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Preparation and Evaluation of herbal Face cream

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1. Abstract:

Aloe vera. amla and cucumber peel are medicinal plant they are used as traditionally from ancient year in various herbal medicines such Ayurveda, siddha, and Homeopathic.
Cosmetics and some medicinal products are made up from the mucilaginous tissue in the centre of aloe vera leaf and called Aloe vera gel Aloe vera gel contains no Antraquinone. Which are Responsible for the strong laxative affects of aloes. However, total leaf extract may contain Antraquinone. Aloe vera contains 75 potentially active constituents like Vitamines, Enzymes, Minerals, Sugars, Saponis, Amino acids. Amla contain Amino acid like glutamic acid, proline, And Aspartic acids etc. Protein, Minerals. Cucumber peels are rich in fiber and contain minerals like magnesium, potassium, and silica. The silica is an essential component to keep your muscles, bones, and tendons healthy. It also hydrates our skin, improves complexion and vision.

Keyword: Aloe vera, Amla, Cucumber peels, facecream.

2. Introduction:

Skin is the outermost tissue of the body and the largest organ in terms of both weight and surface area.It has an area of approximately 16, 000 cm2 for an adult and represents about 8% of the body weight.As seen in Figure 1, skin has a very complex structure that consists of many components. Cells, fibersand other components make up several different layers that give skin a multi-layered structure. Veins,capillaries and nerves form vast networks inside this structure. In addition, hairs stick out from the insideof skin. Numerous fine hair furrows are scattered over the surface of skin.Skin performs a wide variety of functions resulting from chemical and pHysical reactions inside these components. The major function of skin is to act as a barrier to the exterior environment. It protects the body from friction and impact wounds with its flexibility and toughness. Harmful chemicals, bacteria,viruses and ultraviolet light are also prevented from entering the body by the skin. It also prevents waterloss and regulates body temperature by blood flow and evaporation of sweat. The Skin is the outermost tissue of the body and the largest organ in terms of both weight and surface area.It has an area of approximately 16, 000 cm2 for an adult and represents about 8% of the body weight.As seen in Figure 2, skin has a very complex structure that consists of many components. Cells, fibersand other components make up several different layers that give skin a multi-layered structure. Veins,capillaries and nerves form vast networks inside this structure. In addition, hairs stick out from the insideof skin. Numerous fine hair furrows are scattered over the surface of skin.Skin performs a wide variety of functions resulting from chemical and pHysical reactions inside these components. The major function of skin is to act as a barrier to the exterior environment. It protects thebody from friction and impact wounds with its flexibility and toughness. Harmful chemicals, bacteria ,viruses and ultraviolet light are also

prevented from entering the body by the skin. It also prevents water loss and regulates body temperature by blood flow and evaporation of sweat. These functionalities are critical to our well being. The secretion of sweat and skin lipid cause the elimination of a number of harmful substances resulting from metabolic activities in the intestines and the liver. Furthermore, skin has a large amount of nerve fibers and nerve endings that enable it to act as a sensory organ.

When skin is exposed to sunlight, it can produce vitamin D, an imperative chemical substance for the body .These functions of skin tend to vary in degrees according to age, race, gender and individual. For instance, older skin tends to lose its flexibility and toughness because the structure of skin slowly denatures with age. Negroid or Mongoloid skin have higher light-protection ability than Caucasian skin because of the differences in the volume of melanin, which absorbs ultraviolet light. These function all differences are in most cases a result of pHysio-anatomical variations within the structure of skin. It is these physio-anatomical variations that lead to the diverse appearances of skin. Hence, in order to understand the appearance of skin, it is crucial to understand the physiology and anatomy of skin.The secretion of sweat and skin lipid cause the elimination of a number of harmful substances resulting from metabolic activities in the intestines and the liver. Furthermore, skin has a large amount of nerve fibers and nerve endings that enable it to act as a sensory organ.

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3. Aim

The aim of preparing and evaluating herbal face cream could be to assess its efficacy and safety for skincare purposes. This involves determining its moisturizing properties, absorption rate, potential skin irritation, and overall effectiveness in improving skin texture and appearance. Additionally, the aim might include comparing it with existing face creams in the market to understand its uniqueness and potential competitive advantage.

4. BASIC STRUCTURE OF 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: theepidermis, the dermis and subcutis. Hair, nails, sebaceous, sweat and apocrineglands are regarded as derivatives of skin. The epidermis is the outer layer, serving as the pHysical and chemical barrierbetween the interior body and exterior environment; the dermis is the deeperlayer providing the structural support of the skin, below which is a looseconnective tissue layer, the subcutis or hypodermis which is an importantdepot of fat. Epidermis: The epidermis is stratified squamous epithelium. The main cells of the epidermis are the kerating ytes, which synthesise the protein keratin. The four separate layers of the epiderm are formed by the differing stages of keratinmaturation. The epidermis varies in thickness from 0.05 mm on the eyelids to 0.8±1.5 mm on the soles of the feet and palms of the hand Moving from the lower layers upwards to the surface, the four layers of the epidermis.

- Stratum basale (basal or germinativum cell layer)
- Stratum spinosum (spinous or prickle cell layer)
- Stratum granulosum (granular cell layer)

- Stratum corneum (horny layer)
- In addition, the stratum lucidum is a thin layer of translucent cells seen in thick
- Epidermis

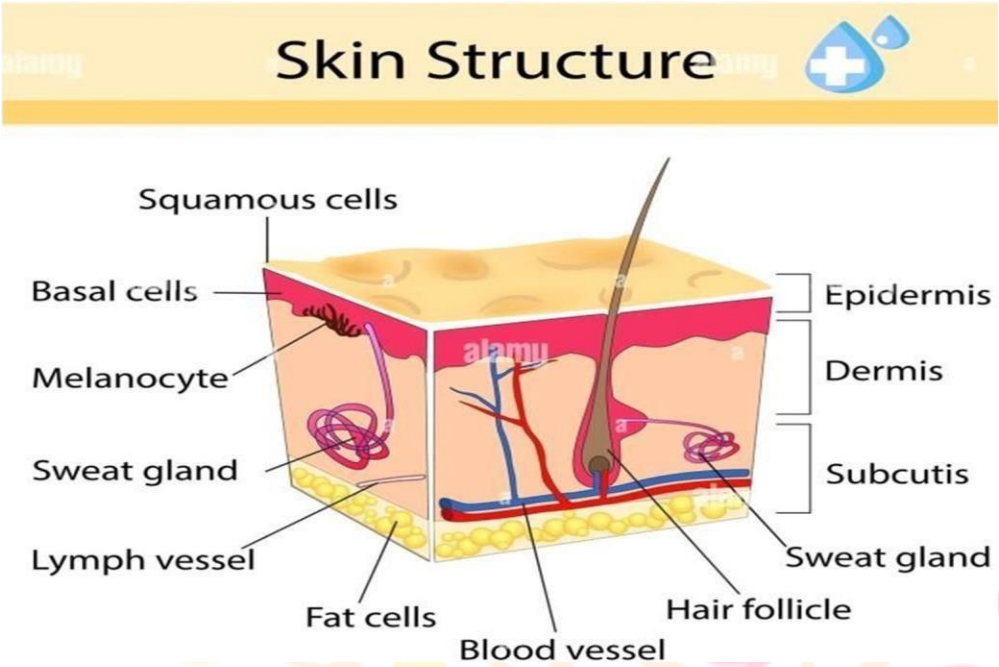

Fig.1 Cross Section of skin

Stratum Basale:

The innermost layer of the epidermis which lies adjacent to the dermis comprises mainly dividing and non-dividing keratinocytes, which are attached to the basement membrane by hemidesmosomes. As keratinocytes divide and differentiate, they move from this deeper layer

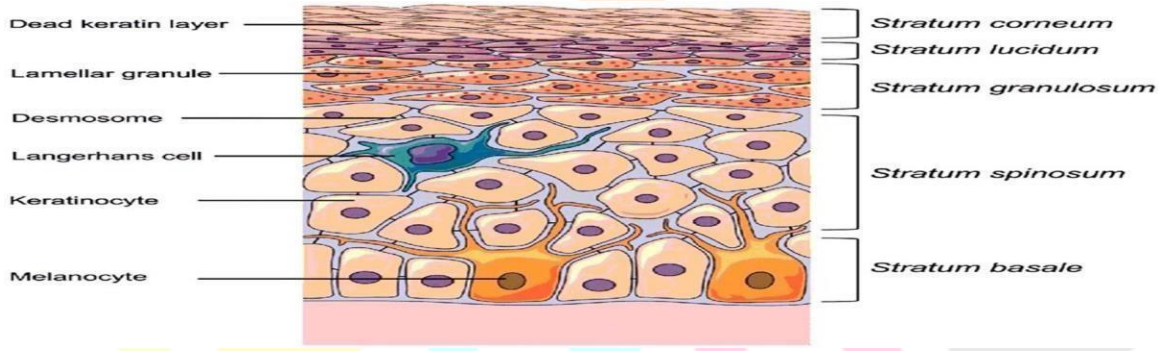

Fig.2 Layers of Epidermis

Stratum Spinosum:

As basal cells reproduce and mature, they move towards the outer layer of skin,initially forming the stratum spinosum. Intercellular bridges, the desmosomes,which appear as prickles at a micr

Stratum Granulosum:

Continuing their transition to the surface the cells continue to flatten, lose theirnuclei and their cytoplasm appears granular at this level. oscopic level, connect the cells.

Stratum Corneum:

The final outcome of keratinocyte maturation is found in the stratum corneum,which is made up of layers of hexagonal shaped, non viable cornified cellsknown as corneocytes. In most areas of the skin, there are 10-30 layers of stackedcorneocytes with the palms and soles having the most.

Dermis:

The dermis varies in thickness, ranging from 0.6 mm on the eyelids to 3 mm onthe back palms and soles. It is found below the epidermis and is composed of atough, supportive cell matrix. Two layers comprise the dermis: A thin papillary layer A thicker reticular layer.

Subcutis: This is made up of loose connective tissue and fat, which can be up to 3 cm thickon 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.

Nerve Supply:

The skin has a rich innervation with the hands, face and genitalia having thehighest density of nerves. All cutaneous nerves have their cell bodies in thedorsal root ganglia and both myelinated and non myelinated fibres are found.Free sensory nerve endings lie in the dermis where they detect pain, itch and temperature.

FUNCTIONS OF SKIN

1. **Protection from war and tear:**

The skin varies in thickness according to the amount of friction and pressure to which it is subjected on the eyelids it is about 1mm thick, while on the palms of the hands and soles of the feet it can be up to 1cm. The toughness of skin is due to the amount of the insoluble protein keratin within it.

2. **Protection against infection and chemicals:**

Although large numbers of micro-organisms live on the skin, these cannot break the barrier created by intact healthy skin. Trauma to the skin creates an opportunity for invasion by micro-organisms and results in an inflammatory response characterised by redness, swelling, localised heat, pain and pyrexia.

3. **Protection against ultraviolet:**

The skin protects the body from harmful UV rays. The pigment melanin is produced in special cells called melanocytes, which are found at the base of the epidermis. Melanin production is influenced by sunlight. When skin is over exposed to the sun's rays, it becomesred with erythema (flushing of the skin in response to dilatation of blood vessels in the dermis) due to inflammation.

4. **Maintaining body temperature:**

The body can survive environmental changes in temperature ranging from -52°C to +49°C. Maintaining a constant core body temperature (37°C) is an important function of the skin and this regulation is essential for the normal functioning of cellular enzymes throughout the body.

a) **Response to increased temperature:**

Arteries and veins in the subcutaneous layer immediately beneath the dermis are linked to small arterioles and capillaries, which supply blood to the dermis. Blood flow can be varied by dilatation and constriction of these dermal blood vessels. Blood flow to the skin can vary from about 250ml/min to 31/min in response to the need to lose or conserve heat. When the body's core temperature rises, blood vessels in the dermis dilatate and the skin becomes warm to the touch, and pink or red in colour.

Convection:

Heat is lost to air currents, for example, when a fan is used to cool a

• **patient Conduction:** Heat is lost to cooler solid objects which are in direct contact with

• **the skin; Radiation:** Heat from a warm body is lost to the cooler surrounding air.

• **Evaporation:** Heat is lost as a liquid becomes a gas, for example, through

• **Evaporation of sweat.**:Eccrine sweat glands assist in reducing body heat. There are about 2-5 million of these glands and their distribution varies in different body areas. There are 400/cm^2 on the palms and soles of the feet and only 70/cm^3 on the back. These glands have their own nerve and blood supply and produce sweat when the skin's temperature rises above 35°C Sweat is composed of 99 per cent water, with sodium, urea, lactic acid and potassium making up the remaining one percent.

a) **Response to a fall in temperature:**

In cold weather, blood supply to the skin is reduced, as is sweat production. This conserves heat in the deeper organs, which are also insulated by the layers of subcutaneous tissue and fat. Another method used in the skin to conserve heat is the mechanism that erects the body's hair.

5. Receiving stimuli from the outside world:

The skin is the body's largest sensory organ and its sensory (or afferent) nerve receptors detect a number of different stimuli: mechanical, such as pressure or stretching; and thermal, in terms of heat and cold.

6. Absorption and excretion Sebacious glands are outgrowths of hair follicles in the dermis:

They secrete a lipid, sebum, to make the skin water resistant. Sebum is bactericidal but if the glands become blocked, this results in a boil.

7. Nutrient and water storage:

Water stored in the skin cells can be accessed in emergency situations when blood volume falls, for example when a patient haemorrhages. The skin also contains a potential energy source in the form of triglycerides (fatty acids and glycerol) stored in the adipose tissue.

8. Communication: Nurses can gain a lot of information about patients' health and well- being simply by examining patients' skin. PHysiological changes in the skin are common- when we are hot, the skin reddens and sweat breaks out, when we are in pain, it tends to be pale; patients experiencing a heart attack often look grey; a yellow tinge to the skin may be a sign of jaundice; blue (cyanosis), a sign of oxygen deficiency.

TYPES OF SKIN

1] COMBINATION

- Combination of oily and dry skin
- T-zone: Forehead, nose, and chin are oily
- Cheeks tend to be dry

2] DRY

- May have dry, flaky skin
- Eczema prone
- Sometimes itchy

3] OILY

- Prone to acne and breakouts
- Shiny skin.

SKIN CARE SUGGESTIONS

A] FACE CLEANSER

- **Combination**: Mild cleanser
- **Dry**: Gentle or creamy cleanser
- **Oily**: Oil-free, non-comedogenic (does not block pores) foaming cleanser that contains salicylic acid or benzoyl peroxide

B] MOSTURIZING

- **Combination:** Medium-weight moisturizer with broad-spectrum sunscreen
- **Dry:** Moisturizer with broad-spectrum sunscreen applied right after washing face while face is still damp

- **Oily**: Lightweight and non-comedogenic (does not block pores) that contain broadspectrum sunscreen; there are oil-free moisturizers and broad- spectrum sunscreens that may be used.

5. Literature Review

1. **World J Pharm Sci Formulation and evaluation of cream from naturally containing plant extract. , SK Uddandu Saheb, Aduri Prakash Reddy, K Rajitha, B Sravani, B Vanitha 851- 861.**
   The aim of the present study is to formulate and evaluate of cream from naturally containing plant extracts prepared by using oil in water method. Methods: Different activities of aqueous and alcoholic extracts was assessed by oil in water type emulsion method. By discovering different types of formulations, such as oil in water, we were able to create several face creams respectively classified from C1 to C6, by incorporating different concentrations of stearic acid and acetyl alcohol. The evaluation of all formulations (C1 to C6) has been done by the analysis of different parameters like pH, viscosity, spread ability and stability. Results: An aqueous and alcoholic fraction analyzed from a sample of Natural remedies (plant extracts) showed a significant different activities. Among the six formulations (C1-C6) C3 and C6 showed good spread ability, good consistency, homogeneity, appearance, pH; there is no proof of a separation phase and ease of removal.

2. **Phytotherapy research Plants used in cosmetics Talal A., Feda M. ch :987 – 1000.**
   This review describes the use of some natural products in cosmetic preparations, due to their low mammalian toxicity, with a brief description of the major use, plant parts used, the actives responsible for effect and the benefits of such products. Their use in skin care; such as dryness, eczema, acne, free-radical scavenging, antiinflammatory, antiaging and skin protection effects are explained, and also the use in hair care as hair growth stimulants, hair colorants, and for hair and scalp complaints such as dandruff. Essential oils when incorporated into finished products impart many benefits such as a pleasant aroma inperfumery, shine or conditioning effects in hair care products, emolliency and improving the elasticity of the skin.

6. Plan of Work

The goal of the current work was to revitalize the skin's tone and make it healthier byremoving dead cells, debris, and impurities from the epidermis and dermis. 1. Searching of various literature regarding face scrub.

1 Segregate the required literature.

2 Selecting appropriate research articles for face scrub.

2. Survey for need of market.

3. Formulation of face scrub using various Multi Herbal Ingredients with the help ofsophisticatedequipments and instruments as per required procedure.

4. Evaluation parameter for face scrub

a. Organoleptic properties-

- Colour

- Odour
- Consistency
- Homogeneity and texture

b. Washability

c. pH

d. Viscosity

e. Extrudability

5. Comparison with the market.

6. Compilation and submission of data.

7. Drug profile

1] Aloe vera:

Occurrence And Distribution:

It belongs to Asphodelaceae (Liliaceae) family, and is a shrubby or arborescent, perennial, xeropHytic, succulent, pea- green color plant. It grows mainly in the dry regions of Africa, Asia, Europe and America. In India,it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu.

Fig.3 Alovera

Taxonomical Classification **Family:** AspHodelaceae **Species:** A. vera
Kingdom:

Plantae **Order:** Asparagales **Indian Names:**
Sanskrit: Kumarirashav **Bengal :** Ghrita kumara
Gujrat: Kunwar

Hindi : Musabhar,**Malyalum:** Kattavazha **Marathi:** KorpHad
Tamil : ChirukattalaiKattalai**CHEMICAL CONSTITUENTS**
Major constituents :

Glycosides- Anthracene derivatives: Hydroxyanthraquinone derivatives(25-40) viz.

aloin (=barbaloin, a mixture of aloin A & B, the diastereoisomeric 10-Cglucosides of aloe-emodin anthrone) and 7-hydroxyaloin isomers.

Indian aoles contain aloinosides as major constituents with only traces ofaloin.

Minor constituents: Aloeemodin,Chry sano
chromonederivatives
viz.,
aloeresin B

(=aloesin, upto30%)
with its p-coumaryl derivatives aloeresins A & Cand the aglycone aloesone.

REPORTED ACTIVITIES:

• Immunomodulatory,

• Wound healing,

• Anticancer,

• Radioprotective efficacy

• Angiogenic

• Antiviral

• Analgesic

• Anti-inflammatory

Cosmetological Importance of Aloe:

Aloe vera has been used since ancient times for healing infection and burns. However with the improvement in cosmetology, it has been proved that Aloe vera is a very important component of cosmetics.

It contains almost 20 amino acids, minerals like calcium, magnesium and sodium in sufficient quantities, enzymes, vitamins,polysaccharides, nitrogenand other components that make it a miracle beauty herb.

Some of the most important applications of Aloe vera for purpose of Cosmetology are being explained here briefly

2] Amla:

Ocurence and distribution:

Amla (Emblica officinalis) (EO) has a hallowed position in Ayurveda- an Indian indigenous system of medicine1 . According to belief in Indian mythology, Amla is the first tree to be created in the universe; which belongs to the family of EupHorbiaceae and is also known as Phyllanthus emblica or Indian gooseberry.

Amla is native to India and also grows in tropical and subtropical regions of Pakistan, Uzbekistan, Sri Lanka, South East Asia, China and Malaysia.

Fig.4 Amla

Taxonomical
Classification:-Kingdom: Plantae
Division: Angiospermae
Class: Dicotyledonae
Order: Geraniales
Family: EupHorbiaceae
Genus: Emblica
Species: officinalis Geartn.

Indian Names

English: Emblic myrobalan,
Indian: Goose berry
Sanskrit: Aamalaki
Hindi: Amla
Kannada: Nelli Kayi
Marathi: Amla

Chemical Constituents of Amla:-

The fruit of Amla is rich in vitamin C (ascorbic acid) and contains several bioactive pHytochemicals, of which majority are of polypHenols (ellagic acid, chebulinic acid, gallic acid, chebulagic acid, apeigenin, quercetin, corilagin, leutolin, etc.)

Cosmetological Importance of Amla:

Well, you must be wondering how gooseberry can be used to your skin. You canconsume it with honey or you can also apply it on your skin directly and reap its benefits. If you are finding it hard to consume this sour fruit, then try making juice out of it and consume it.

This will do good for your skin. Here are some health benefits of gooseberry for your skin.

3] Cucumber:

Occurrence And Distribution:

Europe, Asia, the Middle East, some parts of the U.S.A.

Taxanomical classification:Order: Cucurbitales
Family: Cucurbitaceae

Genus: Cucumis

Species: C. sativus

Fig.5 Cucumber

Chemical Constituent Of Cucumber:

Cucumber fruit mostly contains water (95%) and small amounts of protein (0.6%), lipids (0.1%) and carbohydrates (2.2%). Cucumber plant is widely cultivated in Greece and the annual production represents the 26.7% of the total vegetable production.

Uses:

- Cucumber helps keep the face fresh and glowing, owing to the silicaand high water content.
- Using cucumber slices on the eyes reduces puffiness and makes darkcircles vanish from under the eyes.
- Do not discard cucumber peel it has many.

- health benefits. The benefits include its beneficial. □effects in eyedisorders, vitamin A& C deficiency.
- constipation and bones and muscles disorder.
- Cucumber peels are rich in fiber and contain.
- minerals like magnesium, potassium, and silica. □The silica is an essential component to keep your □muscles, bones, and tendonshealthy.
- hydrates our skin, improves complexion and vision.

4.Spinach:

Fig 6.Spinach

- **INCI:** Spinacia Oleracea Leaf extract
- **Solubility:**LipopHilic
- **Main chemical pigment(s):**ChloropHyll
- **Colour**: Green
- **Chemical constituent:**
- Spinach leaves contain chloropHyll a, chloropHyll b and beta-carotene as major pigments as well as smaller amounts of other pigments such as xanthopHylls. In green leafy vegetables such as spinach, only the green chloropHylls are seen because they mask the bright red, orange and yellow colours of the carotenoids. Blanching spinach reduces its percentage of chloropHyll. ChloropHyll is lipopHilic.
- **Uses:**
- Spinach used as Colouring agent.

8. Materials and Methods:

Preparation of Extract:

Air dried and coarsely powdered of Aloe vera, Amla and cucumber peel.Were placed in Soxhlet separately, using petroleum ether and then successively with Ethanol. The extract was then concentrated to dryness under reduced pressure and controlled Temperature, and they were preserved in a Refrigerator.

Cream Formulation:

1. Beeswax, propylene glycol was taken in first beaker. Then heat on a water bath for uniform mixing.
2. After few minutes oil pHase was formed.

3. Aloe vera extract and Amla extract,cucumber peel extract, Distilled water, white soft paraffin and glycerine, , zinc oxide , Sodium benzoate was taken in second beaker.
4. Mixing all the ingredients by heating on a water bath, the aqueous phase was formed.
5. Oil phase was added into aqueous phase.

Magnetic stirrer:

Agitation and stirring processes are used in all the chemical and biological laboratories in various shapes and sizes. Irrespective of the specific application or process that is being performed, the researchers or technicians need to use the best laboratory equipment for the job to make sure the results are consistent.
The wrong agitation process leads to inaccurate results; that's why it is very much crucial to understand agitation options as per the application. For the agitation, various options are available. Among them, magnetic stirrer hot plates,and overhead stirrers are widely used.

9. Formulation table:

Sr.No.	Ingredient	Quantity
1	Aloevera	9.37 gm
2	Amla	6.25 gm
3	Cucumber peels	5 gm
4	Bees wax	20 gm
5	White soft parafin	56.25 ml
6	Methyl paraben	1.87ml
7	Distilled Water	q.s
8	Menthol	1.19 ml
9	Glycerine	6.25ml
10	Propylene glycol	6.25 ml
11	Zinc oxide	4.37 gm
12	Sodium benzoate	0.625 gm
13	Spinach (Colouring Agent)	q.s.
14	Rosemary (Flavouring Agent)	q.s.

10. Evaluation Parameter:

Sr. No	Parameter	Result
1.	Colour	White green
2.	Odour	Characteristics
3.	State	Semisolids
4.	Consistency	Smooth
5.	PH	6.7
6.	Spredability	7.4 gm.cm/cm
7.	Washability	Easy washable
8.	Non irritancy test	Non irritant
9.	Viscosity	39015
10.	PH as separation	No pHaseseperation
11.	After feel	Emollient

11. Result and Conclusion;

In market, there are various type of face cream are available , claiming that they proect skin from uv radiations, sunlight etc.at considerable rate and minimum time.

Formulation of cream pH, Spreadability, Washability, non-irritancy test, viscosity and phase separation of cream and gives good result.

By using Aloe Vera gel, Neem and Tulsi the cream showed a multipurpose effect and all these herbal ingredients showed significant different activities. Based on results and discussion, the formulations F1H, F2H and F3H were stable at room temperature and can be safely used on the skin.

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