



Research Article

A Research For Herbal Cream Formulation For Treatment Of Skin Disorder

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ABSTRACT

Plant seed oil is often incorporated into the cream emulsions to provide multifunctional effects on the skin. In the current study, pumpkin seed oil (PSO) was used to develop a stable oil-in-water emulsion. The study aimed to optimize pumpkin seed oil cream formulation and determine the synergistic effect of the PSO with vitamin E oil added. This cream has been effective against skin disorder and gives a significant result. It also helpful for the skin because herbal formulation gives a less side effect compared to marketed synthetic cream formulation. It gives an action against the skin like as a rashness, itching etc. Because the vitamin E oil gives a protection against the UV radiation. As compared to the synthetic cream it gives a quick result. But also gives a side effect. Formulation of cream was done by slab method and further evaluated by various evaluation parameters such as physical properties, PH, spread ability, Washability, and phase separation of cream and gives good results.

INTRODUCTION

Nowadays, skincare and cosmetic industries are driven towards the utilization of natural ingredients in the development of eco-friendly cosmetic products. There is a rapidly expanding demand for innovative natural products to overcome consumers' consciousness about their health and safety besides the desires for owing a good and pleasant appearance. Consumers are more concerned about the ingredients involved in cosmetic formulations. In this context, plant seed

oil have been widely used as alternatives for raw materials because they are renewable resources, which can be extracted from different plants. Vitamin E or tocopherols a significant biological antioxidant. α -tocopherol is known to be the most biologically active is of Ormand delivers protection to the human skin by retarding the chain reactions triggered by oxidative stress. As a free radical scavenger, it not only combats the harmful effects of ultraviolet radiation but also contributes to a moisture barrier to the skin that decelerates the

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aging process in return. Due to its multifunctional effects on the skin, vitamin E has been receiving attention in the skincare and cosmetic market throughout the years. An emulsion is a biphasic system consisting of dispersed and continuous phases. It is widely applied in pharmaceutical, cosmetic and personal care and food products. Pumpkin Cucurbita pepo L. originated from Mexico and it can be found abundantly around the world. Pumpkin seed oil PSO encompasses bioactive compounds, such as tocopherols, phytosterols and phenolic acids that exhibit significant antioxidant activities. May be a good source of cosmetic ingredient. PSO not only contains a high amount of unsaturated fatty acid but also rich in squalene, which is commonly used as a moisturizer or emollient in cosmetic product. In the presence of natural vitamin E in plant seed oil can improve the shelf life of the products. Thus, the rationale of this research project is to optimize vitamin E cream with the addition of PSO and determine the presence of synergistic effect of with vitamin E. The word Cosmetic derived from a Greek word – cosmetics that means to adorn. From that time any actually stems from its use in Ancient Rome. Cosmetics products have been generally defined as—articles intended to be applied to the human body by being rubbed, poured, sprinkled, or sprayed for cleansing, promoting attractiveness, beautifying, or altering the appearance. Cosmeceuticals are cosmetic products having some specific therapeutic effects. They were typically produced by females slaves known as —cosmetic which is where the word —cosmetics stemmed from. Cosmetics are used to enhance appearance. Makeup has been around for many centuries. The first known people who used cosmetics to enhance their materials used to beautification or promoting appearances known as cosmetic.

Types of Skin Creams

1. Oil-in-Water(O/W) creams

Which are composed of small droplets of oil dispersed in a continuous phase, and an emulsion in which the oil is dispersed as droplets throughout the aqueous phase is termed an oil-in-water emulsion.

2. Water-in-Oil(W/O) creams

Which are composed of small droplets of water dispersed in a continuous oily phase. When water is the dispersed phase and an oil the dispersion medium, the emulsion is of the water-in-oil emulsion.

Classification of Creams

All the skin creams can be classified on different basis

1. According to function, e.g. cleansing, foundation, massage, etc.
2. According to characteristics properties, e.g. cold creams, vanishing creams, etc.
3. According to then a true or type of emulsion.

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 creams.

1. Make up Cream:

These are mainly o/w type of emulsion. It is cream-based product which leaves a smooth hydrated finish (either stain matte or luminous) on the skin. It nourishes skin basically sweat-resistant and creates a dewy sheen.



a. Vanishing Cream:

They are called vanishing creams because they seem to disappear when rubbed onto the skin. These formulations are based on stearic acid. After application, the cream leaves a dry but tacky residual film which also has an effect on the skin. Because of this reason, these are used particularly in hot climates which cause perspiration on the skin [9]

b. Foundation Cream:

These creams serve as a foundation base for make-up. It acts as an adherent base for application of make-up powders. They provide emollient action and a protective action against environment to the skin which is neither too greasy nor too dry. It is multicolored make up applied on the face to create an even, uniform color similar to the complexion, to cover flaws and to change the skin tones.

2. Cleansing creams:

These creams are used for body cleaning purposes and it is used for personal hygiene and beautification which is important for cosmetics. Cleansing creams or lotions can be used for the removal of make-up, surface grime, oil mainly from the face and neck.

3. Winter Cream:

These are w/o type of formulation and in this formulation oil content will be more than water content. These creams are mainly used for chapped and dry skin. Cold cream: It is known as moisturizer or moisturizing cream. Cold cream must have an emollient action. It should produce a cooling sensation in use and the oil film on the skin should be non-occlusive.

4. All-purpose creams and general creams

These creams are used more nowadays type of these creams are somewhat oily but non-greasy type and can spread on the skin easily. This can also be used as a night creams, nourishing creams,

and protective creams for prevention oral levitation of sunburns treatment are roughed.

5. Night Cream:

These creams are mainly used for the nourishing the skin or as a treatment to dry skin. Creams which are generally applied on skin and left for few or several hours overnight are mainly known as night creams. Creams which act as an emollient by rubbing the cream on the skin with massage is known as massage cream.

6. Skin Protective Cream:

These creams are smooth, thick body creams formulated to provide an invisible, uniform protective film barrier to the skin. It helps to maintain the barrier between the skin and contaminants that may irritate the skin (contact dermatitis and occupational dermatitis). Strengthens the natural properties of the skin and maintains the balance of normal to combination skin

7 Hand and body cream:

Hands are one of the first places to show signs so faring. We tend to wash our hand several times a day, stripping off moisture. Applying cream softens and protects the skin and it keeps the skin looks younger. Since the skin on our palms and fingers needs oil to stay supple and to prevent it from chapping and cracking, it is sensible to use hand creams that puts plenty of oil back in. It is used on the hands more than other parts of the body.[11]

General Ingredient use in cream:

The raw materials which are used in a manufacturing of skin creams include: Water: This is the most important and widely used raw material in any cream formulation. These are the cheaper stand easily available. In skin creams, water is used as solvent to dissolve other ingredients of creams. Water can also form emulsions; it depends upon how much quantity of water is used in the



formulation and sometimes referred to as oil-in-water emulsions and sometimes water-in-oil emulsions depending upon the quantities of oil phase and water phase used.[12]

a. Oil, fates and waxes:

Oil, fats and waxes and derivatives their form comprise an essential portion of creams. Waxes act as an emulsifier, fats act as a thickener and oil act as a perfuming agent, preservative, etc.

b. Mineral oil:

Mineral oil consists of hydrocarbons derived from petroleum oil. Mineral oil is clear, odorless, and heavily refined oil and it is widely used in cosmetics. It is light weight and in expensive, it helps to reduce water loss from the body and keeps body moisturized.

c. Glyceride oil:

Glyceride oil is mostly vegetable oils. Examples of glyceride oils Almond oil coconut oil,

d. Vegetable oil:

Form a barrier on the surface of the skin and slow down the loss of water, helping to maintain plumpness of skin. Vegetable oils may also be used to increase the thickness of the lipid or oil portion of cream or personal care products. E.g. Almond oil, germ oil, avocado oil, sunflower oil etc.

e. Waxes

Which are used in preparation of cream includes beeswax, carnauba wax, ceresin, spermaceti, etc. Waxes are used in cosmetics because it helps to keep an emulsion from separation oil and liquid component. These waxes also increase the thickness of the lipid portion and sticks on the surface of the skin.

f. Fats:

Different types of fats are used in the preparation of creams. These materials can be obtained from animals, plants or mineral origin. Glyceride oils and fats may be of animals or vegetable origin. They consist of combinations of higher fatty acids

and glycerin. When saponified they form soap, or fatty acid and glycerin, depending upon process used. The most common of these fatty acids are lauric, margaric, palmitic, stearic, saturated group. Oleic acid is liquid and most popular unsaturated fatty acid. More specially the oil most commonly used in other cosmetics are olive oil, almond oil, sesame oil, peanut oil, cocoa butter fat, mutton Tal low, lard and beef stearin.

g. Lanolin:

It is derived from wool fat of a sheep. Lanolin are of two types- the hydrous lanolin contains between 25%-30% water. Anhydrous lanolin has point of 38°C-42° Canadases light odor.

h. Colors:

Before the development of the modern technology, colors primarily came from substances found in nature such as turmeric, saffron, indigo, etc. They also could be produced without using plants harvested in the wild.

i. Emollients:

Emollients, also commonly referred to as moisturizers, are products that help to soften skin or to treat skin that has become dry. Most emollients are forms of oil or grease, such as mineral oil, squalene, and lanolin.

j. Humectants:

These are important multi-functional ingredients found in most skincare formulations. Humectants are hydroscopic organic compounds. These are the materials that can absorb or retain moisture. These has many benefits such as moisturization, exfoliation, etc. Examples of humectant are glycerin, Hydroxyethyl urea, betaine, sodium PCA, SLS.[17]

k. Vitamins:

Vitamins plays an important role in maintaining the physiological function of whole body and the skin.



Vitamin A, B, C, E etc. are generally used in formulation of the creams.

1. Preservatives:

The use of preservatives in cosmetics is essential to prevent alteration caused by microorganism and contamination during formulation, shipment, storage and consumer use. Antioxidants can also be used to protect alteration caused by exposure to oxygen. Synthetic Preservative are used in concentration effectively preserve the products.

Advantages of Herbal Cosmetics:

Herbs are important for prevention and health promotion properties having following advantages

1. Herbal cosmetics are natural and free from all the harmful synthetic chemicals which generally may turn out to be lethal to the skin
2. Safe to use. They are hypo-allergenic and tested and proven by dermatologists to be safe to use anytime, anywhere. Since they are made of natural ingredients, people don't have to worry about getting any skin itchiness or irritation.
3. Compatible with all skin types. You will find natural cosmetics like foundation, eye shadow, and lipstick which are appropriate irrespective of your skin tone. Women with sensitive skin can also use them and never have to worry about degrading their skin condition
4. These products are more affordable than synthetic ones. They are offered at economical prices and are sold for a cheap price during sales. An estimate of WHO demonstrates about 80% of world population depends on natural products for their health care, because of side effects inflicted and rising cost of modern medicine.
5. The synthetic beauty products can irritate your skin, and cause pimples. They might block your pores and make your skin dry or oily.

The natural ingredients used assure no side effects.

6. Sunscreen: A substance that helps protect the skin from the sun's harmful rays. Sun screens reflect, absorb, and scatter both ultraviolet A and B radiation to provide protection against both type so radiation.

INDICATIONS FOR THE USE OF SUNSCREENS

The primary use of sunscreens is to protect the skin from the short-term and long-term effects of ultraviolet radiation. In today's scenario of procedure-centered dermatology, sunscreens have become an indispensable part of every patient's post-procedure skin care routine. The common indications for the use of sunscreens in dermatology are in the prevention and management of

1. Sunburn
2. Freckling, discoloration
3. Photoaging
4. Skin cancer
5. Phototoxic/photo allergic reactions
6. Photo sensitivity diseases
 - a Polymorphous light eruption(290-365nm)
 - b Solar urticaria(290-515nm)
 - c Chronic actinic dermatitis (290nm-visible)
 - d Persistent light reaction (290-400nm)
 - e Lupus erythematosus (290-330nm)
 - f Xeroderma pigment sum (290-340nm)
 - g Albinism
7. Photo aggravated dermatoses
8. Post-inflammatory hyperpigmentation (post procedure)

Spectrum of UV radiation:

The biologically active components of ultraviolet (UV) radiation include UVA and UVB radiation. The primary targets of UV radiation in the skin and their corresponding effects are given below: [2]
UVB (290-320nm)



- Responsible for the most severe damage
- Direct impact on cell DNA and proteins
- Acute damage—sunburn
- Long-term damage—cancer

UVA (320-400nm):

- Not directly absorbed by biological targets
- Penetrates deeper than UVB
- Affects connective tissue by producing reactive oxygen species; produces profound Immunosuppression.
- Responsible for tanning, photoaging, photo carcinogenesis, exogenous photosensitization and many idiopathic photo dermatoses (including polymorphous light eruption. [3]

Sea-level solar UV radiation is approximately 95-98% UVA and 2-5% UVB. UVC is completely absorbed by stratospheric ozone that also attenuates UVB. A given solar UVR spectrum varies with the solar zenith angle (the angle between an imaginary perpendicular line and a line from its base to the sun), which is dependent on time of day, season, and latitude. The highest UVB content is found when the sun is directly overhead with the shortest path (e.g., noon, at the equator, at high altitude).

CLASSIFICATION OF SUNSCREENS:

The last FDA sunscreen monograph was issued in 1999, with a list of 16 approved sunscreen agents. It recommends that sunscreens be classified as organic and inorganic, replacing the previously used terms—chemical and—physical, respectively. There are three commonly used nomenclatures for sunscreen agents in the world. These are the International Nomenclature Cosmetic Ingredient (INCI) name; US adopted name (USAN), and trade name. Taking avobenzene (USAN) as an example, the INCI name for avobenzene is butyl methoxy dibenzoyl methane, while Parasol 1789 is one of its many trade names. [4-5]

A. ORGANIC SUNSCREENS:

Organic UV filters are active ingredients that absorb UV radiation within a particular range of wavelengths, depending on their chemical structure. Once the UV filter absorbs energy, it moves from a low-energy ground state to a high-energy excited state. From this excited state, any of the following three processes may occur, depending on the ability of the filter to process the energy it as absorbed:

i. Photostable filter:

This type of filter dissipates its absorbed energy to the environment as heat energy, and returns to the ground state. It is subsequently fully capable of absorbing UV energy again.

ii. Photo unstable filter:

The filter undergoes a change in its chemical structure, or is degraded after absorbing UV energy. It is not capable of absorbing UV energy again.

iii. Photoreactive filter:

In its excited state, the filter with surrounding molecules, including other ingredients of the sunscreen, oxygen, and skin proteins and lipids. This leads to the production of reactive species, which may have unwanted biological effects.

Organic sunscreens are further divided into UVB and UVA filters:

1. UVB filters

- a. PABA derivatives— Padimate O
- b. Cinnamates—Octinoxate, Cinoxate
- c. Salicylates—Octisalate, Homosalate, Trolaminesalicylate
- d. Octocrylene
- e. Ensulizole

2. UVA filters

- a. Benzophenones (UVB and UVA2 absorbers)—Oxybenzone, Sulisobenzene, Dioxybenzone
- b. Avobenzene or Parsol 1789 (UVA1 absorber)
- c. Meradimate (UVA2 absorber)



3. Newer generation broad spectrum (UVA+UVB) filters—Ecamsule (MexorylSX), Silatriazole (Mexoryl XL), Bemotrizinol (Tinosorb S), Bisotrizole (Tinosorb M) Ecamsule is primarily a UVA filter, the patent for which is held by L'Oréal (sunscreens containing ecamsule are exclusive to L'Oréal and its brands). Tinosorb M is the first of a new class of UV filters that combine the properties of both UV conventional filters (organic and inorganic) – it scatters, reflects and absorbs UV light. Apart from Ecamsule, these filters are not yet US FDA approved, but are being used in other countries, such as the European Union and Canada.

B. INORGANIC SUNSCREENS

1. Zinc oxide
2. Titanium di oxide
3. Others-iron oxide, red veterinary petrolatum, kaolin, calamine, ichthammol, talc

SYSTEMIC PHOTOPROTECTIVE AGENTS [4,7,8]

In addition, there are several compounds that have a systemic photo protective effect; these are sometimes referred to as —systemic sunscreen-carotene, antimalarials, ascorbic acid- to copherols (i.e., vitamins A, C, and E), retinol, selenium, green tea polyphones, PABA, antihistamines, aspirin, indomethacin, corticosteroids.

SUNSCREEN-RELATED DEFINITIONS [4,7,8]

1. Critical wave length:

The wavelength below which 90% of the sunscreen 's UV absorbency occurs Broad spectrum sunscreen: Critical wavelength > 370 nm AND UVA protection factor >4.

2. Water-resistant sunscreen:

Maintains the label SPF value after two sequential immersions in water for 20 min (40min)

3. Very water-resistant sunscreen:

Maintains the label SPF value after four sequential immersions in water for 20 min (80min).

DEBATABLE ISSUES

1. Sunscreen use in infants

Although not known to be hazardous, the use of sunscreens is not recommended for infants younger than 6 months.

2. Contact dermatitis

The most common cause of contact dermatitis (photo allergy) among sunscreens is oxy benzene.

3. Nano sized particles

Nanosized particles range in size from 1-100 nm. Microfine forms of zinc oxide and titanium dioxide have a particle size of 20-50 nm. Nanotechnology makes inorganic sunscreens more cosmetically acceptable (less whitening of skin after application). In recent years, there have been concerns that nanoparticles can induce free radical formation in the presence of UV radiation. However, studies show that these particles remain on the surface of the skin or in the stratum corneum, and are hence safe for human use.

DRUG PROFILE:

1. Fenugreek Seed:

Fenugreek (*Trigonella frenum graecum*) is an annual plant belonging to the family Leguminosae. It is the famous spice in human food. The seeds and green leaves of fenugreek are used in food as well as in medicinal application that is the old practice of human history. It has been used to increase the flavoring and color, and also modifies the texture of food materials. Seeds of fenugreek spice have medicinal properties such as hypocholesterolemia, lactation aid, antibacterial, gastric stimulant, for anorexia, antidiabetic agent, galactagogue, and anticancer. These beneficial physiological effects including the antidiabetic and hypocholesterolemia effects of fenugreek are mainly attributable to the intrinsic dietary fiber



constituent which have promising nutraceutical value. It is well known for its fiber, gum, other chemical constituents and volatile contents. Dietary fiber of fenugreek seed is about 25% which changes the texture of food. These days it is used as food stabilizer, adhesive and emulsifying agent due to its high fiber, protein and gum content. The protein of fenugreek is found to be more soluble at alkaline pH.



Figure1: Fenugreek Seed

Phytochemistry:

Fenugreek contains a number of chemical constituents including steroidal component has been found in the oily embryo of fenugreek. There are two furan, F-ring opened precursors of diosgenin that have been reported in fenugreek also as hederagenin glycosides. Alkaloids such astrinige coumarin, nicotinic acid, trimethyl and trigonelline are present in stem. The mucilage is a standing out constituent of the seeds. There is about 28% mucilage; a volatile oil; 2 alkaloids such as trigonelline and Choline, 5% of a stronger-smelling, bitter fixed oil, 22% Proteins and a yellow colouring substance are presenting stem Fenugreek contains 23–26% protein, 6–7% fat and

58% carbohydrates of which about 25% is dietary fiber.[23]

Leaves:

The leaves contain even saponin known as graecunin's. These compounds are glycosides of diosgenin. Leaves contain about 86.1% moisture, 4.4% protein, 0.9% fat, 1.5% minerals, 1.1% fiber, and 6% carbohydrates. The mineral and vitamins present in leaves include calcium, zinc iron, phosphorous, riboflavin, carotene, and vitamin C leaves of fenugreek contain ascorbic acid of about 220.97 mg per 100 go leaves and β-carotenes present about 19 mg/100 g. On the other side, it was reported that 84.94% and 83.79% ascorbic acid were reduced in sun and oven-dried fenugreek leaves respectively. Fresh leaves are used as vegetables in the diets. It was found that there was a better retention of nutrients in the leaves of fenugreek. The leaves of fenugreek should be stored in either in refrigeration conditions, or dried in oven, or blanched for some time (about 5min) and should be cooked in pressure cooker.

Seed:

Fenugreek is known for its pleasantly bitter, slightly sweet seeds. The seeds are available in any form whether whole or ground form is used to flavor many foods mostly curry powders, teas and spice blend. Fenugreek seed has a central hard and yellow embryo which is surrounded by a corneous and comparatively large layer of white and semi-transparent endosperm.[25]

Table1. Chemical constituents of Fenugreek.[26]

Sr.no	Chemical constituents
Alkaloids	Trimethylamine, Neurin, Trigonelline, Choline, Gentianine, Carpaine and Betain
Amino acids	Isoleucine, 4-Hydroxyisoleucine, Histidine, Leucine, lysine, l-tryptophan, Arginine
Saponins	Graecunins, fenugrin B, fenugreekine, trigofoenosides A–G
Steroidal	Yamogenin, diosgenin, smilagenin, Sars sapogenin, tigogenin, neo tigogenin,

	gitogenin,
Flavonoids	Quercetin, rutin, vitexin, is vitexin

Extraction Method:

A 100 g of crushed fenugreek seed was extracted using n-hexane (600 mL) and a Soxhlet extractor for 3 h at (65–70 °C). Then, the mixture of solvent-oil was filtered through No.1 paper filter (Whatman). The extract was transferred into a round flask and solvent was evaporated using rotary evaporator, (Rotavapor R-200, Buchi, Germany) at 40 °C. Finally, the oil extract was stored at 4 °C to prevent degradation of the compounds for further analysis.

Uses:

- The medicinal value of fenugreek seeds is mentioned in Ayurvedic texts as well as in Greek and Latin pharmacopoeia. The Ayurvedic texts praise this herb for its power as an aphrodisiac, but modern Vaidya as seem to be using it more for digestive and respiratory problems stemming from an excess of kaph (phlegm) and vat(wind).
- In ancient Egypt, meth was used to ease of child birth and to increase milk flow, and modern Egyptian women are still using it today to relieve menstrual cramps, as well as making hila tea out of it to ease other kinds of abdominal pain. The Chinese call it hu Luba, and also use it for treating abdominal pain. Though this cool season crop is grown in most corners of the world, its use and people 's awareness of its value vary considerably.
- In India, fresh meth ka saag (the stems and leaves of the plant) is very commonly cooked as a winter vegetable, and the seeds are used year-round as a flavoring agent for various dishes. The seeds are also eaten raw as sprouts and used medicinally. In Egypt and Ethiopia,

methi is used in baking bread, and the Swiss use it for flavoring cheese.

- In the USA, it is mainly used to make spice blends for soups and stews.

2. Vitamin E Oil:

Vitamin E is a vitamin that dissolves in fat. It is found in many foods including vegetable oils, cereals, meat, poultry, eggs, and fruits. Vitamin E is an important vitamin required for the proper function of many organs in the body. It is also an antioxidant. Vitamin E that occurs naturally in foods (RRR-alpha-tocopherol) is different from man-made vitamin that is in supplements (all-rac-alpha-tocopherol). Vitamin E is used for treating vitamin E deficiency, which is rare, but can occur in people with certain genetic disorder and in very low-weight premature infants. Vitamin E is also used for many other conditions, but there is no good scientific evidence to support many of these other uses.

- An inherited condition that affects motor control (ataxia with vitamin E deficiency or A VED). Taking vitamin E by mouth is effective for treating vitamin E deficiency due to this genetic movement disorder.
- Vitamin E deficiency. Taking vitamin E by mouth is effective for preventing and treating vitamin E deficiency.

Side Effects:

1. Vitamin E is likely safe for most people when taken in doses lower than 1000 mg daily. This is the same as 1100 IU of synthetic vitamin E (all-rac-alpha-tocopherol) or 1500 IU of natural vitamin E (RRR-alpha-tocopherol).
2. The risk of side effects increases with higher doses. Side effects can include nausea, fatigue, headache, and bleeding. Vitamin E is



possibly unsafe when taken in doses greater than 1000mg daily.

Precautions:

a. Heart disease:

Vitamin E might increase the risk for death in people with a history of heart disease

b. Diabetes:

Vitamin E might increase the risk for heart failure in people with diabetes. People with diabetes should avoid taking doses of vitamin E greater than 400 IU daily.

c. Head and neck cancer:

Vitamin E might increase the chance that this cancer will return. Do not take vitamin E supplements in doses greater than 400 IU daily.

d. Prostate cancer:

Vitamin E might increase the chance of developing prostate cancer. The effect of vitamin E in people who currently have prostate cancer isn't clear. An inherited eye condition that causes poor night vision and loss of side vision (retinitis pigmentosa): All-rac-alpha-tocopherol (synthetic vitamin E) 400 IU seems to speed vision loss in people with this condition. But much lower amounts (3 IU) don't seem to have this effect. If you have this condition, it is best to avoid vitamin E supplements.

Dosing:

Vitamin E is an important nutrient. Vegetable oils, cereals, meat, poultry, eggs, fruits, and wheat germ oil are good sources of vitamin E. The amount that should be consumed on a daily basis is called the recommended dietary allowance (RDA). The RDA for natural vitamin E (RRR-alpha-tocopherol) in adults is 15mg (22 IU), 15mg (22 IU) during pregnancy. Keep in mind that the doses of natural vitamin E (RRR-alpha-tocopherol) and vitamin E that has been made in the lab (all-rac-alpha-tocopherol) are calculated differently. This can make supplement dosing confusing. The

American Heart Association recommends obtaining vitamin E by eating a well-balanced diet rather than from supplements until more is known about the risks and benefits of these supplements.

3. Bees Wax:

Beeswax (cera alba) is a natural wax produced by honey bees of the genus *Apis*. The wax is formed into scales by eight wax-producing glands in the abdominal segments of worker bees, which discard it in or at the hive. The hive workers collect and use it to form cells for honey storage and larval and pupal protection within the beehive. Chemically, beeswax consists mainly of esters of fatty acids and various long-chain alcohols.



Figure 2: Bees Wax

Chemical Composition:

An approximate chemical formula for beeswax is $C_{15}H_{31}COOC_{30}H_{61}$. Its main constituents are palmitate, palmitoleate, and oleate esters of long-chain (30–32 carbons) aliphatic all with the ratio of $CH_3(CH_2)_{29}O-CO-(CH_2)_{14}CH_3$ to $CH_3(CH_2)_{24}COOH$.

Physical characteristics:

Beeswax is a fragrant solid at room temperature. The colors are light yellow, medium yellow, or dark brown and white. Beeswax is a tough wax formed from a mixture of several chemical compounds. Beeswax has a relatively low melting point range of 62 to 64 °C (144 to 147 °F). If beeswax is heated above 85 °C (185 °F) discoloration occurs. The flash point of beeswax is 204.4 °C

4. Stearic Acid:



Figure3: Stearic acid

5 Emulsifying wax

Emulsifying wax is a cosmetic emulsifying ingredient. The ingredient name is often followed by the initials NF, indicating that it conforms to the specifications of the National Formulary. Emulsifying wax is created when a wax material (either a vegetable wax of some kind or a petroleum-based wax) is treated with a detergent to cause it to make oil and water bind together into a smooth emulsion. It is a white waxy solid with a low fatty alcohol odor. [29]



Figure4: Emulsifying Wax

6 Xanthum Gum:

Xanthan gum is a polysaccharide with many industrial uses, including as a common food additive. It is an effective thickening agent, emulsifier and stabilizer which prevents ingredients from separating. It can be produced from simple sugars using a fermentation process, and derives its name from the species of bacteria used, *Xanthomonas campestris*.

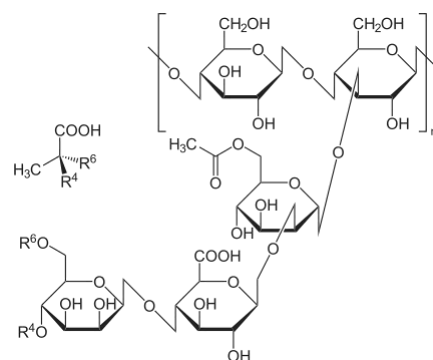


Figure5: Structure of Xanthum gum.

Uses:

Xanthumgum,1%, can produce a significant increase in the viscosity of a liquid

7. Glycerin

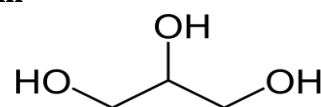


Figure6: Structure of Glycerin.

Chemical Formula:

C₃H₈O₃

MolarMass:

92.094g·mol⁻¹

LITERATURE SURVEY:

Literature survey was carried out on the proposed topic by referring various scientific journals, Online and offline also referred various textbooks available in college library. This survey reveals that no such articles were reported on the proposed work and some related articles are Mentioned below.

Teik Siun Ong:

It was studied about the Plant seed oil is often incorporated into the cream emulsions to provide multifunctional effects on the skin. In the current study, pumpkin seed oil (PSO) was used to develop a stable oil-in-water emulsion.

Chee Chin Chu, Chin Ping Tan:

The study aimed to optimize Pumpkin seed oil cream formulation and determine the synergistic effect of the PSO with vitamin E oil added. The physical properties,

antioxidant activities and storage stability of the formulations were analysed.

Kar Lin Nyam:

Optimize PSO cream formulation and determine the synergistic effect of the PSO with vitamin E oil added. The physical properties, antioxidant activities and storage stability of the formulations were analyzed. Besides, the synergistic effect of the best formulation was analyzed based on α -tocopherol content using ultra-high performance liquid chromatography (UHPLC).

Ahmed Shaban:

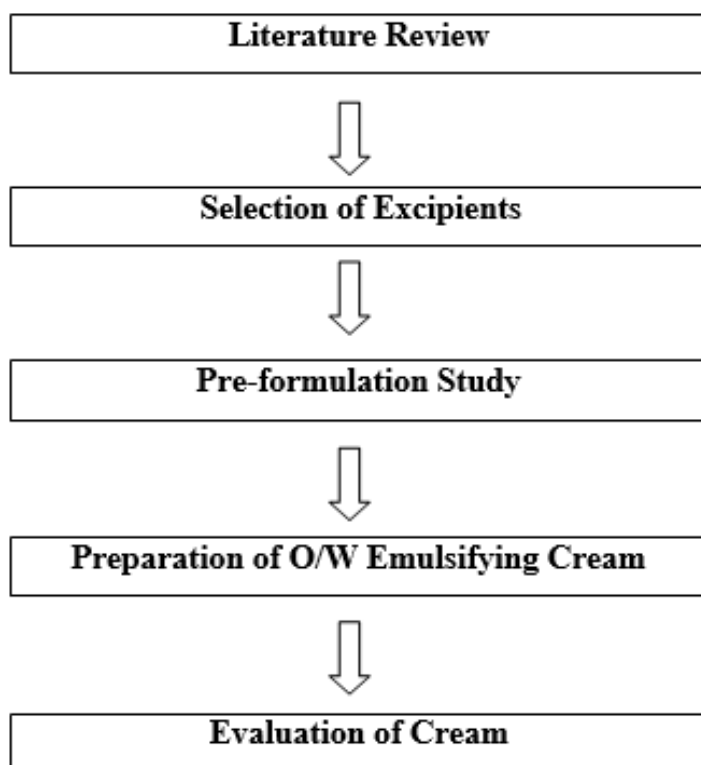
Pumpkin seed oil has long been considered as an ingredient for its nutritional and medicinal values

for the prevention of various ailments, especially for prostate diseases. In addition, several studies have suggested the crucial roles and effectiveness of pumpkin seed oil in the treatment of diabetes, anxiety and even cancer.

Ravi P Sahu:

This review highlights the characterization, properties and use of pumpkin seed oil from various pumpkin species against several diseases pathophysiology. These researches provide overall insights to the chemists, biologists and researchers on the roles of pumpkin seed oil extracts that possess promising biological activities.

PLAN OF WORK:



AIM & Objective:

Aim:

To formulate and evaluate such a herbal cream which protect the skin against the ultraviolet radiation.

Objective:

Since the development cost of a new drug molecule is very high, efforts are now being made by pharmaceutical companies to focus on the development of new drug dosage forms for existing drugs with improved safety and efficacy



together with reduced dosing frequency, and the production of more cost-effective dosage forms.

- To study the pre-formulation properties like compatibility of oil, purity of oil.

- To formulate the O/W emulsifying cream.
- To evaluate the formulation with respect to various physical parameters pH, color, odor, penetration, spread ability.

MATERIALS AND METHOD:

Table2: List of materials

Sr. No	Ingredient	Uses
1	Pumpkin Seed Oil	Active Ingredient
2	Fenugreek Oil	Active Ingredient
3	Vitamin E Oil	Preservative
4	Stearic Acid	Thickening agent
5	Emulsifying Wax	Emollient
6	Bees Wax	Emulsifying agent
7	Xanthum Gum	Thickening agent
8	Glycerin	Humectant

Table3: List of Equipment's

Sr. No	Instrument Used
1	pH meter
2	Hot air oven
3	Spredability Testing Apparatus

EXPERIMENTAL WORK PREFORMULATION STUDY:

1. Compatibility of oil:-

One ml of each oil is mixed in ampoule for one month to study compatibility oils.



Figure 5: Compatibility of oil

Table4: Compatibility of oil

Sr. No.	Parameters	Initial observation	Final observation
1.	Color	Yellow	Yellow
2.	Odor	Odorless	Odorless

a. Purity of oils:-

Table5: Purity of oil.

Sr. No.	Name of oil	R.I by using Refractometer	Standard Refractive index
1.	Pumpkin seed oil	1.477	1.4 ± 0.1
2.	Fenugreek oil	1.469	1.4640
3.	Vitamin E oil	1.470	1.505

Formula for cream

Sr. No	Ingredient	F1(gm)	F2(gm)	F3(gm)
1	Pumpkin Seed Oil	1.134	—	1.68
2	Fenugreek Oil	0.546	1.68	—
3	Vitamin E oil	0.57	0.57	0.57
4	Bees Wax	1.8	1.8	1.8
5	Stearic acid	1.35	1.35.	1.35.
6	Emulsifying wax	2.7	2.7	2.7
7	Xanthum gum	0.15	0.15.	0.15.
8	Glycerin	1.134	1.134	1.134
9	Rose Oil	2-3drop	2-3drop	2-3drop

Procedure:

Pumpkin seed oil, Fenugreek oil, Vitamin E oil added in 1:3 ratio. Bees wax and Emulsifying wax melted under 80°C in water bath. Adding Stearic acid to form the lipid phase. The aqueous phase containing Glycerine, Xanthum gum, and distilled

water heated 80°C.in water bath After heating the lipid phase added into the aqueous phase Adding 2 3drop of rose oil. With continuous magnetic stirring to form cream. The emulsion cooled at room temperature.



Figure8: Cream Formulation



Figure9: Cream Formulation F1, F2 & F3 Evaluation Test:

1. pH:

0.5g cream was taken and dispersed in 50 ml distilled water and then P was measured by using digital PHmeter.

2. Phase separation:

Prepared cream was kept in a closed container at a temperature of 25-100 °C away from light. Then phase separation was checked for 24 h for 30 d. Any change in the phase separation was observed or checked.

3. Spread ability:

The spread ability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides better the spread ability. Two sets of glass slides of standard dimension were taken. Then one slide of suitable dimension was taken and the cream formulation was placed on that slide. Then other slide was placed on the top of the formulation. Then a weight or certain load was placed on the upper slide so that the cream between the two slides was pressed uniformly to form a thin layer. Then the weight was removed and excess of formulation adhering to the slides was scrapped off. The upper slide was allowed to slip off freely by the force of weight tied to it. The time taken by the upper slide to slip off was noted. The F1 having a good spread ability

$$\text{Spread ability} = m \times l / t$$

Where, m=Standard weight which is tied to or placed over the upper slide(30g)

l=length of a glass slide(5cm), t=time taken in seconds.

4. Washability:

Washability test was carried out by applying a small amount of cream on the hand and then washing it with tap water. All three formulations were easily washable.

5. Physical evaluation:

In this test color, odor, texture and state of the three formulations were checked.

RESULT & DISCUSSION:

RESULT:

The present research was the formulation and evaluation of cream. The evaluation parameters were coming under results, like the physical evaluation of cream, PH of the cream, Spread ability, Wash ability, viscosity and phase separation of the cream was shown in table.

DISCUSSION:

The present work was the formulation and evaluation of cream. This cream formulation was o/w type of emulsion; hence this formulation was easily washed with plain water after application. The prepared formulation was good Spread ability. Viscosity and PH of the cream was good. Cream does not show any type of phase separation during storage.

Table6: pH observation table

Sr. No	Formulation	pH
1	F1	6.9
2	F2	6.7
3	F3	6.3

Table7: Phase Separation

Sr. No	Formulation	Phase Separation
1	F1	No Change
2	F2	No Change
3	F3	No Change

Table8: Spreadability observation table

Sr. No	Formulation	Time(sec)	Spreadability
1	F1	15	35.15
2	F2	7	22.8
3	F3	12	32.4



Physical Evaluation:

Table9: Physical Evaluation

Sr. No	Evaluation	Result
1	Colour	Slightly Yellow
2	Odour	Plesant
3	pH	6.9
4	Penetrations	Peneterate into skin within 2 min

CONCLUSION

By using Pumpkin seed oil, Fenugreek oil, vitamin E oil the cream showed a multipurpose effect and all these herbal ingredients showed significant different activities. Based on results and discussion, the formulations F1, F2 and F3 were stable at room temperature and can be safely used on the skin. Sunscreen having a multiple uses it cure dryness of skin, cure oczema, cure itching, improve skin tone and also has a Antimicrobial action. This cream having a significant use again a protection from the UV rays which can be a harmful to skin. Using all the above ingredient the sunscreen can be prepared and shows a significant result against a skin disorder. Formulation of cream was done by slab method and further evaluated by various evaluation parameters such as physical properties, pH, Spreadability, Washability, and phase separation of cream and gives good results.

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