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## Research Article

### FORMULATION AND EVALUATION OF HERBAL CREAM

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#### ABSTRACT

The aim of the present study was to formulate and evaluate the herbal cream having properties of moistening, nourishing, anti-acne and anti-inflammatory effect on the skin using different crude drugs like *Azadirachta indica* (Neem), *Aloe barbadensis* (Aloe Vera), *Ocimum tenuiflorum* (Tulsi). The cream was prepared by using the cream base i.e. bee's wax, liquid paraffin, borax, methyl paraben, distilled water, rose oil, Aloe Vera gel, aqueous extract of neem and tulsi. The cream was prepared by homogeneous mixing of all the excipients and the herbal extract. By using this method, we have prepared six batches F1, F2, F3, F4, F5, and F6. Formulations were evaluated for different parameters like physical evaluation, irritancy study observation, wash ability, spread ability, PH, Viscosity, phase separation, greasiness observations, dye test, homogeneity, acid value, saponification value. All the six formulations F1, F2, F3, F4, F5, and F6 showed good appearance, PH, adequate viscosity and no phase separation was observed. All the six formulations F1, F2, F3, F4, F5, and F6 were stable and can be safely use on the skin.

**Keywords:** *Azadirachta indica* (Neem), *Aloe barbadensis* (Aloe Vera), *Ocimum tenuiflorum* (Tulsi), Herbal cosmetic, Multipurpose cream.

#### INTRODUCTION

Multipurpose Skin Cream is daily-use cream which is light and non- greasy, and which provides hydration, moisturizing effects, nourishment and skin protection. Blended with natural herbal extracts Multipurpose Skin Cream protects your skin from pollution and different weather conditions and provide nourishment and moisture to the skin. The intension of our work is to develop a herbal cream which can give multipurpose effect, like moisturizer, reduce pimples and skin irritation, skin breakouts, reduce skin related diseases like eczema, psoriasis, dehydrated skin, wrinkles, redness and tiny bumps etc. Creams are semisolid preparation containing one or more medical agent dispersed or dissolved in suitable base. Semisolid emulsion of either oil in water (O/W) or water in oil(W/O) type. Cream is a topical preparation usually for application to the skin. The main aim of our work is to develop a herbal cream which can give multipurpose effect, like moisturizer, minimizes acne and reduce skin diseases like eczema, psoriasis, dehydrated skin, wrinkles, redness etc. In order to formulate multipurpose herbal cream three herbal ingredients have been used which are Aloe Vera gel, Neem and Tulsi. Aloe Vera gel is used for hydrating purpose, to reduce skin issues like pimples, acne and burn wounds. Neem is used to treat various bacterial, fungal infections and also treat inflammatory conditions. It is also used to reduce acne scars, pigmentation, redness and itching of the skin. Tulsi is used to add glow to the skin and to helps in wound healing. Herbal medicine has its own significant from ancient cultures. It involves the therapeutic use of plants to treat various skin conditions and enhance general health and wellbeing.



**Fig. 1: Neem**



**Fig. 2: Tulsi**



Fig. 3: Aloe vera gel

**MATERIALS AND METHODS**

Table 1: Excipients and herbal ingredients with their roles

| Ingredients     | Roles  |
|-----------------|--|
| Aloe vera gel   | Anti-aging, anti-inflammatory, moisturizer, reduce acne and pimples. |
| Tulsi           | Antibacterial, adds glow to the face                                 |
| Neem            | Promote wound healing, relieves skin dryness, itching and redness.   |
| Bees wax        | Emulsifying agent, stabilizer and gives thickness to the cream.      |
| Liquid paraffin | Lubricating agent  |
| Borax           | Alkaline agent which reacts with emulsifying agent to form soap      |
| Methyl paraben  | Preservative   |
| Rose oil        | Fragrance  |

**Collection of plant materials:** Neem powder, tulsi powder and aloe vera were collected from new ganapaya ramdas Ayurveda house, car street, Mangalore. The authenticity of the collected powder drug was ensured.

**Extraction Processes**



Fig. 4: Extracts of natural plant ingredients

**Extraction of neem:** Take a clean beaker and add 5 gm of neem powder and 20 ml of water. Heat it on a water bath for 15 minutes at 50-degree temperature for 1 hour. All the active constituents present in neem are thermolabile in order to avoid the degradation of these constituents more than 50 degree centigrade is avoided. After heating, filter it using muslin cloth. Collect the extract. The authentication of selected plant was done by checking the presence of active constituents in the sample. The main active constituent present in neem is found to be glycoside and the test for glycoside done by Liberman’s test.

**Extraction of tulsi:** Take a clean beaker and add 5 gm of tulsi powder and add 16.6 ml of water. Stir it properly for few minutes and then kept aside for some time. Since tannins are water soluble heating is avoided. Filter it using filter paper. The authentication of selected plant was done by checking the presence of active constituents in the sample. The main active constituent present in tulsi is found to be tannins and the test for tannins done by ferric chloride test.

**Extraction of aloe vera:** Take a mortar and add the pulp of aloe vera and water only if needed then triturate with the help of pestle. Filter it using muslin cloth and collect the filtrate. The authentication of selected plant was done by checking the presence of active constituents in the sample. The main active constituent present in aloe vera is found to be amino acid and test for amino acid done by xanthoprotein test.

**Formulation of cream:** Heat liquid paraffin and beeswax in a borosilicate glass beaker at 75 °C and maintain that heating temperature. (Oil phase). In another beaker, dissolve borax, methyl paraben in distilled water and heat this beaker to 75 °C to dissolve borax and methyl paraben and to get a clear solution. (Aqueous phase). Then slowly add this aqueous phase to heated oily phase. Then add a measured amount of aloe Vera gel, Neem extract, and Tulsi extract and stir vigorously until it forms a smooth cream. Then add few drops of rose oil as a fragrance. Apply the tiny amount of cream on the slab and add up few drops of distilled water if needed and mix the cream in a geometric manner to give a smooth texture to the cream and mix all the ingredients accordingly. This method is called as slab technique or extemporaneous method of preparation of cream. (Table 2)



Fig. 5: Preparation of multipurpose herbal cream

Table 2: Composition of herbal cream

| Ingredients     | F1    | F2    | F3    | F4    | F5    | F6    |
|-----------------|-------|-------|-------|-------|-------|-------|
| Aloe vera gel   | 1.5ml | 1ml   | 1ml   | 1.2ml | 1ml   | 1.4ml |
| Neem extract    | 0.5ml | 0.2ml | 0.4ml | 0.3ml | 0.2ml | 0.5ml |
| Tulsi extract   | 1.5ml | 1ml   | 1ml   | 1.2ml | 1ml   | 1.4ml |
| Bees wax        | 3 g   | 3.5g  | 3.2g  | 3.2g  | 3.5g  | 3g    |
| Liquid paraffin | 10ml  | 15ml  | 12ml  | 12ml  | 15ml  | 10ml  |
| Borax           | 0.2g  | 0.4g  | 0.3g  | 0.3g  | 0.4g  | 0.2g  |
| Methyl paraben  | 0.02g | 0.04g | 0.03g | 0.03g | 0.04g | 0.02g |
| Distilled water | Q.S   | Q.S   | Q.S   | Q.S   | Q.S   | Q.S   |
| Rose oil        | Q.S   | Q.S   | Q.S   | Q.S   | Q.S   | Q.S   |

**RESULTS AND DISCUSSION**

The herbal cream formulation was prepared from aloe vera, Tulsi and neem. The batch of six formulations were prepared and evaluation is carried out.

**Table 3: Physical parameter of multipurpose herbal cream**

| Parameters | Observations |
|------------|--------------|
| Color      | Off white    |
| Odor       | pleasant     |
| Texture    | smooth       |
| State      | Semi solid   |

**Irritancy:** The test and standard creams were applied on rat’s skin surface. Then it is checked for irritancy, erythema and edema, if any for an interval up to 24 hours and reported. According to the results there is no sign of irritancy, erythema and edema.

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

**Spreadability:** The spreadability of six formulations i.e; F1 F2 F3 F4 F5 F5 And F6 was carried out and out of that for F2 the time taken by the 2 slides to separate is less so as said in the description of evaluation test lesser the time taken for separation of the two slides better the spreadability.so according to the statement F2 showed better spreadability.

**Table 4: Result of spreadability**

| Formulations | Time (Sec) | Spreadability (g x cm/sec) |
|--------------|------------|----------------------------|
| F1           | 11         | 22.4                       |
| F2           | 8          | 33.2                       |
| F3           | 14         | 14.9                       |
| F4           | 10         | 20.2                       |
| F5           | 9          | 32.3                       |
| F6           | 15         | 15.24                      |

**pH:** According to the results the pH of all the six formulation i.e; F1 F2 F3 F4 F5 And F6 were found nearer to skin pH.so it can be safely used on the skin.

**Table 5: Result of pH**

| Formulations | pH  |
|--------------|-----|
| F1           | 6.6 |
| F2           | 6.3 |
| F3           | 6.5 |
| F4           | 6.7 |
| F5           | 6.4 |
| F6           | 6.8 |

**Phase separation:** Prepared cream was kept in a closed container at a temperature of 25 to 100° C away from sunlight. Then phase separation was checked for 24 hours for 5 days. any changes in the phase separation were observed or checked according to the results no phase separation was observed in the six formulation.

**Greasiness:** The cream was applied on the skin surface in the form of smear and if the smear was oily or grease like. According to the results we can say that all the six formulations were mildly greasy.

**Homogeneity:** The formulation was tested for the homogeneity by visual appearance and by touch According to the results all the six formulations are homogenous. The homogeneity test confirms the uniform distribution of extracts in cream of all six formulations.

**Dye Test:** The dye test was performed used amaranth dye on slide for different six formulations. The dye test confirms that formulated cream was o/w type emulsion cream.

**Acid Value:** Take 1 gm of cream which was found to be standard i.e; F2 dissolved in 50ml solvent methanol, slowly heated, until sample was dissolved completely, to this 1 ml of phenolphthalein added and titrated with 0.1N KoH until faintly pink color appears after shaking for 30 seconds.

The titration was done for 3 trials and the mean was taken, which was found to be 1.13.

$$\text{Acid value} = \frac{n \times 5.6}{w} = \frac{1.13 \times 5.6}{1} = 6.33$$

**Viscosity:** Viscosity test was carried out for six formulations F1 F2 F3 F4 F5 and F6 using Brooke field viscometer.

**Table 6: Result of viscosity**

| Formulations | Viscosity(cps) |
|--------------|----------------|
| F1           | 22120          |
| F2           | 22440          |
| F3           | 18280          |
| F4           | 11210          |
| F5           | 11820          |
| F6           | 13560          |

**After Feel:** The emollience, slipperiness and amount of residue left after the application of fixed amount of cream for all the six formulations F1 F2 F3 F4 F5 and F6.

In the present study, multipurpose herbal cream was prepared using the herbal plant *Azadirachta indica* (Neem), *Aloe barbadensis* (Aloe Vera), *Ocimum tenuiflorum* (Tulsi). Various formulations were prepared by varying the amount of active ingredient concentration. The formulated multipurpose herbal cream is capable of maintaining skin moisture, to fight against acne and aging issues.

The prepared formulation is then evaluated for parameters like physical evaluation, irritancy study observation, wash ability, spread ability, PH, Viscosity, phase separation, greasiness observations, dye test, homogeneity, acid value, saponification value of the formulated cream. From the present study, it can be concluded that it is possible to develop creams containing herbal extracts that can be used as a barrier to protect the skin.

## CONCLUSION

From the above results we can conclude that herbal multipurpose cream is having prominent function in maintaining the skin health and preventing acne and aging issues and are safer with minimum side effect than chemical based synthetic cream. All the formulated herbal cream that is F1, F2, F3, F4, F5 and F6 has been evaluated and compared. The formulated multipurpose herbal cream is capable to maintain skin moisture and to fight against acne and aging issues Evaluation and comparison of results with formulated multipurpose herbal cream F2 is better, helpful and fascinating than over formulated multipurpose herbal cream F1, F3, F4, F5 and F6. Formulation has better efficacious as compared to F1, F3, F4, F5 and F6 formulation in terms of all evaluation properties of herbal cream.

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