

DEVELOPMENT AND ASSESSMENT OF HERBAL CREAM FOR WOUND HEALING

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ABSTRACT:

Herbal cosmetics have gained widespread usage worldwide across all age groups. This research aims to develop a herbal cream for wound healing, treating various skin diseases, and moisturizing and nourishing the skin. The key ingredients used in the cream formulation include extracts of moringa leaves (*Moringa oleifera*), turmeric rhizomes (*Curcuma longa*), aloe vera (*Aloe barbadensis miller*), neem leaves (*Azadirachta indica*), Tulsi (*Ocimum sanctum*), and papaya oil (*Carica papaya*). These ingredients possess anti-inflammatory and antiseptic properties beneficial for disease management, wound healing, enzymatic actions, and overall skin health. Various parameters were evaluated to assess the efficacy of the cream.

KEY WORDS: Herbal formulation, Herbal drug, Moringa leaves.

Introduction:

The skin constitutes a significant part of the human body, making it crucial to care for damaged areas effectively. Herbal creams offer an easily applicable solution for various skin concerns. These formulations typically consist of semi-solid water-in-oil emulsions designed for topical application. They are aimed at healing wounds, treating skin diseases, and maintaining overall skin health. The selection of ingredients is based on their specific properties, such as wound healing, anti-inflammatory effects, antiseptic properties, enzymatic actions, and their ability to provide multifaceted benefits [1].

Cream:

Creams are widely used to protect the skin under various environmental conditions and provide a soothing effect. They come in different types, including cleansing creams, cold creams, foundation creams, vanishing creams, night creams, massage creams, and hand and body creams[2].

MATERIAL AND METHOD:

Extraction Methods:

Preparation of Moringa Leaves Extract:

1. Take 2 grams of moringa leaves powder and add it to 10 mL of distilled water in a 250 mL volumetric flask.
2. Shake the mixture and heat it in a water bath at 80°C to 90°C for 5 to 10 minutes.
3. Filter the mixture to obtain the moringa leaves extract[3].

Preparation of Turmeric Extract:

1. Take 1 gram of turmeric powder and add it to 10 mL of distilled water in a 250 mL volumetric flask.
2. Shake the mixture and heat it in a water bath at 80°C to 90°C for 5 to 10 minutes.
3. Filter the mixture to obtain the turmeric extract[4].

Preparation of Aloe Vera Extract:

1. Collect mature and fresh aloe vera leaves, wash them with distilled water, and dry them in a hot air oven.
2. Use a sterile knife to dissect the leaves longitudinally.
3. Collect the semi-solid aloe vera gel, removing fibers and impurities[5].
4. Aloe vera extract is obtained.

Preparation of Neem Extract:

1. Collect fresh neem leaves, wash them with distilled water, and dry them in a hot air oven.
2. Powder the dried leaves and take 5 grams of neem powder in 20 mL of dimethyl sulfoxide.
3. Heat the mixture at 100°C for 5 to 10 minutes and filter it through filter paper to obtain the neem extract.

Preparation of Tulsi Extract:

1. Collect Tulsi leaves, wash them with distilled water, and dry them in a hot air oven. Powder the dried leaves.
2. Take 1 gram of Tulsi leaf powder in 10 mL of dimethyl sulfoxide in a volumetric flask.
3. Heat the mixture in a water bath at 80°C to 100°C for 5 to 10 minutes, then filter the solution through filter paper to obtain clear Tulsi extract[6].

Preparation of Ripe Papaya Extract (Papaya Oil):

1. Take finely cut ripe papaya pieces and place them in a bowl.
2. Add 2 tablespoons of any unrefined oil of your choice to the bowl.
3. Use a double boiler method: place the bowl over a pan of boiling water (ensure the bottom of the bowl does not touch the water).
4. Cook over low heat for 30 minutes, topping up with water in the pan every 10 minutes.
5. After 30 minutes, remove the bowl, strain out the oil, and obtain papaya oil.

Preparation Methods of Cream:

1. Take liquid paraffin and beeswax in a borosilicate glass beaker and heat them at 75°C (oil phase).
2. Maintain the heating temperature[7].
3. In another beaker,

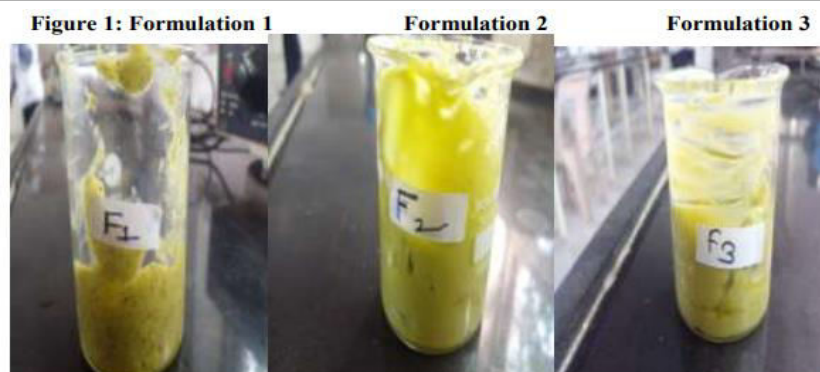
Cream Preparation Method:

1. Dissolve Borax and Methyl paraben in distilled water, maintaining a temperature of 75°C using a water bath. Stir the solution with a glass rod until all solid particles are dissolved (aqueous phase).
2. Gently add the heated aqueous phase to the heated oily phase while stirring continuously.

- After mixing both phases, immediately add moringa extract, aloe vera extract, neem extract, Tulsi extract, and turmeric extract to the mixture.
- Add ripe papaya and continue stirring with a glass rod until a smooth cream forms.
- Once the cream is formed, add rose oil as a fragrance.
- Transfer the cream onto a slab and, if necessary, add a few drops of distilled water[8].
- Mix the cream on the slab in a geometric manner to achieve a smooth texture and ensure thorough mixing of all ingredients.
- This method of cream preparation is known as the slab technique or extemporaneous method.

Table 2: Formulation table

Sr.no.	Ingredients	Formulation 1	Formulation 2	Formulation 3
1	Moringa extract	5ml	4.5ml	5.5ml
2	Turmeric extract	2.7ml	1.42ml	1.67ml
3	Papaya oil	2.7ml	1.67ml	1.47ml
4	Aloe-vera extract	2.8ml	1.47ml	1.67ml
5	Tulsi extract	1.7ml	1ml	1ml
6	Neem extract	0.9ml	0.28ml	0.67ml
7	Bees wax	5.45gm	4.97gm	5.36gm
8	Liquid paraffin	18.1ml	21.32ml	20.7ml
9	Borax	0.36gm	0.56gm	20.1gm
10	Methyl paraben	0.03gm	0.59gm	0.50gm
11	Distilled water	q.s.	q.s.	q.s.
12	Rose oil	q.s.	q.s.	q.s.

**Table 3: Evaluation test for herbal cream**

Sr.no.	Evaluation test	Formulation 1	Formulation 2	Formulation 3
1	Physical parameters : Colour Odour Texture State	Yellowish green Pleasant Crystal Semi-solid	Light yellow Pleasant Smooth Semi-solid	Yellowish green Pleasant Smooth Semi-solid
2	Irritancy test	No irritation	No irritation	No irritation
3	Wash ability test	Easily washable	Easily washable	Easily washable
4	Phase separation test	No phase separation	No phase separation	No phase separation
5	pH test	7.52	7.50	7.54
6	Spreadability test	Easily spread	Easily spread	Easily spread

RESULTS AND DISCUSSION:

The formulation and evaluation of the herbal cream for wound healing have been completed. Based on evaluation parameters, the formulation has been found stable at room temperature and suitable for safe application on the skin. The cream exhibits properties such as skin softening, anti-inflammatory, and antiseptic effects, with specific wound healing activity noted for *Moringa oleifera* and *Ocimum sanctum*.

CONCLUSION:

The herbal cream formulated using *Moringa* leaves, turmeric rhizomes, papaya oil, aloe vera, neem leaves, and Tulsi leaves demonstrated significant wound healing and multipurpose effects. Each herbal ingredient contributed distinct beneficial activities as indicated by the results. All formulations (Formulation 1, Formulation 2, and Formulation 3) were stable at room temperature and proven safe for skin application.

The simplicity of ingredient selection and preparation method ensures the cream is cost-effective.

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