as the provision of a barrier to protect skin.
- 6) The result of different tests of cream showed that the formation could be used topically in order to protect skin against damage.
- 7) Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones.
- 8) Promote sustainable beauty practice by using biodegradable, plant based ingredients.
- 9) Helps fight free radicals, slowing down skin aging and improving overall skin texture.

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