



**RESEARCH ARTICLE**

**FORMULATION AND EVALUATION OF HERBAL COSMETIC FORMULATION  
CONTAINING CALENDULA OFFICINALIS**

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**Abstract:**

The present study was to prepare and evaluate the herbal cosmetic cream comprising extracts of Calendula Officinalis. The evaluations of the formulation were done on different parameters like pH, viscosity, spreadibility and stability were examined. Formulated cream showed good spreadibility, good consistency, homogeneity, appearance, pH, spreadibility, no evidence of phase separation and ease of removal. The prepared formulation shows no redness, edema, inflammation and irritation during irritancy studies. The formulation therefore found to be safe to use for skin. These studies suggest that composition of extracts and base of cream are more stable and safe, it may produce synergistic action.

**Key words:** Herbal cosmetic cream, spreadibility, phase separation

## INTRODUCTION:

The concept of beauty and cosmetics dates back to ancient mankind and civilization. Generally herbal cosmetics are also referred to as natural cosmetics. Herbal cosmetics are formulated, using different cosmetic ingredients to form the base in which one or more herbal ingredients are used to cure various skin ailments. Plants are highly used for development of new drug products for cosmeceuticals and pharmaceutical applications.<sup>1</sup> Herbal cosmetics are the products in which herbs are used in crude or extract form.<sup>2</sup> Cosmetic products are used to protect skin against exogenous and endogenous harmful agents and enhance the beauty and attractiveness of skin.<sup>3-5</sup> The use of cosmetics not only developing an attractive external appearance, but towards achieving longevity of good health by reducing skin disorders. The synthetic or natural ingredients present in skin care formulation that supports the health, texture and integrity of skin, moisturizing, maintaining elasticity of skin by reduction of type I collagen and photoprotection etc.<sup>6-8</sup> Calendula or pot marigold, is a genus of about 15–20 species of annual and perennial herbaceous plants in the family Asteraceae. It is used topically for treating acne, reducing inflammation, controlling bleeding, and soothing irritated tissue.<sup>9-10</sup> Limited evidence indicates Calendula cream or ointment is effective in treating radiation dermatitis.<sup>11-12</sup> Topical application of *C. officinalis* ointment has helped to prevent dermatitis, pain, and missed radiation treatments in randomized trials.<sup>10</sup> The flowers of *C. officinalis* contain flavonol glycosides, triterpene oligoglycosides, oleanane-type triterpene glycosides, saponins, and a sesquiterpene glucoside.<sup>11-14</sup>

## MATERIALS AND METHODS

All the chemicals used in this investigation were of analytical reagent (AR) grade. Distilled water was used throughout the study.

### Preparation of Extracts

The shade dried leaves were pulverized to coarse powder with the help of mechanical grinder and passed through 20 mesh sieve. Then subjected to Soxhlet extraction with petroleum ether, ethanol. The solvent was removed using rotary evaporator to get dry residue. Finally vacuum dried to get coarse powder.<sup>15-16</sup>

### Formulation of Herbal Cream

Herbal cream was prepared as per the composition mentioned in **Table 1**. Accurately weighed amount of stearic acid was taken and kept on water bath at 80°C. Extract was

dissolved in water which was also kept at same temperature then potassium hydroxide was added to this extract solution. All the other oils were dissolved in melted stearic acid. The extract solution was added slowly to the stearic acid with stirring and allowed the mixture to cool. Then cream base was incorporated with all the necessary ingredients.<sup>15-18</sup>

**Table 1: Formulation of Herbal Cream**

<b>Ingredients</b>	<b>Quantity</b>
Extract	5 gm
Methyl Paraben	0.1 mg
Propyl Paraben	0.02 mg
Potassium hydroxide	0.4 gm
Glycerin	1.5 gm
Stearic acid	9.0 gm
Distilled water	Q.S

### **Antibacterial Activity**

The formulation was subjected to preliminary antibacterial screening using cup plate method. The method for antibacterial activity was based on diffusion of antibacterial compound to the surrounding agar medium such that the growth of the microorganism is inhibited as a circular zone. *Staphylococcus aureus*, *Bacillus subtilis*, & *Escherichia coli* were selected for the study. Nutrient agar was used as base medium for screening of antibacterial activity and nutrient broth for the preparation of inoculums. The nutrient agar plates were seeded with standardized inoculums of each test organism. The inoculums were spread evenly over plate with loop or sterile glass spreader. The seeded plates were allowed to dry in the incubator. Uniform wells were prepared on the surface of the nutrient agar and samples were introduced into the well. The inoculated plates were incubated at 35-37°C for 24 hours and zone of inhibition was measured.<sup>7,12,19</sup>

### **FORMULATION EVALUATION<sup>8,9</sup>:**

Various characteristics parameters were performed to establish quality of cream formulation and results were mentioned in **Table 2**.

**pH:** The pH of formulation was determined by using Digital pH Meter. Cream was dissolved in 100 ml of distilled water and stored for two hours. The measurement of pH of formulation was done in triplicate

**Viscosity:** The measurement of viscosity of prepared cream was carried out with Brookfield Viscometer and the determinations were carried out in triplicate and the average of three reading was recorded.

**Determination of Spreadability:**

The spreadability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides, better the spreadability. Two sets of glass slides of standard dimensions were taken. The herbal cream formulation was placed over one of the slides. The other slide was placed on the top of the formulation, such that the cream was sandwiched between the two slides weight was placed upon the upper slides so that the cream between the two slides was pressed uniformly to form a thin layer. The weight was removed and the excess of formulation adhering to the slides was scrapped off. The upper slide allowed slipping off freely by the force of weight tied to it. The time taken for the upper slide was noted.<sup>14-18</sup>

**Determination of Extrudability:**

The formulation was filled in standard capped collapsible tube and sealed. The tube was weighed and recorded. The tube was placed between two glass slides and was clamped. A weight was placed over the glass slide and then cap was opened. The amount of cream extruded were collected and weighed.<sup>9,11</sup> The percent of cream extruded was calculated.

**Table 2: Results of Quality Control Evaluation**

Parameter	Value
pH	6.5
Viscosity (cps)	1601
Spreadability (g cm/sec)	13.11
Extrudability (%)	68

**RESULT AND DISCUSSION**

The cream formulation with extract of *Candela* was prepared and subjected to quality control and microbiological evaluations. The characteristics of cream in terms of pH, viscosity, spreadability and extrudability were analyzed by reported method. The result of the study indicates that prepared formulation showed optimum range of characteristics properties of cream formulation. The results of this investigation showed that developed formulation had inhibitory effect on the selected microorganism.

## **CONCLUSION**

Herbal cosmetics are prepared, using permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to treat different skin ailments and for the beautification. The present work involves formulation and evaluation of an herbal cream. The extract of Calendula or pot marigold was used for the preparation of cream formulation. Results showed that Calendula possess excellent properties for the formulation.

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