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A Review on *Moringa Oleifera* Seed Oil Facewash Preventing Acne and Boost the Face Collagen

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ABSTRACT

Moringa Oleifera L. also known as horse reddish tree and drum stick tree. Moringa oleifera (munga) plant belonging to the family "Moringaceae". Various study has shown that Moringa seeds contain high oil content and many nutritional compound vitamin A, C, E including mono-unsaturated fats, proteins, sterols, and tocopherols which helps to nourish the skin. Moringa oil has an excellent skin penetration profile after application on skin, it absorbs easily and giving way to instant radiance.

There are various factor that causes skin damage and loss of elasticity .Staphylococcus epidermis is one of the bacteria that causes acne (pimples). UV lights (also called photo-aging) is the main cause of skin collagen loss accounting for up to 80-90% of the appearance of skin aging.

The purpose of this study to compare bacterio-static ability of the Moringa oil face wash against Staphylococcus epidermis and effect on skin elsticiy byimproving the collagen on face and antioxidant activity of moringa face wash, to formulate a moringa seed face wash in vivo.

A moringa oleifera face wash has been prepared The chemical component of moringa face wash (stearic acid, methyl parabean, KOH, polyethyelene glycol, liquid paraffin, sorbitol, propyl parabean sodium phosphate, SLS) were analyzed by High Performance Liquid Chromatography in further study.

The oil of moringa oleifera seed and ethanol was extracted via Clevenger apparatus. The stability study indicated that the PH, viscosity, homogeneity, foaming index and spreadability behavior of the face wash 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 gel face wash exhibited in vitro antioxidant activity and increased the in vivo skin hydration level and maintain the face elasticity. There was no report of skin irritation and nausea, hyper and hypo pigmentation while using the face wash, the moringa face wash possessed antioxidant activity enhanced the skin hydration level, and reduced erythema, but did not affect the melanin content and also improve the skin visco-elasticity. This gel face wash did not induce skin irritation and thus it's safe to use.

***Keywords*:-** Horse reddish tree (drum stick), High Performance Liquid Chromatography, Staphyllococcus epidermis, UV damage (face collagen), antioxidant, skin visco-elasticity etc.

1. INTRODUCTION

HERBAL PLANTS

Medicinal plants throughout the ages, humans have relied on nature for their basic needs, for the production of food, shelter, clothing, transportation, fertilizers, flavours and fragrances, and medicines.

Man relied on the healing properties of medicinal plants. Some people value these plants due to the ancient belief which says plants are created to supply man with food, medical treatment, and other effects. It is thought that about 80% of the 5.2 billion people of the world live in the less developed countries and the World Health Organization estimates that about 80% of these people rely almost exclusively on traditional medicine for their primary healthcare needs. Medicinal plants are the “backbone” of traditional medicine, which means more than 3.3 billion people in the less developed countries utilize medicinal plants on a regular basis. There are nearly 2000 ethnic groups in the world, and almost every group has its own traditional medical knowledge and experiences. (2)

Medicinal plants have been used in healthcare since time immemorial. Studies have been carried out globally to verify their efficacy and some of the findings have led to the production of plant-based medicines. The global market value of medicinal plant products exceeds $100 billion per annum. This paper discusses the role, contributions and usefulness of medicinal plants in tackling the diseases of public health importance, with particular emphasis on the current strategic approaches to disease prevention. A comparison is drawn between the ‘whole population’ and ‘high-risk’ strategies. The usefulness of the common-factor approach as a method of engaging other health promoters in propagating the ideals of medicinal plants is highlighted. The place of medicinal plants in preventing common diseases is further examined under the five core principles of the Primary Health Care (PHC) approach. Medicinal plants play vital roles in disease prevention and their promotion and use fit into all existing prevention strategies. However, conscious efforts need to be made to properly identify, recognize and position medicinal plants in the design and implementation of these strategies. These approaches present interesting and emerging perspectives in the field of medicinal plants. Recommendations are proposed for strategizing the future role and place for medicinal plants in disease prevention.

Plants have formed the basis of sophisticated traditional medicine systems that have been in existence for thousands of years and continue to provide mankind with new remedies. Although some of the therapeutic properties attributed to plants have proven to be erroneous, medicinal plant therapy is based on the empirical findings of hundreds and probably thousands of years of use.(1)

HERBS

An herb is a plant or plant part used for its scent, flavor, or therapeutic properties. Herbal medicines are one type of dietary supplement. They are sold as tablets, capsules, powders, teas, extracts, and fresh or dried plants. People use herbal medicines to try to maintain or improve their health.

Many people believe that products labeled "natural" are always safe and good for them. This is not necessarily true. Herbal medicines do not have to go through the testing that drugs do. Some herbs, such as comfrey and ephedra, can cause serious harm. Some herbs can interact with prescription or over-the-counter medicines.

If you are thinking about using an herbal medicine, first get information on it from reliable sources. Make sure to tell your health care provider about any herbal medicines you are taking.

Herbs are the leaf part of a plant that is used in cooking - these can be used fresh or dried. Any other part of the plant, which is usually dried, is referred to as a spice. These include, for example, barks (cinnamon), berries (peppercorns), seeds (cumin), roots (turmeric), flowers (chamomile), buds (cloves) and stigmas of flowers (saffron).(1)

MORINGA OLEIFERA:-

Moringa oleifera 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 area in Asia).

Figure:- 1 Moringa Oliefera tree

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.(3)

Figure:- 2 Stems and leaves of Moringa

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.

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).

Figure:- 3 Flowers of Moringa

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.

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

Moringa seed

M. oleifera seeds are globular, about 1 cm in diameter. They are three-angled, with an average weight of about 0.3 g, 3-winged with wings produced at the base of the seed to the apex 2–2.5 cm long, 0.4–0.7 cm wide; the kernel is responsible for 70%–75% of the weight.

Figure:- 4 Seeds of Moringa

Oil is the main component of the seed and represents 36.7% of the seed weight. The oil can be extracted almost entirely by solvent extraction, generally n-hexane, whereas less yield is obtained by cold press extraction. In fact, only 69% (on average) of the total oil contained in seeds can be extracted by cold press. Among rural dwellers, the edible oil is extracted by boiling de-husked seeds with water, and collecting the oil from the surface of the water. Apart from the oil, the seed has a high protein content, on average 31.4%, whereas carbohydrate, fibre and ash contents are 18.4%, 7.3% and 6.2%, respectively. Thus, the defatted seeds of *M. oleifera* could provide an economical source of protein for use as a food supplement to traditional diets to increase protein intake. Furthermore, like the protein fraction, *M. oleifera* seeds have a high content of methionine and cysteine, close to that reported for milk and eggs. Therefore, they can be consumed together with legumes which are deficient in sulphur amino acids. More over, *M. oleifera* seeds seem to be free of trypsin inhibitor and urease activity, confirming the high protein digestibility (93%) of *M. oleifera* seeds.(5)

Taxonomical classification

Kingdom – plantae
Sub kingdom –tracheobionta
Super divison- spermatophyta

Divison – Magnoliophyta
Class – Magnoliopsida
Sub class – Dilleniidae
Order – Capparales
Family- Moringceae
Genus- Moringa
Species- Oleifera

Sandalwood

Sandalwood is a class of woods from trees in the genus *Santalum*. The woods are heavy, yellow, and fine-grained, and, unlike many other aromatic woods, they retain their fragrance for decades. Sandalwood oil is extracted from the woods. Sandalwood is often cited as one of the most expensive woods in the world. Both the wood and the oil produce a distinctive fragrance that has been highly valued for centuries. Consequently, some species of these slow-growing trees have suffered over-harvesting in the past.

Figure:- 5 Sandal wood

Sandalwoods are medium-sized hemiparasitic trees, and part of the same botanical family as European mistletoe. Sandalwood is indigenous to the tropical belt of the peninsular India, Malay Archipelago and northern Australia. The main distribution is in the drier tropical regions of India and the Indonesian islands of Timor and Sumba.[8] It spread to other regions through the incense trade route by the vast Indian and Arab mercantile networks and the Chinese maritime trade routes until the sixteenth century CE. The sandalwood of peninsular India and Malay Archipelago supported most consumption in East Asia and West Asia during the time of the incense trade route before the commercialization of Australian sandalwood (*Santalum spicatum*) in sandalwood plantations in Australia and China, although sandalwood album (*Santalum album*) is still considered to have the best and original quality in terms of religion and alternative medicine. *Santalum spicatum* is marketed as the notable members of this group today by merchants because of its stable sources; others in the genus also have fragrant wood. These are found in India, Nepal, Bangladesh, Pakistan, Sri Lanka, Australia, Indonesia, Hawaii, and other Pacific Islands.(4)

Biological Name- Santalum album

Taxonomical Classification:-

- Kingdom- Plantae
- Clade- Tracheophytes
- Clade- Angiosperms
- Clade- Eudicots
- Order- Santalales
- Family- Santalaceae
- Genus- Santalum
- Species- S. album

Rose

Rosa damascena mill L, commonly known as Damask rose, is known as Gole Mohammadi in Iran. It is one of the most important species of Rosaceae family. Rosaceae are well- known ornamental plants and have been referred to as the king of flowers. At present time, over 200 rose species and more than 18000 cultivars form of the plant have been identified. Apart from the use of *R. damascena* as ornamental plants in parks, gardens, and houses, they are principally cultivated for using in perfume, medicine and food industry. However, *R. damascena* is mainly known for its perfuming effects.(8)

Figure:- 6 Rose Flower

The *R. damascena* has also been used for medicinal purposes. Various products and isolated constituents from flowers, petals and hips (seed-pot) of this plant have been studied in a variety of *in vivo* and *in vitro* studies. However, there are not any reviews to collect pharmacological effects of *R. damascena* in the present time. Therefore, in this review we collect and discuss important pharmacological effects of *R. damascena* that recently have been published in numerous studies.

Biological Name- Rosa rubiginosa

Taxonomical Classification:-

- Kingdom- Plantae
- Clade- Tracehophytes
- Clade- Angiosperms
- Clade- Eudicots
- Clade- Rosids
- Order- Rosales
- Family- Rosaceae
- Subfamily- Rosoideae
- Tribe- Roseae
- Genus- Rosa

FORMULATION

In this time period ultraviolet radiation, air pollutants, psychological stress, and chemical exposure are capable of free radicals, damaging face elasticity 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 dimerize. Most organic radicals have short lifetimes. Am excess of free radicals generates oxidative stress and damages cell membranes and lipoproteins through lipid oxidation process.

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 protect 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 photoaging. 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 photodamage. In addition, some antioxidant were shown to increase skin hydration to revitalize the skin. (1)

Natural oils are providing deep hydration and lasting moisture, and enhance the elasticity of face, 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 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.

Moringa oleifera seed oil gel face was 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 Moringa Oleifera 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 invenstigated. In addition, there are very limited data regarding the safe and effective dose of moringa oliefera oil gel formulations. In this study, we characterized the antioxidant activity and basically the most important enhancing face collagen (elasticity of face) of moringa seed oil. The chemical compositions of moringa seed oil gel face wash were analyzed to validate its biological activities. A gel containing Moringa oliefera face wash was formulated. The physical stability and antioxidant activity of the gel were tested. The safety and efficacy of the formulation were also reported.(2)

ACNE

Acne vulgaris, is a epidermis disorder that occurs when hair raiser are obstruct with lifeless skin cells and oil from th skin. It is characterized by blackheads or whiteheads, pimples, oily skin, and possible scarring. In the 16th century, the French physician and botanisht Francois Sauvagesde Boissier del Lacroix gives one of the earlier description of acne. He used the term “psydraciaachne” to describe small, red and hard tubercles that altered a person’s facial appearance during adolescence, and were neither itchy nor painful.

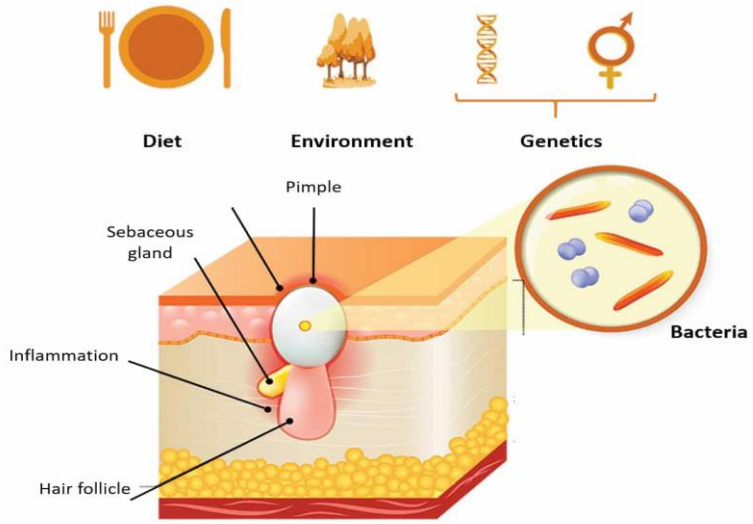

Figure:-7 Acne

Acne is a skin condition that occurs when your hair follicles become plugged with oil and dead skin cells. It causes whiteheads, blackheads or pimples. Acne is most common among teenagers, though it affects people of all ages.

Effective acne treatments are available, but acne can be persistent. The pimples and bumps heal slowly, and when one begins to go away, others seem to crop up.

Depending on its severity, acne can cause emotional distress and scar the skin. The earlier you start treatment, the lower your risk of such problems.(8)

Types of acne:-
1.Blackheads
2. Whiteheads
3.Papuls
4.Pustules
5.Nodules
6.Cystic

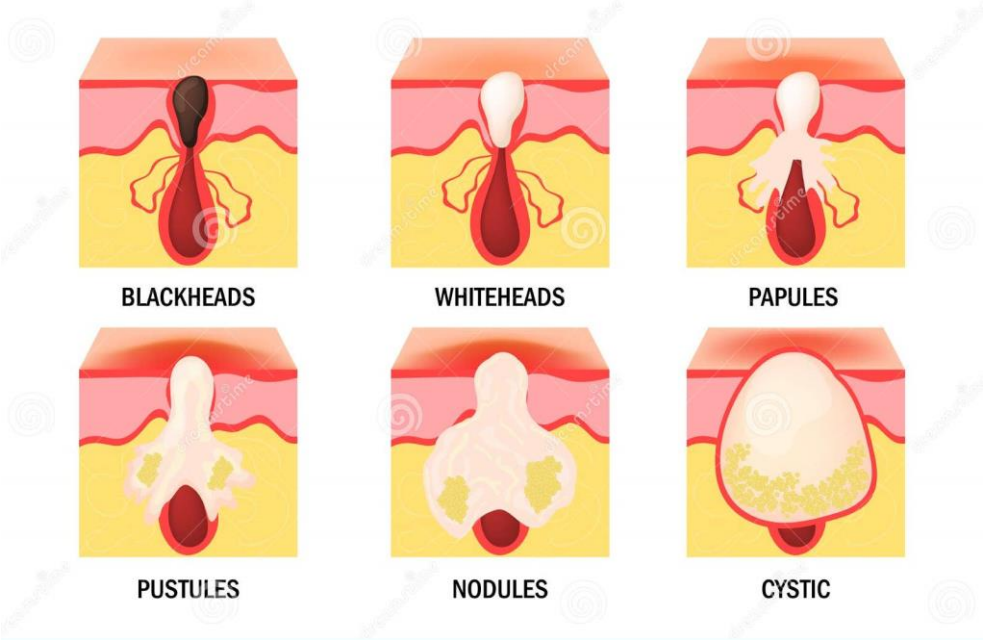

Figure:-8 Types of Acne

Acne signs vary depending on the severity of your condition:

- Whiteheads (closed plugged pores)
- Blackheads (open plugged pores)
- Small red, tender bumps (papules)
- Pimples (pustules), which are papules with pus at their tips
- Large, solid, painful lumps under the skin (nodules)
- Painful, pus-filled lumps under the skin (cystic lesions)

Acne usually appears on the face, forehead, chest, upper back and shoulders.

Four main factors cause acne:

- Excess oil (sebum) production
- Hair follicles clogged by oil and dead skin cells
- Bacteria
- Inflammation

Face collagen

Collagen is the main structural protein in the extracellular matrix found in the body's various connective tissues. As the main component of connective tissue, it is the most abundant protein in mammals, making up from 25% to 35% of the whole-body protein content. Collagen consists of amino acids bound together to form a triple helix of elongated fibril known as a collagen helix. It is mostly found in connective tissue such as cartilage, bones, tendons, ligaments, and skin. Collagen makes up 30% of the protein found in the human body. Vitamin C is vital for collagen synthesis. Vitamin E improves the production of collagen.

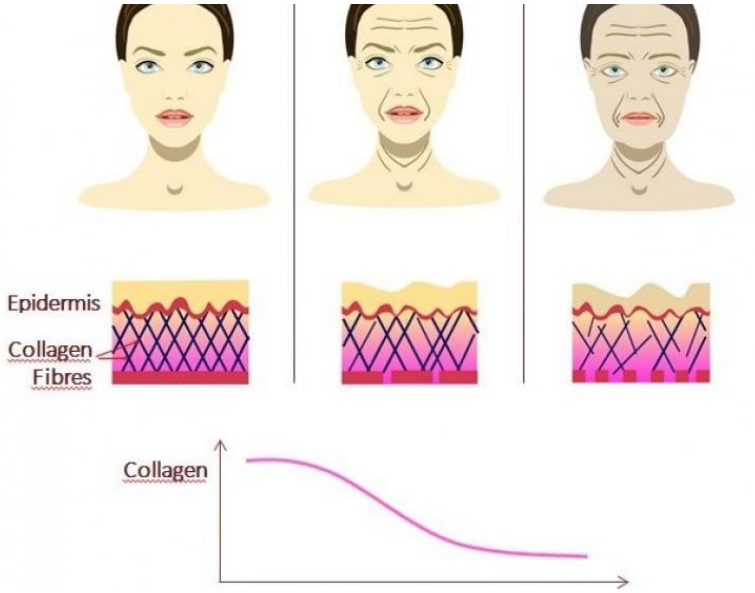

Figure:-9 Collagen of face

Depending upon the degree of mineralization, collagen tissues may be rigid (bone) or compliant (tendon) or have a gradient from rigid to compliant (cartilage). Collagen is also abundant in corneas, blood vessels, the gut, intervertebral discs, and the dentin in teeth. In muscle tissue, it serves as a major component of the endomysium. Collagen constitutes one to two percent of muscle tissue and accounts for 6% of the weight of the skeletal muscle tissue. The fibroblast is the most common cell that creates collagen. Gelatin, which is used in food and industry, is collagen that has been irreversibly hydrolyzed using heat, basic solutions or weak acids.(7)

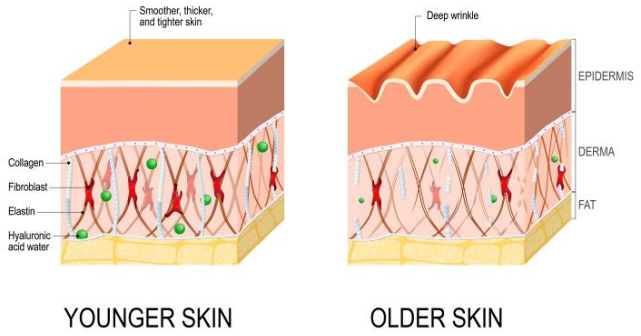

Figure:-10 Younger or older skin collagen

Collagen is one of the long, fibrous structural proteins whose functions are quite different from those of globular proteins, such as enzymes. Tough bundles of collagen called *collagen fibers* are a major component of the extracellular matrix that supports most tissues and gives cells structure from the outside, but collagen is also found inside certain cells. Collagen has great tensile strength, and is the main component of fascia, cartilage, ligaments, tendons, bone and skin.[50][51] Along with elastin and soft keratin, it is responsible for skin strength and elasticity, and its degradation leads to wrinkles that accompany aging.[52] It strengthens blood vessels and plays a role in tissue development. It is present in the cornea and lens of the eye in crystalline form. It may be one of the most abundant proteins in the fossil record, given that it appears to fossilize frequently, even in bones from the Mesozoic and Paleozoic.

2. INGREDIENT TABLE

S no.	Name of Ingredients	Functions
1.	Stearic Acid	Emulsifying Agent
2.	Sodium Phosphate	Emulsifying Agent
3.	Liquid Paraffin	Emollient
4.	Propyl Paraben	Preservative
5.	Propylene Glycol	Humectant
6.	Potassium Hydroxide	Emulsifier
7.	Sodium Laurel Sulphate	Foaming Agent

8.	Sorbitol	Mosturizing Agent
9.	Methyl Paraben	Preservative
10.	Moringa Oil	Active Ingredient
11.	Perfume	Fragrance
12.	Water	Vehicle

3. METHODOLOGY

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.
- After following this process we get the moringa seed oil.
- Then we can easily stored in temperature 20-30°C.

4. Preparation of Face wash:-

Preparation of Mixture A-

Take a clean and dried mortar pestle.

Add stearic acid and sodium phosphate into the motar pestle and triturate properly.

To this add gram of propyl paraben and continue trituration.

Prepataion of mixture B-

Take another clean and dry motar pestle and add propylene glycol, potassium hydroxide and triturate.

Sodium laurel sulphate, sorbitol, methylparaben was added to the above mixture and triturate well.

Mixture A and B was mixed together and triturate until a proper consistency is obtained.

After mixed well both of mixture then extracted moringa oleifera seed oil has introduced into in it.

Then to this perfume was added properly mix all the above ingredients.

Figure – 11. Prepared Moringa seed oil Facewash

5. Result and Discussion

The preparation of moringa oleifera seed oil face wash has prepared and tested. Moringa oleifera seed oil face wash 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, cleanses and purifies skin, prevents and reduces stretches marks, soothes and inflammation and has healing properties, great for hair and nail health. For further work of moringa we can use for our body.

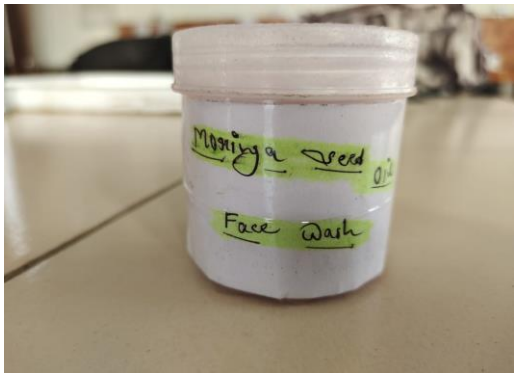

Figure. 12 Moringa seed oil Facewash

Moringa Oleifera seed oil facewash hydrating qualities like other. Moringa Oleifera seed oil face wash has an excellent skin penetration profile when applied this oil easily absorb giving way to instant radiance. This face wash 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 acne(pimples), fine lines and wrinkles.

✓ 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 5.92 both in the PH paper & in digital PH meter.
✓ Spread-ability- 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.
✓ Washability- 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.
✓ consistency- The formulation was in a good consistency and it easily flows in our skin.
✓ Foaming index- The formulation was given good amount of foam that should becomes in an ideal face wash.
✓ Viscosity- The formulation shows good rate of viscosity.

6. EVALUATION TEST:

(2)**1. Homogeneity**

The formulation were tested for homogeneity by visual appearance and by touch. **2. After feel**

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

3. 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 colour appeares after shaking for 30sec.

Acid Value=n x 5.61/w

n= number of ml of NaOH required

w= weight of substance

4. PH measurement

The pH meter was calibrated using standard buffer solution. About 0.5gm of face wash was weighed and dissolved in 50ml of distilled water and its pH was measured using digital pH meter. As result of PH of our formulation was 5.92.

6. Irritancy test

Mark an area (1 sq. cm) on the left hand cheek surface. The face wash was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24hrs and reported. As result not any type of irritancy feel after applied of our formulation on face.

7. Viscosity

Viscosity of the formulation was determined was brookfield or ostwald viscometer at 100 RPM, using spindle no. 7 at temp 25oC. The determinations were carried out in triplicate and the average of three reading was recorded. As result of our formulation the viscosity of face wash is 748.83.

8. 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 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:

$S = M \times L/T$

Where,

S= Spread ability,

L= Length of glass slide,

M= Weight tied to the upper slide and

T= Time.

9. Washability Test

A portion of face wash was applied over the skin of face (cheeks) and allowed to flow under the force of flowing tap water for 10 minutes. The time when the face wash completely removed was noted.

10. 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 and 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.

11. 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

12. Test for thermal stability

Thermal stability of the formulation was determined by the humidity chamber controlled at 60- 70% RH and 37 ±

1oC.

13. Foaming Index

An index that takes into account the deformation kinematic and thermo-mechanical parameters of metal forming is proposed to estimate and compare metal forming processes. This index represents the product of the strain resistance and the cumulative shear strain.

14. Consistency

The quality of always behaving or performing is a similar way, or of always happening in a similar way. A cream face wash typically has a thicker consistency and contains moisturizing ingredients such as milk or honey. Lotion or cream type cleansers are meant to deep cleanse your skin while hydrating it thoroughly.

Biological application of Moringa Oleifera seed oil face wash:-

The bioactive compounds present in moringa oleifera 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 Moringa Oliefera 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 Trichophyton mentagrophytes.

Phenolic compounds have been associated with the antimicrobial and antifungal activities of Moringa oleifera extracts, the leaves being the organs with the highest amount of the compounds. Regarding the antimicrobial effect of Moringa oleifera plants when included in food, Moringa Oleifera contributes to control the growth of undesirable microorganism, due to low ph values and the presentive of pterigospermin. The roots of Moringa oleifera 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.

7. CONCLUSION

The face wash was prepared keeping in mind that it suits all skin type as the formulation was kept mild. Having properties of activated charcoal clears the pores, remove dirt and nurtures the skin even in summers and gives pleasant feeling on the skin after every wash. The face wash prepared such that they were fit for daily use. Various tests were conducted which proved that the pH of the face wash was the same as what ideally should be used in a facial product. Cleaning action of the facewash also tested to check the accuracy of the face wash. The goal of this study was to develop a liquid-based face wash for the cure of acne and enhance and boost the collagen of the face that may be used on a daily basis by people of all ages. It aids in the maintenance and nourishment of skin.

Face washes are designed to remove impurities, germs, dirt and makeup that can irritate the skin. Here's the tough part: when skin is cleansed too frequently, in contact with water or subject to harsh soaps, your skin's natural moisture is stripped—leaving it vulnerable to dryness and irritation.

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