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Formulation and development of herbal gel for wound healing

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Abstract

Herbal gel is a solid, jelly-like substance that can have properties ranging from soft and weak to hard and tough preparation. It is used topically for a variety of purposes, such as protectants, antiseptics, and antimicrobials. Herbal formulations means a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, cosmetic benefits meant for use to diagnose, treat, mitigate diseases of human beings or animals, alter the structure or physiology of human beings or animals. The aim of herbal treatment is usually to produce persisting improvements in well-being. Practitioners often talk in terms of trying to treat the “underlying cause” of disease and may prescribe herbs aimed at correcting patterns of dysfunction rather than targeting the presenting symptoms. Gel-based products absorb into the skin easily, leave little to no residue on the skin, and prevent greasiness. Moisturizing benefit, Acne, Ageing, treat sunburn, hydration, cooling effect, long lasting, Compatible with sensitive skin type. Moringa oleifera is a tree with antioxidants and also anti-inflammatory properties. Its health benefits may range from speeding up wound healing.

The herbal gel was prepared by using heat add the required amount of all the ingredients and stirred it continuously up to 10 to 15 minute to form a homogenous mass of gel.

This gel was formulate by using suitable ingredients like, Maringa seed oil, olive oil, aloe-Vera gel This gel is honey, Garlic extract. In different properties the herbal gel was evaluated by different parameters such as a pH measurement, viscosity test skin irritation test, physical appearance, spread ability test and net content.

Keywords: Moringa seed oil; Herbal extract; Herbal gel; Evaluations

1. Introduction

Herbal medicine, also called botanical medicine or phytomedicine, refers to using a plant's seeds, berries, roots, leaves, bark, or flowers for medicinal purposes. Herbalism has a long tradition of use outside conventional medicine. 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. Herbal medicine has its origins in ancient cultures. It involves the medicinal use of plants to treat disease and enhance general health and wellbeing.

Some herbs have potent (powerful) ingredients and should be taken with the same level of caution as pharmaceutical medications. Plant-based products used to treat diseases or to maintain health, are called herbal products, botanical products, or phytomedicines.

A product made from plant sources and used only for internal use is called an herbal supplement. 'PURE HERBAL' 100% Natural as the name itself suggests is 100% herbal beauty brand with no use of chemical. Its Ayurveda results-driven

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skincare made from certified herbal and wild crafted ingredients collected from across India. Herbal medicine has its origins in ancient cultures. It involves the medicinal use of plants to treat disease and enhance general health and wellbeing. Some herbs have potent (powerful) ingredients and should be taken with the same level of caution as pharmaceutical medications.

The herbal are easy to use and carry anywhere, to protect are self. The herbal gel has the easy to apply on our skin and it has the good spread ability to applying on any damaged skin area.it was the many beneficial for the using skin purpose. Moringa plant a "Miracle tree" due to its many uses and possible health benefits For example, evidence suggests that Moringa seed oil can reduce premature aging, help to manage diabetes and stave the heart diseases. Moringa plant having a many benefits for the human beings. The Moringa plant is the having antioxidant, anti-inflammatory and anti-aging properties.

The oleic acid in Moringa oil acts as a barrier to help seal in moisture so the oil may be good for people with dry skin.

1.1. Objectives:

- Helps Reduce Premature Aging.
- Might Treat Infections.
- Reduces Inflammation.
- Easy spread ability.
- Good ability of absorbance in skin.
- Treat hydration & sunburn.
- Cooling effect.
- Compatible with sensitive skin.

The herbal ingredients are also important for the gel formulation like garlic powder is use to acne, pimples and spot treatment. It also having the antifungal properties which can be used to get rid of that stubborn acne that has been giving you sleepless night.it has the antiaging and minimizing properties.

Second is the olive oil that may help in the providing deep hydration, reduce inflammation, gently exfoliate, reduce the appearance of wrinkles and fine lines, reduce puffiness and swelling, helps soothe dry or irritated skin and also may cause breakouts.

Third is the aloe Vera gel is the beneficial for the ant inflammatory properties can reduce pain, swelling and soreness of wound or injury. It is supports the production and resale's of collagen, it can speed up wound healing time and limit scaring. It also helps in the reducing time of burns.

Fourth one is honey has antimicrobial, immunomodulatory, and antioxidant and would healing properties. Honey increase wound contraction, re epithelialization and reduce excessive scar formation. Most of the clinical trials suggest the use of honey for management of various wound models.

Herbal formulations means a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, cosmetic benefits meant for use to diagnose, treat, mitigate diseases of human beings or animals, alter the structure or physiology of human beings or animals. Herbal gel is a solid, jelly-like substance that can have properties ranging from soft and weak to hard and tough preparation. It is used topically for a variety of purposes, such as protectants, antiseptics, and antimicrobials. Hydrogels are widely used in everyday products such as nappies, hair gels, and contact lenses, wound dressings and controlled release drug delivery systems.

Wound healing, as a normal biological process in the human body, is achieved through four precisely and highly programmed phases: hemostasis, inflammation, proliferation, and remodeling. For a wound to heal successfully, all four phases must occur in the proper sequence and time frame.

Gel accelerates wound healing by increasing the regeneration of blood vessels around the wound and speeding up tissue reconstruction. The major use of herbal medicines is for health promotion and therapy for chronic, as opposed to life-threatening, conditions. However, usage of traditional remedies increases when conventional medicine is ineffective in the treatment of disease, such as in advanced cancer and in the face of new infectious diseases.






2. Material and methods

2.1. Collection of Material [1, 5, 6]

The various materials are collected from the various places. Moringa seed oil, garlic extract, olive oil and honey was collected from local market and aloe Vera gel was collected from aloe Vera plant leaf.

2.2. Roles of ingredient [3, 1, 14, 15, 10]

Table 1 Role of Ingredient and their uses

Sr.no	Ingredients	Role	Pictures
1	Moringa seed oil	Anti-inflammatory, Anti- bacterial agent	
2	Olive oil	Anti-inflammatory agent	
3	Honey	To treat burns and promote wound healing	
4	Aloe Vera gel	Boosts healing of wound, reduce infection and acne.	
5	Garlic powder extract	Reducing the risk of colds and infections	

2.3. Preparation Method [1, 5, 6, 9, 10]

2.3.1. Extracting of Garlic powder

Take 30 gm of garlic powder put in soxhlet apparatus and add sufficient amount of 500ml alcohol as a solvent and allow to stand for to 06 hours. After 6 hours, filter and collect the extract.

2.3.2. Preparation of Herbal Gel

In a water bath, Put a beaker, add required amount of honey, aloe Vera gel, garlic extract, Moringa seed oil and olive oil, stirred it continuously up to 10 to 15 minute to form a homogeneous mass of gel.



Figure 1 Herbal Extract and Drugs

2.4. Formulation table [1, 8, 5]

Table 2 Formulation Table

Sr. no.	Herbal Ingredients	Formulation 1	Formulation 2	Formulation 3
1	Moringa seed oil	3ml	3ml	3ml
2	Olive oil	1 ml	1.5 ml	2 ml
3	Honey	1 drop	2 drops	4 drops
4	Garlic extract	1ml	2 ml	1.5 ml
5	Aloe-Vera gel	5 gm	8gm	10 gm
6	Sodium Benzoate	0.05gm	0.05gm	0.05gm



Figure 2 Formulations of Herbal Gel



Figure 3 Formulations (F1, F2, F3)

2.5. Evaluation parameters [11, 12, 13]

2.5.1. Organoleptic characteristic

As rule, gels have a viscous consistency, they was homogeneous, transparent, fluid, elastics and plastic. The organoleptic characteristics was observed as a seeing form and which type of gel is see in vitro observation. The herbal gel was evaluated by color, odor and texture.

2.5.2. pH measurement

pH was measure of the concentration of hydronium ions in an aqueous solution. It was measures on a negative logarithm scale from 0 to 14. Acidic solution was below pH 7, with 0 being the acidic ph. Basic solution are above pH 7, with 14 being basic. When the existing in the environment of pH=8, the gel get the largest viscosity. The determination of gel measure by using pH meter.

2.5.3. Viscosity

Viscosity was the measurement of the thickness of fluid. Gel preparation refers to fluid that have high viscosity of 2000-4000cps. The viscosity of gel plays an important part in the success. Viscosity was defined as a measurement of a fluids resistance to flow. The viscosity was determine by using Brooke field viscometer.

2.5.4. Skin irritation test

The method uses the skin ethic reconstructed human epidermis model and involves the topical application of a chemical for 42 minutes. The preparation of gel was apply on wound and kept form 42 minutes and observe the any irritation may occur there, were no any itching or redness on wound.

2.5.5. Spread ability test

The gel was weighing to be as high as 0.5 g and then placed on graph paper coated with glass. Then, we put another glass above the gel mass. The gel diameter was calculated by measuring the diameter length of several sides Spread the formulate gel on the wound, it is spread easily and smoothly without any small particles.

3. Results and discussion

The Herbal gel formulation was formulated and evaluated by the studying all the measurement which needed for the gel. The herbal gel are the effective gel from observing the all the evaluation parameters it's giving the positive result for the wound healing. All the evaluation may observe the herbal gel formulation are good in quality. And further study get improved to future gel formulation.

Based on evaluation parameters that formulation is stable at room temperature and can be safely use on skin. It is use as anti- inflammatory, anti-bacterial, anti-septic purpose. I was prepared three formulations f1, f2, f3 .in this formulation f2 is better than f1 and f3 because f2 shows good viscosity, pH and easily spreadability.

Table 3 Evaluation parameters of Herbal gel formulation

Test	Formulation 1	Formulation 2	Formulation 3
Color	Light yellow	Green	Light green
Odor	Garlic like smell	Garlic like smell	Garlic like smell
Texture	Smooth	Smooth	Smooth
PH	6.82	7.75	8.15
Viscosity	0.35 poise	0.37 poise	0.39 poise
Skin irritation test	No itching or inflammation	No itching or inflammation	No itching or inflammation
Spread ability	Easily spread	Easily spread	Easily spread

4. Conclusion

The all ingredients which used in the formulation are giving maximum therapeutic effect and minimum or no adverse effect to the body. Because of the all ingredients are as natural products which are helpful and effective to the wound healing. To studied the all the perspectives the herbal gel was found to be natural products and living for the long period of time to use.

Moringa seed oil is suitable for preparation of herbal gel. Best formula consisting with moringa seed oil 5%.As this is the pre formulation study stage and further studies will conclude the need for incorporation of the drug.

Compliance with ethical standard

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No conflict of interest to be disclosed.

Author's Contributions

- Conception, design and writing of the work: Ms. Sayali S. Wagh
- Drafting the article: Ms. Bhavana D.Tambe
- Critical revision of the article: Ms. Sayali S. Wagh
- Final approval of the version to be submitted - All named authors should approve the paper prior to submission: Ms. Sayali S. Wagh, Ms. Bhavana D.Tambe

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