FORMULATION AND EVALUATION OF HERBAL VANISHING CREAM CONTAINING PUNICA GRANATUM

D. Nirmala kumari*, Dr. T. Satyanarayana, CH. Sai kumar, SK. Moulabi, B. Pullarao, A. Gavamma, K. Nagamani
Mother Teresa Pharmacy College, Sathupally, Khammam District, Telangana State.

ABSTRACT
Everyone needs natural and beautiful skin so that the natural skin care products are growing day by day in the present market. The main objective of these natural products is to avoid skin problems and to protect the skin from harmful chemicals and also to give healthy skin. By extracting the seeds and peel of Punica granatum (Pomegranate) with olive oil and almond oil the herbal vanishing creams of 4 formulations were formulated named as C1, C2, C3 and C4. The prepared formulations were evaluated for physical evaluation tests like color, odor and evaluated for different evaluation parameters like pH, homogeneity, viscosity, type of smear, after feel test, dye test, spreadability test, patch test and skin irritation studies were done on rat skin. The results were found good and no erythema and hypersensitivity was found on rat skin therefore the formulated creams were tested on human skin and found satisfactory. All the 4 formulations were subjected to accelerated stability studies for 20 days by maintaining at different temperatures and creams were evaluated for different parameters and there was no change in the results.

Corresponding author
D. Nirmala kumari
Assistant professor,
Mother Teresa Pharmacy College,
Sathupally, Khammam District,
Telangana State.
9000785981
nimbu.mpharm@gmail.com

INTRODUCTION

Skin problems generally occur because of the impurities that present in blood, improper blood circulation and due to individual lifestyle. The main skin problems are pimples, acne, rashes, etc. Cosmetic products are used to protect skin against exogenous and endogenous harmful agents and enhance the beauty and attractiveness of skin. Cosmetics are the substances intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, and altering the appearance without affecting the body's structure or functions. Cosmetics will help in reducing the skin disorders and will give attractive. In Cosmeceuticals; cream is viscous semisolid emulsions intended for local application to the skin. Chemically emulsions are biphasic liquid. In which two immiscible liquids (water and oil) are made miscible by using emulsifying agent or emulgent. A cream is lighter than an ointment and sinks more easily into the skin. (An ointment will leave a protective layer on the skin.) It is a mixture of oil and water and so can be slightly more tricky to make than an ointment since oil and water don’t readily mix. Emulsifying wax helps to get the oil and water to mix into a smooth cream[1].

Applications of Herbal Products in Cosmetics:
There are different types of herbal products used for skin
For skin:
Herbal soaps, Herbal body lotions, Herbal oils, etc [1].

For hair:
Henna, Amla, Shikakai, Hibiscus, Aloevera.

For lips:
Herbal Lipsticks and Lip-gloss

For eyes:
Eye Liners, Kajal

Creams, lotions and gels:
Herbal Hand Cream, Herbal Face Cream

Herbal Oils:
Herbal oils for treating of dandruff, hairfall and to treat baldness [1]

For Fragrance:
To give natural fragrance for the herbal products like lavender oil, citrus oil, grapeseed oil [2].
Pomegranate is edible fruit which contains full of anti-oxidants belongs to the Punicaceae family and has very beneficial characteristic i.e. anti-ageing useful for preparation of cosmetics.

MATERIALS AND METHODS

The materials used in the present study that is seeds and peel of Punica granatum fruit were purchased from local market, and dried in shade for 4 days and powdered for further use.

Extraction process:
The dried peel and seeds were powdered and extracted with different oils like almond oil, olive oil placed in stirrer separately at constant temperature by infusion method of extraction process.

Cream formulation:
The cream was oil in water type of formulation, stearic acid acts as an emulsifier and different oil extracts like almond oil extract and olive oil extract of seeds and peel. The cream was prepared by mixing of oil phase (Phase A) and water phase (Phase B). Both the phases are heated to 75°C. methyl paraben, propyl paraben, potassium hydroxide acts as preservatives and other ingredients like glycerin was dissolved in water phase. After heating to 75°C the aqueous phase slowly added drop wise to the oil phase with continuous stirring and cool to get smooth cream [1].
Table 1: Formulation of Herbal Cream.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Ingredients</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stearic acid</td>
<td>5g</td>
<td>5g</td>
<td>5g</td>
<td>5g</td>
</tr>
<tr>
<td>2</td>
<td>Glycerine</td>
<td>2mL</td>
<td>2mL</td>
<td>2mL</td>
<td>2mL</td>
</tr>
<tr>
<td>3</td>
<td>Potassium hydroxide</td>
<td>120mg</td>
<td>120mg</td>
<td>120mg</td>
<td>120mg</td>
</tr>
<tr>
<td>4</td>
<td>Methyl paraben</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Rose water (pure)</td>
<td>10mL</td>
<td>10mL</td>
<td>10mL</td>
<td>10mL</td>
</tr>
<tr>
<td>6</td>
<td>Olive oil extract (peel)</td>
<td>5mL</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Almond oil extract (peel)</td>
<td>-</td>
<td>5mL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Olive oil extract (seed)</td>
<td>-</td>
<td>-</td>
<td>5mL</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Almond oil extract (seed)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5mL</td>
</tr>
</tbody>
</table>

Evaluation of creams:

pH:
The pH meter was calibrated and measured the pH by placing in the beaker containing 20mg of the cream [4].

Viscosity:
Viscosity of the formulation was determined by Brookfield Viscometer at 100 rpm at 25 °C, using spindle no 7 [4].

Spreadability test:
500mg of the cream was sandwiched between 2 slides. A weight of 100gm was placed on upper slide. The weight was removed and extra formulation was scrapped off. The lower slide was fixed on board of apparatus and upper slide was fixed with non flexible string on which 20g load was applied. Time taken by upper slide to slip off was noted down [5].

Dye test:
The test was done by mixing the cream with red dye then place the drop of cream was placed on a slide and covered with cover slip, observed under microscope. If the dispersion phase appears in red colored globules the cream was O/W type. If the continuous phase appears red color the cream was W/O type [5].

Homogeneity:
The test was done by physical touch with hands [6].

Patch Test:
About 1-3gm of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetic to be tested was applied to an area of 1sq.m.of the skin. Control patches (of similar cosmetic of known brand) were also applied. The site of patch is inspected after 24 hrs. As there was no reaction the test was repeated three times. As no reaction was observed on third application, the person may be taken as not hypersensitive [6].

Appearance:
The appearance of the cream was found by observing its color, opacity, etc [6].

After feel:
After applying the herbal cream on skin the properties like emollient nature, slipperiness and the amount of cream left after applying to the skin was checked [7].

Smear type:
The test was conducted after the application of cream on the skin the smear formed was oily or aqueous in nature [7].

Removal:
The removal of the cream applied on skin was done by washing under tap water with minimal force to remove the cream [8].

Irritancy test:
The cream was applied on left hand dorsal side surface of 1sq.cm and observed in equal intervals upto 24hrs for irritancy, redness and edema [9].

Accelerated stability studies:
Accelerated stability studies were performed on all the formulations by maintaining at room temperature for 20 days with constant time interval. During the stability studies the parameters like homogeneity, viscosity, physical changes, pH and type of smear were studied [10].
RESULTS AND DISCUSSIONS

The herbal vanishing cream was prepared by using the fruit and peel of Punica granatum extracted by infusion method using different oils like olive oil and almond oil as solvents, and the extracted oils were used and formulated 4 different formulations named C1, C2, C3 and C4.

![Formulations of Herbal creams.](image)

**Figure 1: Formulations of Herbal creams.**

**pH:**

All the formulations have shown the readings between 5.6 to 6.8 which was matching to the skin pH.

**Homogeneity:**

The 4 formulated creams shown good homogeneity when the creams were observed by touch and visual test.

**Appearance:**

The color and its physical appearance were not changed during storage.

**After feel:**

The herbal creams were applied on skin and the cream felt on skin was emollient and smooth in nature.

**Type of smear:**

The smear formed was found to be non-greasy in nature.

**Removal:**

All the creams applied on the skin were removed from the skin with tap water.

**Dye test:**

This dye confirms that all formulations were o/w type emulsion cream shown more stable as o/w type emulsion.

**Viscosity:**

Viscosity of the formulation was determined by Brookfield Viscometer at 100 rpm at 25°C, using spindle no 7 was found to be C1- 12.005cp, C2- 12.521cp, C3- 13.124cp and C4 12.008cp.

**Patch test:**

The site of patch was inspected after 24 hrs. As there was no reaction the test was repeated three times. As no reaction was observed on third application, the person may was not hypersensitive to the formulations.

**Skin irritation study:**

All the creams were found to be safe to use because no redness, edema was observed on skin.
Accelerated stability testing:
Accelerated stability studies were performed on all the formulations by maintaining at room temperature for 20 days with constant time interval. During the stability studies the parameters like homogeneity, viscosity, physical changes, pH and type of smear were studied and the results were as follows

Table 2: Accelerated Stability Studies For C1.

<table>
<thead>
<tr>
<th>Time interval</th>
<th>Homogeneity</th>
<th>Type of smear</th>
<th>Viscosity(cp)</th>
<th>Physical changes</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0th day</td>
<td>+++</td>
<td>+++</td>
<td>12.005</td>
<td>No change in color and odour</td>
<td>6.1</td>
</tr>
<tr>
<td>5th day</td>
<td>++</td>
<td>+++</td>
<td>12.004</td>
<td>No change in color and odour</td>
<td>6.1</td>
</tr>
<tr>
<td>10th day</td>
<td>++</td>
<td>+++</td>
<td>12.005</td>
<td>No change in color and odour</td>
<td>6.3</td>
</tr>
<tr>
<td>15th day</td>
<td>++</td>
<td>+++</td>
<td>12.005</td>
<td>No change in color and odour</td>
<td>6.1</td>
</tr>
<tr>
<td>20th day</td>
<td>++</td>
<td>+++</td>
<td>12.005</td>
<td>No change in color and odour</td>
<td>6.3</td>
</tr>
</tbody>
</table>

+ = average  
++ = good  
+++ = excellent.

Table 3: Accelerated Stability Studies For C2.

<table>
<thead>
<tr>
<th>Time interval</th>
<th>Homogeneity</th>
<th>Type of smear</th>
<th>Viscosity(cp)</th>
<th>Physical changes</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0th day</td>
<td>+++</td>
<td>+++</td>
<td>12.521</td>
<td>No change in color and odour</td>
<td>5.7</td>
</tr>
<tr>
<td>5th day</td>
<td>+++</td>
<td>+++</td>
<td>12.499</td>
<td>No change in color and odour</td>
<td>5.7</td>
</tr>
<tr>
<td>10th day</td>
<td>++</td>
<td>+++</td>
<td>12.514</td>
<td>No change in color and odour</td>
<td>5.9</td>
</tr>
<tr>
<td>15th day</td>
<td>++</td>
<td>+++</td>
<td>12.520</td>
<td>No change in color and odour</td>
<td>5.9</td>
</tr>
<tr>
<td>20th day</td>
<td>++</td>
<td>+++</td>
<td>12.519</td>
<td>No change in color and odour</td>
<td>5.9</td>
</tr>
</tbody>
</table>

+ = average  
++ = good  
+++ = excellent.
### Table 4: Accelerated Stability Studies For C3.

<table>
<thead>
<tr>
<th>Time interval</th>
<th>Homogeneity</th>
<th>Type of smear</th>
<th>Viscosity(cp)</th>
<th>Physical changes</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>+++</td>
<td>+++</td>
<td>12.521</td>
<td>No change in color and odour</td>
<td>5.7</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>+++</td>
<td>+++</td>
<td>12.499</td>
<td>No change in color and odour</td>
<td>5.7</td>
</tr>
<tr>
<td>10&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>++</td>
<td>+++</td>
<td>12.514</td>
<td>No change in color and odour</td>
<td>5.9</td>
</tr>
<tr>
<td>15&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>++</td>
<td>+++</td>
<td>12.520</td>
<td>No change in color and odour</td>
<td>5.9</td>
</tr>
<tr>
<td>20&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>++</td>
<td>+++</td>
<td>12.519</td>
<td>No change in color and odour</td>
<td>5.9</td>
</tr>
</tbody>
</table>

+ = average  
++ = good  
+++ = excellent

### Table 5: Accelerated Stability Studies For C4.

<table>
<thead>
<tr>
<th>Time interval</th>
<th>Homogeneity</th>
<th>Type of smear</th>
<th>Viscosity(cp)</th>
<th>Physical changes</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>+++</td>
<td>+++</td>
<td>12.008</td>
<td>No change in color and odour</td>
<td>5.9</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>+++</td>
<td>+++</td>
<td>12.004</td>
<td>No change in color and odour</td>
<td>5.8</td>
</tr>
<tr>
<td>10&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>+++</td>
<td>+++</td>
<td>12.002</td>
<td>No change in color and odour</td>
<td>6.1</td>
</tr>
<tr>
<td>15&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>+++</td>
<td>+++</td>
<td>12.005</td>
<td>No change in color and odour</td>
<td>6.3</td>
</tr>
<tr>
<td>20&lt;sup&gt;th&lt;/sup&gt; day</td>
<td>+++</td>
<td>+++</td>
<td>12.008</td>
<td>No change in color and odour</td>
<td>6.3</td>
</tr>
</tbody>
</table>

+ = average  
++ = good  
+++ = excellent
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