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Moringa Seed Oil Gel Preparation For Face Care

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ABSTRACT:-

MoringaOleifera[(2)] L. also known as horse reddish tree and drum stick tree seed have a high oil content and contain many nutritional compound, including mono-unsaturated fats, proteins, sterols, and tocopherols. Staphylococcus epidermis is one of the bacteria that causes acne (pimples). The purpose of this study to compare bacteriostatic ability of the extract and gel for Staphylococcus epidermis and antioxidant activity of moringa seed oil gel, to formulate a moringa seed oil gel in vivo. The chemical component of moringaseed oil were analyzed by High Performance Liquid Chromatography. The stability study indicated that the PH, viscosity and homogeneity spreadability behavior of the cream containing moringa seed oil were not significantly changed after storage at 2-4, 20-25, and 35-40 °C for 28 days as well as heating cooling cycle. The moringa seed oil gel exhibited in vitro antioxidant activity and increased the in vivo skin hydration level compared with the gel based. There was no report of skin irritation and nausea etc. from this Moringa seed oil gel application, suggesting that the moringa seed oil cream developed in this study was appropriate for pharmaceutical and cosmetic uses. A moringaoleifera seed oil gel has been prepared. The moringa seed oil gel possessed antioxidant activity enhanced the skin hydration level, and reduced erythema, but did not affect the melanin content and skin visco-elasticity. This oil gel did not induce skin irritation and thus was safe to use.

Keywords:-Horse reddish tree(drum stick), High Performance Liquid Chromatography, Staphyllococcus epidermis, antioxidant etc.

I. INTRODUCTION:-

In this time period ultraviolet radiation, air pollutants, psychological stress, and chemical exposure are capable of free radicals and reactive oxygen species on the skin. Free radical is an atom, molecules, or ion that has at least one unpaired valence electron. With some expectations, these unpaired electrons makes radicals highly chemically reactive. Many radicals spontaneously demerize. Most organic radicals have short lifetimes. Am excess of free radicals generates oxidative stress and damages cell membranes and lipoproteins through lipid oxidation process.(1)

Fig.- 1.1

Skin has endogenous antioxidants, such as glutathione, melanin, and enzymatic antioxidants. However, the excess formation of free radicals requires exogenous antioxidant topical application in preventing oxidative stress and enhancing DNA repair. Several studies have shown that the oxidation could be prevented by prior antioxidant treatment. Antioxidant protects the skin by reducing free radical production. Scavenging free radicals by antioxidants can prevent skin aging. Antioxidants also have anti-inflammatory properties in preventing sunburn and protecting the skin from sun damage and photo-aging. By reducing inflammation antioxidant stimulate skin repair and correct skin damage. Free radicals can trigger the skin's melanin production, causing skin color changes. Antioxidants prevent skin pigment generation by reducing photo-damage. In addition, some antioxidantwere shown to increase skin hydration to revitalize the skin.

Natural oils are providing deep hydration and lasting moisture, natural face oil can also nourish the skin with a range of vitamins, antioxidants and essential fatty acids. These nourishing compounds can help to promote healthy

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skin barrier function, reduce inflammation, and protect the skin from environmental stressors like sun and wind. By providing deep hydration, lasting moisture, and nourishing nutrients, natural oils plump up the skin and restore its natural elasticity and moisture balance, helping to reduce the appearance of fine lines and wrinkles.

Many of the nutrients found in facial oils also offer additional anti-aging benefit. For example, some natural oil like moringa oil contain vitamin A,C,E etc. in that Vit.A which has been shown to stimulate collagen production an reduce the appearance of the fine lines and wrinkles. Vit.C which helps to brighten the skin and even out the skin tone, reducing the appearance of hyperpigmentation. As well as Vit.E, a powerful antioxidant that can help protect the skin against free radical damage and promote healthy skin function. Vit.E is also known for its ability to soothe dry, irritated skin, making it an excellent choice for sensitive skin.

MoringaOliefera:-

Moringaoleifera is a fast-growing, drought-resistant tree of the family Moringaceae, native to the Indian subcontinent and used extensively in South and Southeast Asia. Common names include moringa, drumstick tree(from the long, slender, triangular seed-pods), horseradish tree (from the taste of the roots, which resembles horseradish), or malunggay (as known in maritime or archipelagic areas in Asia).

Figure:- 1.2

It is widely cultivated for its young seed pods and leaves, used as vegetables and for traditional herbal medicine. It is also used for water purification. Although listed as an invasive species in several countries, M. oleifera has "not been observed invading intact habitats or displacing native flora", so should be regarded at present as a widely cultivated species with low invasive potential.

Figure:- 1.3

M. oleifera is a fast-growing, deciduous tree that can reach a height of 10–12 m (33–39 ft) and trunk diameter of 45 cm (18 in). The bark has a whitish-gray color and is surrounded by thick cork. Young shoots have purplish or greenish-white, hairy bark. The tree has an open crown of drooping, fragile branches, and the leaves build up a feathery foliage of tripinnate leaves.

Figure:- 1.4

The flowers are fragrant and hermaphroditic, surrounded by five unequal, thinly veined, yellowish-white petals. The flowers are about 1–1.5 cm (⅜–⅝ in) long and 2 cm (¾ in) broad. They grow on slender, hairy stalks in spreading or drooping flower clusters, which have a length of 10–25 cm (4–10 in).

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Figure:- 1.5

Flowering begins within the first six months after planting. In seasonally cool regions, flowering only occurs once a year in late spring and early summer (Northern Hemisphere between April and June, Southern Hemisphere between October and December). In more constant seasonal temperatures and with constant rainfall, flowering can happen twice or even all year-round.

The fruit is a hanging, three-sided, brown, 20–45 cm (8–17+½ in) capsule, which holds dark brown, globular seeds with a diameter around 1 cm. The seeds have three whitish, papery wings and are dispersed by wind and water.

Figure:- 1.6

In cultivation, it is often cut back annually to 1–2 m (3–6 ft) and allowed to regrow so the pods and leaves remain within arm's reach.

Moringaoleifera seed oil gel has a light yellow color with a mild nutty odor. Research suggested that M. oleifera seed oil possesses a skin protecting effect. M oleifera seed oil was suggested to maintain the natural skin pigmentation as it possesses a mild sun protective activity. The antifungal activity of M. oleifera seed oil has been reported. The benefit of MoringaOleifera seed oil gel for the skin have been widely recognized. The antioxidant activities and effects of skin hydration, skin color, and skin visco-elasticity of M. oleifera oil gel formulations have not been investigated. In addition, there are very limited data regarding the safe and effective dose of moringaoliefera oil gel formulations. In this study, we characterized the antioxidant activity of moringa seed oil. The chemical compositions of moringa seed oil gel were analyzed to validate its biological activities. A gel containing Moringaoliefera seed oil gel was formulated. The physical stability and antioxidant activity of the gel were tested. The safety and efficacy of the formulation were also reported. (3)

Fig.-1.7

Taxonomical classification:-
Kingdom – plantae
Subkingdom –tracheobionta
Super divison- spermatophyta
Divison – Magnoliophyta
Class – Magnoliopsida
Sub class – Dilleniidae
Order – Capparales
Family- Moringceae
Genus- Moringa
Species- Oleifera

Synonyms:-

The plant MoringaOleifera is known by several names throughout the world. The synonyms are as followed:-

Moringaoleifera, Subhanjana, Saguna, Sainjna, Mulaga, Munaga, Drumstick, Horse Reddish Tree, Haritashaaka, Raktaka, Akshiva etc.

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Materials: Resorcinol, Sulfur, Propylene glycol, Methylparaben, Carbopol, Alcohol, Purified water taken from pharmaceutical laboratory of SSTC, SSGI, FPS.

II. INGREDIENTS TABLE:-

s.no	Ingrediants
1	Moringa oil
2	Sulfur(antibacterial)
3	polyethylene glycol (PEG)(moisture maintain)
4	Methylparaben and Propylparaben(preservative)
5	Carbopol (C)(thickner)
6	Alcohol (A)(antiseptics)
7	Perfumes and Purified water

Fig.-2.1

- **Moringa oil:**

Moringa oil is derived from the seeds of Moringaoleifera, a small tree native to the Himalayan mountains. Virtually all parts of the moringa tree, including its seeds, roots, bark, flowers, and leaves, can be used for nutritional, industrial, or medicinal purposes. Moringa seeds have a high oil content and contain many nutritional compounds, including monounsaturated fats, protein, sterols, and tocopherols. Moringa oil is produced through a variety of industrial processes, including solvent extraction and cold-pressing.

Figure 2.2

Moringa Oil helps in cleansing, nourishing, and nurturing your skin naturally. It is often compared to other oils like Olive oil and Argan oil; however, Moringa Oil stands out due to its unique composition.Moringa oil has antimicrobial, antibacterial, antioxidant, antifungal, and anti-aging properties. These help in aiding numerous skin problems, including the effects of aging like wrinkles, dull and lifeless skin.

- **Sulfur:**

Sulfur is an element that exists in nature and can be found in soil, plants, foods, and water. [1]. Some proteins contain sulfur in the form of amino acids. [2]. Sulfur is an essential nutrient for plants.

Sulfur is a chemical element; it has symbol S and atomic number 16. It is abundant, multivalent and nonmetallic. Under normal conditions, sulfur atoms form cyclic octatomic molecules with the chemical formula S_8. Elemental sulfur is a bright yellow, crystalline solid at room temperature.

Figure 2.3

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- **Polyethylene Glycol:-**

Polyethylene glycol is a medication that is used in the management and treatment of constipation. It is in the laxative class of drugs. This activity describes the indications, action, and contraindications for polyethylene glycol as a valuable agent in the treatment of constipation. Polyethylene glycol (PEG) is a product with industrial and pharmaceutical uses. Since many PEG compounds are hydrophilic, industrially, they are utilized in cosmetic products as surfactants, emulsifiers, cleansing agents, humectants, and skin conditioners.As a medication, PEG is a part of the laxative class.

Figure 2.4

- **Methylparaben:-**

Methyl paraben is an anti-fungal agent often used in a variety of cosmetics and personal care products. It is also used as a food preservative and has the E number E218. It is commonly used as a fungicide in Drosophila food media at 0.1%.

Figure 2.5

- **Propyl paraben:-**

Propyl paraben is the benzoate ester that is the propyl ester of 4-hydroxybenzoic acid. Preservative typically found in many water-based cosmetics, such as creams, lotions, shampoos and bath products. Also used as a food additive. It has a role as an antifungal agent and an antimicrobial agent.

Figure 2.6

- **Carbopol 934:-**

Carbopol® 934 polymer is a white powder, cross-linked polyacrylic acid polymer. It exhibits short flow properties and a creamy sensory profile, and is therefore well suited for use as a rheology modifier in lotions and creams. Carbomer is a high molecular weight polymer compound used commonly in the cosmetic industry. These compounds can absorb large amounts of water, increasing in volume up to 1,000 times to form gels and thick solutions that are stable and resistant to spoilage. When not in solution, they carbomers exist as a white powder.

Figure 2.7

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- **Alcohol (Ethanol):**

Ethanol is present in alcoholic drinks (beer, wine spirits) when diluted. It is use as a topical gent to prevent skin infections, in pharmaceutical preparations (e.g. rubbing compounds, lotions, tonics, colognes), cosmetics, and in perfumes. Ethanol may be present in fuels, labeled as ethanol blended fuels, and is used as an industrial solvent for fats, oils, waxes, resins, and hydrocarbon. It is used to make many chemical compounds, lacquers, plastics and plasticizers, rubber and rubber accelerators, aerosols, mouthwash products, soaps and cleaning preparations, polishes, surface coatings, dyes inks, human and veterinary medicines and as a dehydrating agent.

Figure 2.8

- **Rose water:-**

Rose water is perfect for cleaning your skin and removing any impurities that could cause unwanted spots. Because of its gentle nature, it is suitable for people with any skin type – even sensitive skin. Using rose water for face and body cleansing will ensure your skin doesn't become dry and irritated.

Rose oil is extracted form the flowers of rosa damascene. And it belongs to the family of Rosaceae. Rose oil contains citronellol, geraniol, nerol, linalool, phenyl ethyl alcohol, pinene, limonene and p-cymene.

Fig.- 2.9

- **Sandal wood:-**

Over the year, it has been used as an important cosmetic product. Traditionally, sandalwood is used as an anti-ageing product as it reducaes wrinkles, scars, and the darkening of the skin. This is due its toning, antioxidant, and anti-inflammatory actions.Sandalwood consist of the heartwood of the stems and roots of Santalum album Linn. An evergreen small ltree of the family Santalaceae. The plant widely distributed in india and is cultivated under government control in Southern India.

Figure 2.10

- **Distilled water:-**

Distilled water is water that has been boiled into vapor and condensed back into liquid in a separate container. Impurities in the original water that do not boil below or near the boiling point of water remain in the original container. Thus, distiller water is a type of purified water.

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Figure 2.11

III. METHOD OF PREPARATION

Preparation of moringa seed oil:-

- First we collect fresh moringa seeds and left it for dry.
- Then after dry we should peeled out the dried seed and triturate it with the help of mortar pestle.
- Then weighed 20gm of moringa seed powder accurately and put it into round bottom flask.
- Then we add 200ml ethanol in it.
- Now we set the Clevenger assembly and start the extraction process in 70°C temperature for 5hours.(4)

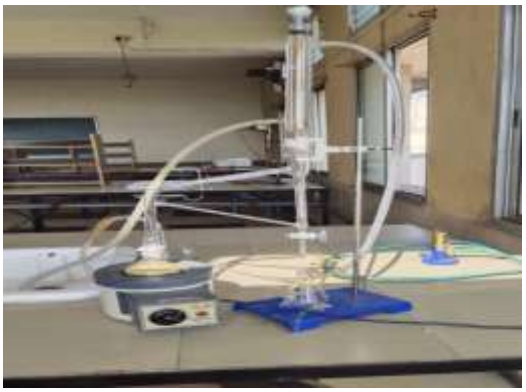

Fig.-3.1

Preparation of Gel:-

Dissolve the resorcinol in the alcohol and slowly incorporate the carbopol by sprinkling it on with agitation

⇩

Dissolve methylparaben in about 35ml of purified water

⇩

Combine both the solution by continuous mixing

⇩

Make a paste of the sulfer with the propylene glycol and slowly incorporate into the combine solution and mix well

⇩

To get Gel

Fig.-3.2

IV. RESULT:-

(1)The preparation of moringaoleifera oil gel has prepared and tested. Moringaoleifera olio-gel hydrates, prevents and treats dry skin condition, act as an anti-pollution shield, prevent and sun spots, slows down the ageing process, control oily skin,

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cleanses and purifies skin, prevents and reduces stretches marks, soothes and inflammation and has healing properties, great for hair and nail health. For futher work of moringa we can use for our body.

Figure- 4.1

Moringa oil hydrating qualities like other. Moringa oil has an excellent skin penetration profile when applied this oil easily absorb giving way to instant radiance. This oil rich in many nutrients that help nourish the skin such as vitamin A,C,E . This help in improving the elasticity of the skin thereby reducing fine lines and wrinkles.

Characterization:

After getting the best formula based on accurate Resorcinol, Sulfur, Propylene glycol, Methylparaben, Carbopol, Alcohol, Purified water ratio, it was further studied for its characterization such as Colour, Appearance, Odour, Feel of application, Extrudability, pH value, viscosity, Spreadability, Stability, Grittiness, Homogeneity, . All this studies are conducted in the laboratory .(3)

Physical appearance:

The physical appearance was visually checked for the colour, appearance, odour, feel of application gel formulation was noted.

S.NO	PHYSICAL APPERANCE	RESULT
1	COLOUR	PALE GREEN
2	ODOUR	PLEASANT
3	APPERANCE	TRANSLUCENT
4	FEEL OF APPLICATION	SMOOTH

✓ Appearance- The appearance of the formulation was lotion type.
✓ Color- The color of the formulation was observed greenish.
✓ Odour- The odour was aromatic.
✓ PH- The PH of the formulation was found to be approx. 7.8 both in the PH paper & in digital PH meter.
✓ Spreadability- The formulation was easily spreadable.
✓ After fill- The formulation was emollient in nature & the after fill was so soft.
✓ Types of smear- The formulation was good in forming film on the skin.
✓ Irritancy test- The formulation was non-irritable & non allergic on the skin.
✓ Ease of removal- The formulation was easily removed from the skin by using water & the time of the removal was 25-30sec.
✓ Test for microbial growth- No microbial growth is observed.(5)

V. EVALUATION TEST:

1. Homogeneity

The formulation were tested for homogeneity by visual appearance and by touch.

2. Appearance

The appearance of the lotion

3. After feel

Emolliency, slipperiness and amount of residue left after the application of fixed amount of lotion was checked.

4. Acid Value

Take 10gm of substance dissolve in accurately weighed in 50ml mixture of equal volume of alcohol and solvent ether. The flask was connected reflux condenser and slowly heated, until sample was dissolved completely. To this 1ml of phenolphthalein added and titrated with 0.1N NaOH, until faintly pink colourappeares after shaking for 30sec.

Acid Value=n x 5.61/w

n= number of ml of NaOH required

w= weight of substance

5. pH measurement

The pH of gel formulations were determined by using the digital pH meter. One gram of gel was dissolved in 100 ml distilled water and stored for two hours. Electrodes were completely dipped into the gel formulations and pH

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was noted. The measurement of pH of each formulation was done in triplicate and average values were calculated.

pH value - pH values of the sample is measured by using pH meter of model number Me-962P.The graph indicates that all the resulted pH values are in range between 6.7–7.4. These values indicate that gel is suitable for topical administration.

S.NO	SAMPLE	pH
1	F1	4.9
2	F2	5.3
3	F3	6.0
4	F4	5.8

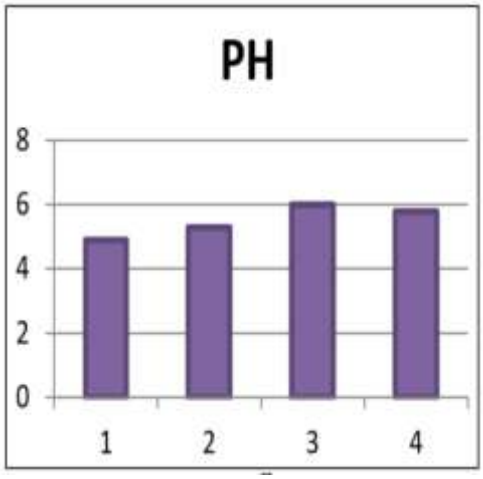

Figure 5.1

6. Irritancy test

Mark an area (1 sq. cm) on the left hand dorsal surface. The lotion was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals upto 24hrs and reported.

7. Viscosity

The viscosity of the prepared gel formulations was measured by Brook field viscometer model –WDV-8. The sufficient quantity of gel was filled in wide mouth jar separately. The height of the gel filled in the wide mouth jar should sufficiently allow dipping the spindle. The RPM of the spindle was adjusted to 2.5 RPM. The viscosities of the formulations were recorded.

S.NO	SAMPLE	VISCOSITY
1	F1	1,00,080
2	F2	1,52,030
3	F3	50,075
4	F4	62,000

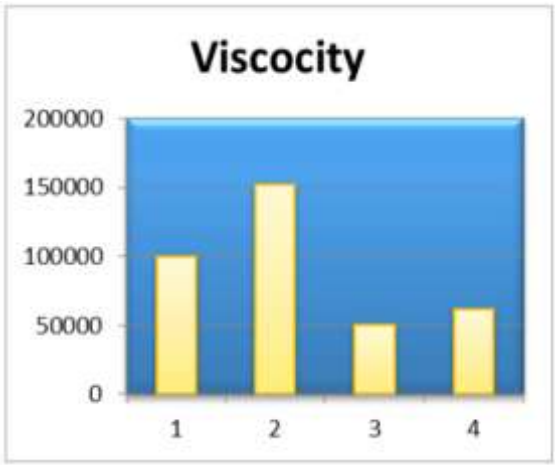

Figure 5.2

8. Accelarated stability testing

Accelarated stability testing of prepared lotion was conducted for 2 most stable formulations at room temp, studied for 7 days. The formulations were placed at 40oC + 1oC for 20 days. Both formulations were kept at room temp and elevated temp and observed on oth, 5th, 10th, 15th and 20th day for any change in color, phase separation etc.

9. Subjective Properties

Consistency, feel on application and irritation parameters are determined.

10. Spreadability

Two glass slides of standard dimensions (20 × 5cm) were selected. The formulation was over one of the slide. The other slide placed on the top of the lotion such a that the formulation sandwiched between the two slides in an area occupied by a distance of 7.5 cm, alongside 100 gm weight was placed uniformly to form a thin layer. The weight was removed and the excess of lotion adhering to the slides was scrapped off. The two slides in a position were fixed to stand (45° angle) without slightest disturbance and in such a way that only the lower slide held firmly by the opposite fangs of the clamps allowing the upper slide to slip off freely by the force of weight tied to it. 60 gm of weight was tied to the upper slide carefully. The time taken for the upper slide to travel the distance

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of 5 cm and separate away from the lower slide under the direction of weight was noted. The experiment repeated for 3 times and the mean taken for three such dimensions was calculated. The results were recorded.
The Spread ability is calculated by using formula:

S = M x L/T

Where,

S= Spread ability,

L= Length of glass slide,

M= Weight tied to the upper slide and

T= Time.

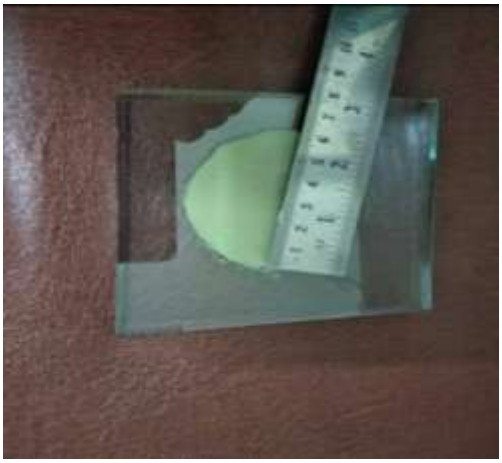

Figure- 5.3

S.NO	SAMPLE	SPREADABILITY
1	F1	10.9
2	F2	10.2
3	F3	8.7
4	F4	7.9

11. Type of emulsion test

Dye solubility and dilution test was conducted to determine the type of emulsion formed. A portion of lotion was applied on the forearms of 6 volunteers and left for 20 minutes. After 20 minutes any kind of irritation if occurred was noted.

13. Washability Test

A portion of lotion was applied over the skin of hand and allowed to flow under the force of flowing tap water for 10 minutes. The time when the lotion completely removed was noted.

14. In vitro permeation studies

In vitro permeation studies of TRA lotions across rabbit skin were carried out using two-chambered Franz-type diffusion cells (manufactured “in house”) having a receptor phase of ~5 ml, 2 and a diffusional area of ~0.788 cm .Adult rabbit skin was used for permeation studies at 37 ± 0.5 C. Abdominal full thickness skin of male White New Zealand rabbit (3 - 4 kg weight) was carefully excised after sacrificing the rabbit. Subcutaneous fats and other extraneous tissues adhering to the dermis were completely removed and trimmed with forceps and scissor. The skin was cleaned with phosphate buffered saline (PBS) at pH 7.4 and stored in 500 ml normal saline in a o refrigerator (18 – 20 C) The skin was used within one week of excision. Sheets of the skin were cut to appropriate sizes 2 (~ 1 cm in diameter) and soaked overnight in the receptor solution (PBS). The membrane was then placed between the two compartments of the diffusion cells with epidermis side facing the donor compartment while the dermal side was bathed with PBS at pH 7.4 (receptor fluid). The donor compartment was filled with PBS at pH 7.4 ± 0.1.

This pH is close to that of human skin. The receptor fluid was stirred with a magnetic stirring bar at 500 rpm, keeping the temperature at 37 ± o 0.5 C by means of a water jacket. Care was exercised to remove any bubbles between the underside of the skin and the solution in the receiver compartment. Vacuum grease was used to produce a leak-proof seal between the membrane and the two compartments of the diffusion cell, i.e., donor and receptor. Ultrasonic bath. To avoid evaporation from the compartments, the cell arm and donor compartment were covered with a parafilm. Constant mixing of the receptor phase was obtained with a magnetic stirrer placed in the receptor compartment. The diffusion cells were placed on a stirring-bed immersed in a water o bath at 37 ± 0.05 C, to maintain the temperature of membrane surface. After 24 hours, both chambers were cleared of PBS and the receptor compartment was immediately refilled with pre- thermostated PBS, while the skin remained intact. The donor compartment was charged with 1 ml of the lotion (test formulation). At time intervals of 5, 15, 30, 60, 90, 120, 180, 240, 360 and 480 min, 0.2 ml sample was drawn, using a micro-pipette, from receptor solution followed by addition of same volume of pre-thermostated receptor solution to maintain sink conditions. The samples were analyzed spectrophotometrically at 271 nm using UV/Vis spectrophotometer to obtain the amount of TRA permeated through rabbit skin after diluting with 1.8 ml PBS. Since skin shows great sampleto-sample permeability variations, each of these analyses was conducted in pentaplicate (n = 5). To

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construct a calibration curve, 500 mg of TRA was dissolved in PBS (10 ml) in 100 ml volumetric flask and the final volume made up to 100 ml by adding PBS to prepare stock solution. From this solution, dilutions of 10, 20, 30, 40, 50, 60, 70, and 80 µg/ml were prepared. The resultant dilutions were analyzed spectrophotometrically for UV absorbance' maximum UV absorbance of TRA was found at 271 nm. The linear equation of the constructed calibration curve was y = 0.022x – 2 0.021 and correlation coefficient (R) of 0.998. Steady-state flux was determined from the slope of the linear portion of the cumulative amount of permeation (Q) versus time (t) plot. The input rate of TRA permeating across rabbit skin was determined as in Eq Input rate = K p × C × A.....

Where, K p is permeability coefficient, C is donor amount (µg), i.e., amount of drug in the donor compartment and A is the Franz cell area of 2 permeation (~0.788 cm).

Enhancement ratio (ER) was calculated by dividing the flux of the test formulation by the flux of control formulation.

15. Statistical analysis

The receptor and donor compartments were filled with PBS at pH 7.4 ± 0.1. To remove air bubbles and preclude the development of air pockets in the receptor phase, PBS was degassed in an The results are expressed as mean ± standard deviation (SD, n = 5). Statistically significant differences between various permeation datawere determined using F-test, Fisher's least significant difference (LSD), analysis of variance (ANOVA) and multiple range tests at 95 % confidence level.

16. Preference Test:

The parameters of preference tests based on sensory evaluation were a scent, color, and sensation on the skin. The level of preference was assessed using a numerical scale, i.e. 5 = like extremely, 4 = like, 3 = neutral, 2 = dislike, 1 = dislike extremely.8

17. Stability Test:

Stability Test:

Table 9: Stability data after 7 days

S. No	Sample	Temperature °C		
		2-4°C	20-25°C	35-40°C
1	F1	Stable	Stable	Stable
2	**F2**	**Stable**	**Stable**	**Stable**
3	F3	Stable	Un-stable	Un-stable
4	F4	Stable	Stable	Un-stable

Table 10: Stability data after 14 days

S. No	Sample	Temperature °C		
		2-4°C	20-25°C	35-40°C
1	F1	Stable	Stable	Un-stable
2	**F2**	**Stable**	**Stable**	**Stable**
3	F3	Stable	Un-stable	Un-stable
4	F4	Stable	Stable	Un-stable

Table 11: Stability data after 21 days

S. No	Sample	Temperature °C		
		2-4°C	20-25°C	35-40°C
1	F1	Stable	Stable	Un-stable
2	**F2**	**Stable**	**Stable**	**Stable**
3	F3	Stable	Un-stable	Un-stable
4	F4	Stable	Un-stable	Un-stable

Table 12: Stability data after 28 days

S. No	Sample	Temperature °C		
		2-4°C	20-25°C	35-40°C
1	F1	Stable	Un-stable	Un-stable
2	**F2**	**Stable**	**Stable**	**Un-stable**
3	F3	Stable	Un-stable	Un-stable
4	F4	Stable	Un-stable	Un-stable

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The stability studies were carried out for all the prepared gel formulations by freeze thaw cycling. Here, by subjecting the formulations to a temperature of 40c for one month, then at 250c for one month and then 40c for one month and syneresis was observed. After this, the gel is exposed ambient room temperature and liquid exudate separating is noted.

18. Determination of total fatty matter

2g of the sample was weighed in a conical flask, added 25ml of dil. HCL (1% v/v) & refluxed. Poured this into the separating funnel and 50ml of ethyl ether were added in to it. The separating funnel was shaken well until two layers were separated. The aqueous layer was separated out and added 50ml portion of ether twice. All the ether extracts were combined and filter through the filter paper containing dried sodium sulphate on it. Distilled off the ether (filtrate) & dried the material remaining in the flask at temperature 60±2oC to constant mass.

Calculation
Total Fatty Matter% = 100xM1/M 2
Where, M1= mass in gram of residue
M 2= mass in gram of material taken for test

19. Determination of water content

10g of the material was weighed and transferred it into the flask. 200ml of toluene and few pieces of pumice stone was added and connected the apparatus with condenser. The flask was heated until toluene was begin to boil and refluxed. When the H2O was distilled over source of heat was removed.
Calculation
Water % by mass = V X D x 100/ M
Where, V = volume of water in ml at room temperature collecting in receiving tube
D = density of water at room temperature
M = Mass in gm of the material taken for the test

20. Patch test

About 1-3gm of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetic to be tested was applied to an area of 1sq.m.of the skin. Control patches (of similar cosmetic of known brand) were also applied. The site of patch is inspected after 24 hrs. As there was no reaction the test was repeated three times. As no reaction was observed on third application, the person may be taken as not hypersensitive.(2)

6. Biological Applications of moringaoliefera gel:

The bioactive compounds present in moringaoleifera confer properties associated with disease prevention and treatment, such as antimicrobial, anti-inflammatory, anticancer, antidiabetic, antioxidant, hepato-protective and cardio-protective. Primary and secondary metabolites may also be involved in these applications. Primary metabolites are proteins, polysaccharides and lipids involved in physiological functions. Among them, polysaccharides and fibres are the main compounds showing positive effects on chronic diseases such as cancer, cardio-vascular disease, diabetes and obesity. On the other hand, secondary metabolites are minor molecules, such as phenolic compounds, halogenated compounds sterols terpenes and small peptides. Most of the phytochemicals reported in MoringaOliefera offer potential in the prevention and treatment of diseases.
The antimicrobial effect provided essential oils from the leaves and alcoholic extract of the seeds. In fact, Chuang et al. demonstrated this activity of the leaf and leaves against dermatophytes such as Trichophytonmentagrophytes.

Phenolic compounds have been associated with the antimicrobial and antifungal activities of Moringaoleifera extracts, the leaves being the organs with the highest amount of the compounds. Regarding the antimicrobial effect of Moringaoleifera plants when included in food, MoringaOleifera contributes to control the growth of undesirable microorganism, due to low ph values and the presentive of pterigospermin. The roots of Moringaoleifera have antibacterial properties and are described to be rich in antimicrobial agents. The bark extract has been found to have antifungal activities while the juice of the bark and stem show an antibacterial effect against Staphylococcus aureus.

VI. CONCLUSION:-

(2)Higher concentration of Moringaoleifera seed ethanolic extract produce higher activity antibacterial with higher inhibition zone diameter to Staphylococcus epidermis. Anti-acne gel of Moringaoleifera seed gel ethanolic extract has antibacterial activity to Staphylococcus epidermis with moderate inhibiton category, better formula for antibacterial activity was formula with concentration of MoringaOleifera seed ethanolic extract was 15%.

We successfully developed an M. oleifera seed oil gel. Moringa seed oil gel possessed antioxidant activity, enhanced skin hydration level, and reduced skin erythema, but did not affect the melanin content and skin visco-elasticity. There was no report of skin irritation from the application of the gel, suggesting that the moringa seed oil cream developed in this study is appropriate for pharmaceutical and cosmetic uses.

Moringa oil hydrating qualities like other. Moringa oil has an excellent skin penetration profile when applied this oil easily absorb giving way to instant radiance. This oil rich in many nutrients that help nourish the skin such as vitamin A,C,E . This help in improving the elasticity of the skin thereby reducing fine lines and wrinkles.

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