**Formulation and Evaluation of Polyherbal Cream**

Vibhavari M. Chatur*, Nazma M. Ansari, Sanket K. Joshi, Sanjay G. Walode

Rasiklal M. Dharwal Institute of Pharmaceutical Education and Research, Pune-19, India

**INTRODUCTION**

Cream formulation was semisolid formulations intended for topical application. The cream formulations were prepared by using various herbal extracts, herbal oils, and various excipients.

Cosmetic products are used for the protection of skin from various endogenous and exogenous harmful agents along with enhancing the beauty and making skin attractive. The only use of cosmetic is not developing an attractive external appearance but also achieving longevity of good health by reducing skin disorders. The cosmetics which are meant for skin care nourishes the health, texture and moisturizes the skin.

Polyherbal cream is a semisolid formulation intended for topical application. The cream formulation is prepared by using various herbal extracts, almond oil and various excipients.

Nyctanthes arbor-tristis was the oldest holistic, sacred and traditional medicinal plant belonging to family Oleaceae. The plant was mentioned in Vishnu Purana and having great importance to treat varieties of diseases, especially rheumatoid arthritis it reduces pain and inflammation. The fresh leaves are collected and complete shade drying, further powdered by using the mixer. This formed powder was passed through the sieve. The extract was obtained by using a simple maceration process.

Maceration was extractive technique and carried out at room temperature. Powdered herbal leaves of Nyctanthes arbor-tristis was immersed in alcohol and continuous shaking by using REMI RSB 12 mechanical shaker. After 3 d the concentrated extract was collected and filtered.

Nyctanthes arbor-tristis is an old holistic, sacred and traditional medicinal plant belonging to family Oleaceae. The fresh leaves were collected and dried in shade, further powdered by using the mixer. This formed powder was passed through the sieve. The extract was obtained by using a simple maceration process.

Almond oil has excellent emollient properties help the skin to balance water loss and absorption of moisture, helps relieve irritation, inflammation and itching, and is greatly lubricating.

Gram flour, commonly known as Besan, has been used extensively since the olden times for its beauty-enhancing benefits. It mainly acts as a tonic for the skin as it helps to clean and exfoliate it.

The secondary metabolites which are present in the plants taken will support the strength, texture and integrity to skin along with the moisturizing of skin and maintaining its elasticity. Thus, the presence of herbal ingredients in skincare formulation helps reduce the production of free radicals in the skin and maintain for a long time. Active ingredients delays skin aging by reducing the wrinkles, protect against UV radiation by antioxidant property.
MATERIAL AND METHODS

a. Preparation of Extracts

Table 1: Ingredients used for the formulation of Polyherbal Cream

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Ingredients</th>
<th>Chemical Constituents</th>
<th>Process of Extraction/Collection of Raw Material</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Almond Oil</td>
<td>Almonds contain lipids (around 50%), proteins (around 25%) and carbohydrates (around 20%) and have a low moisture content and diverse minor bioactive compounds.</td>
<td>Hamdard Roghan Badam Shirin Sweet Almond Oil®, 100 g</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Night Jasmine extract</td>
<td>The leaves and seeds contain iridoid glycosides. The other constituents reported from the leaves are mannitol, beta-amin, beta-sitosterol, hentriacontane, benzoic acid, astragalin, nicotiflorin, oleanolic acid, nycyanthae acid friedelin and lupeol.</td>
<td>Maceration—Maceration is an extractive technique and carried out at room temperature. Powdered herbal leaves of Nyctanthes arbor-tristis is further immersed in alcohol and continuous shaking by using mechanical shaker. After 3 days the concentrated extract was collected and filtered.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Neem leaves extract</td>
<td>The chemical constituents are found in the leaves of neem as nimbin, nimbanene, 6-desacetyl nimbinene, nimbandiol, nimbolide, ascorbic acid, n-hexacosanol and amino acid, 7-desacetyl-7-benzoxyazadiradione, 7-desacetyl-7-benzoylegedunin, 17-hydroxyazadiradione and nimbiol</td>
<td>Extraction—Neem leaves were collected from Local Area. Further the leaves were shade dried for 4 days and size reduced using mixer grinder converted into coarse powder and passed through sieve number 22. The extraction was carried out for 3 hrs taking 100 gms of plant material with 500 ml of ethanol.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Besan Powder</td>
<td>11.2% moisture, 22.5% protein, 5.2% fat, and 58.9% carbohydrate.</td>
<td>Fortune chana besan®</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Bees wax</td>
<td>Hydrocarbons (12%–16%) with a predominant chain length of C27–C33, mainly heptacosane, nonacosane, hentriacontane, pentacosane and tricosane [10]: free fatty acids (12%–14%), with a chain length of C24–C32; free fatty alcohols</td>
<td>It was purchased from Loba Chemie Pvt. Ltd.</td>
<td></td>
</tr>
</tbody>
</table>

b. Method for preparation of Polyherbal Cream.[12]

1. Add the required quantity of Borax in sufficient amount of water and prepare a solution by heating on water bath.
2. In the above solution, add required quantity of night jasmine, neem extract and besan powder. [Solution 1]
3. Weigh accurately almond oil and add into beeswax contained in a china dish, melt to prepare a proper solution. [Solution 2]
4. Add Solution1 dropwise into Solution2. When both the phases get mixed properly, add methyl paraben as preservative.
5. The formulated Polyherbal Cream was kept aside for about an hour in cool and dry place indirect to sunlight till it sets completely and was used after 48 hours after keeping at room temperature for stability and analytical testing.
Table 2: Composition of Polyherbal Cream

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Ingredients</th>
<th>Quantity taken</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Almond Oil</td>
<td>10mL</td>
<td>Emollient</td>
</tr>
<tr>
<td>2.</td>
<td>Night Jasmine extract</td>
<td>1mL</td>
<td>Anti-inflammatory</td>
</tr>
<tr>
<td>3.</td>
<td>Neem leaves extract</td>
<td>0.4mL</td>
<td>Antibacterial</td>
</tr>
<tr>
<td>4.</td>
<td>Besan Powder</td>
<td>1gm</td>
<td>Rejuvenate dull skin</td>
</tr>
<tr>
<td>5.</td>
<td>Bees wax</td>
<td>3.2gm</td>
<td>Humectant</td>
</tr>
<tr>
<td>6.</td>
<td>Borax</td>
<td>0.16gm</td>
<td>Emulsifier</td>
</tr>
<tr>
<td>7.</td>
<td>Methyl Paraben</td>
<td>0.02gm</td>
<td>Preservative</td>
</tr>
<tr>
<td>8.</td>
<td>Water</td>
<td>6mL</td>
<td>Vehicle</td>
</tr>
<tr>
<td>9.</td>
<td>Perfume (Rose water)</td>
<td>q.s.</td>
<td>Fragrance</td>
</tr>
</tbody>
</table>

Formulated polyherbal Cream

Evaluation of Polyherbal Cream

The evaluation of herbal cream was following.

1. Physical evaluation

Formulated herbal cream was further evaluated by using the following physical parameters: Color, Odour, Consistency, and state of the formulation.

a) Colour: The colour of the cream was observed by visual examination.

b) Odour: The odour of cream was found to be characteristics.

c) Consistency: The formulation was examined by rubbing cream on hand manually. The cream having smooth consistency. Cream did not leave greasy substances on skin surface after application.

d) State: The state of cream was examined visually. The cream having a semisolid state.

e) pH: The pH of prepared herbal cream was measured by using digital pH meter. The solution of cream was prepared by using 100 mL of distilled water and set aside for 2 h.

2. Spreadability

Spreadability of formulated cream was measured by placing sample in between two slides then compressed to uniform thickness by placing a definite weight for a definite time. The specified time required to separate the two slides was measured as spreadability.

Spreadability was calculated by the following formula:

**Formula:**

\[
S = \frac{M \times L}{T}
\]

Where,

- \( S \) = Spreadability
- \( M \) = Weight tied to the upper slide
- \( L \) = Length of glass slide
- \( T \) = Time taken to separate the slides.

3. Wash ability

Formulation was applied on the skin and then ease extends of washing with water was checked.

4. Non-irritancy test

Herbal cream formulation was evaluated for the non-irritancy test. Observation of the sites was done for 24 h.

Viscosity

Viscosity of cream was done by using Brooke field viscometer at the temp of 25 °C using spindle no. 63 at 5rpm. Results were shown in table 2.

Phase separation

The prepared cream was transferred in a suitable wide mouth container. Set aside for story age, the oil phase and aqueous phase separation was visualizing after 24h. Results were shown in table 2.

5. Viscosity

Viscosity of cream was done by using Brooke field viscometer at the temperature of 25°C using spindle no. 63 at 5rpm.

6. Phase separation

The prepared cream was transferred in a suitable wide mouth container. Set aside for storage, the oil phase and aqueous phase separation were visualizing after 24h.
RESULTS

Table 3: Evaluation of Polyherbal Cream

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Evaluation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Physical evaluation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colour</td>
<td>Creamy White</td>
</tr>
<tr>
<td></td>
<td>Odour</td>
<td>Pleasant</td>
</tr>
<tr>
<td></td>
<td>Consistency</td>
<td>Smooth</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td>Semisolid</td>
</tr>
<tr>
<td></td>
<td>pH</td>
<td>6.8</td>
</tr>
<tr>
<td>2.</td>
<td>Spreadability</td>
<td>7.8g/cm/sec</td>
</tr>
<tr>
<td>3.</td>
<td>Wash ability</td>
<td>Easily washable</td>
</tr>
<tr>
<td>4.</td>
<td>Non-irritancy test</td>
<td>Non-irritant</td>
</tr>
<tr>
<td>5.</td>
<td>Viscosity</td>
<td>110.30cP</td>
</tr>
<tr>
<td>6.</td>
<td>Phase separation</td>
<td>No phase separation</td>
</tr>
</tbody>
</table>

DISCUSSION

The present research mainly focused on the formulation and evaluation of polyherbal cream using various evaluation parameters. This cream formulation was o/w type of emulsion; hence this formulation was easily washed with normal water after application. The prepared formulation had a good spreadability. Viscosity and pH of the cream was in range. The polyherbal cream was non-greasy in nature and easily removable after application. The formulation was non-irritant and is not harmful to the skin. The prepared cream showed no phase separation while storage.

CONCLUSION

The incorporated herbs such as the dried leaves of Azadirachta indica and dried leaves of Nynctanthes arbor-tristis have antibacterial, anti-inflammatory analgesic activity. Formulation of polyherbal cream was done by Fusion method and further evaluated by various evaluation parameters such as physical properties, pH, Spreadability, Wash ability, non-irritancy test, viscosity and phase separation of cream gave quite good results. The present experimental study showed that it is possible to develop and evaluate polyherbal cream with herbal extract for anti-microbial activity.

Acknowledgement

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Conflict of Interest

We, authors declare that we have no known competing financial interest or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES