

## Formulation, Development and Evaluation of Natural Herbal Eye Cosmetic

G.Swetha, U.Tejaswini, B.Chanti Kumar, P.Sandeep, K.Blessi Priyanka

University College of Pharmaceutical Sciences, Kakatiya University, Warangal, Telangana.

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**ABSTRACT:** A seven different herbal kajal formulations were prepared by using different concentrations of bhring raj and orange peel extracts. Bhring raj leaves and orange peels were collected, washed with tap water, then with distilled water. They were left until become completely dried. By using different concentrations of extracts kajals were formulated. The formulations were examined for the physicochemical properties, pH, IR, irritability and spreadability. All formulations showed better results. Among the seven formulations no.F1 and F2 are considered as best formulations. These formulations will be used for beatification purpose.

**KEYWORDS:** kajal, bhring raj, orange peel

### I. INTRODUCTION:

According to The Federal Food and Drug Cosmetic Act criteria (2015), cosmetic means the articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance and articles intended for use as a component of any such articles; except that such term shall not include soap.

Kajal, also known as Surma or Kohl, is a visually arresting cosmetic. Ayurvedic kajal is completely fresh because it is made with natural substances. The components in Ayurvedic kajal are therapeutically useful to the body. The eyes are nourished and moisturized when organic kajal is used. This kajal is frequently used to cleanse the skin of pollutants. The ayurvedic kajal improves the clarity of the eyes by strengthening their muscles. Tear fluid tends to drain faster when the kajal is utilized, as opposed to utilizing an industrial kajal. Because of its astringent qualities, natural kajal frequently melts in the eyes of tiny red vessels to keep them clean. Keeping this entire thing we have formulated seven different kinds of kajal using herbal extracts.

### II. MATERIALS AND METHODS:

#### Formulations Of herbal kajal:

#### Collection of plant materials:

Bhringraj leaves were collected from our college medicinal plant garden. Oranges were collected from local market. Cow ghee, mud diyas, white cotton cloth and rose water were purchased from local market. Methanol was purchased from SD fine chemical Limited, Mumbai.

#### Bhringraj:

**Synonyms:** Eclipta, bhangra, maka, wadelia

**Biological Source:** Obtained from whole plant of *Eclipta Alba* (L) Hassk

**Family:** Asteraceae (S.B. Ghokale *et al.*,)



Fig 1: Bhringaraj

**Orange Peel:**

**Synonyms:** orange cortex

**Biological Source:** Orange peel is dried or fresh outer part of the pericarp of the ripe or near ripe fruits of citrus *aurantium* Linn.

**Family:** Rutaceae. (S.B.Ghokale *et al.*,)



**Fig 2: Orange peel**

**Coconut Oil:**

**Botanical Name:** oleum cocos, cocos nucifera

**Biological Source:** It is obtained from dried kernel of the coconut palm *Cocos nucifera* L.

**Family:** Arecaceae.(S.B.Ghokale *et al.*,)



**Fig 3: Coconut oil**

**Rose Water:**

**Synonyms:** Gulab Jal, Rose Hydroso

**Biological Source:** Rose water is obtained by steam distillation of fresh rose petals, usually from *Rosa damascena*, *Rosa centifolia*, or other fragrant rose species.

**Family:** Rosaceae(S.B.Ghokale *et al.*,)



**Fig 4: Rose water**

**Formulation of herbal kajal:** After drying, leaves made powder by the use of mixer. The powders were dried and weighed. Both powders were extracted with methanol. The cotton cloth was soaked in different concentrations in mornings drying overnight. The process was repeated until the extracts were completely absorbed. The cotton cloth was made as wick and lighted in mud lamp containing 20ml of coconut oil and 2 drops of rose water. The black soot was collected in dry and porcelain dish. The powder was made as paste with the help of cow ghee and packed in dry box.( Sarita L. Sangale *et al.*,)

**Table1: Formulation of herbal kajal**

| S.No. | Ingredients         | F1      | F2     | F3      | F4      | F5     | F6      | F7     |
|-------|---------------------|---------|--------|---------|---------|--------|---------|--------|
| 1     | Bhringraj           | 19ml    | 10 ml  | 14 ml   | 16 ml   | 18 ml  | 26 ml   | 12 ml  |
| 2     | Orange peel extract | 12 ml   | 26 ml  | 18 ml   | 16 ml   | 14 ml  | 10 ml   | 19 ml  |
| 3     | Coconut oil         | 20ml    | 20ml   | 20ml    | 20ml    | 20ml   | 20ml    | 20ml   |
| 4     | Rose oil            | 2 drops | 2drops | 2 drops | 2 drops | 2drops | 2 drops | 2drops |
| 5     | Cow ghee            | q.s.    | q.s.   | q.s.    | q.s.    | q.s.   | q.s.    | q.s.   |



**Fig 5: Bhringraj Leaf extract**



**Fig 6: Fine powder**



**Fig 7: Extraction**



**Fig 8: Different concentrations of extractions**



**Fig 9: Cloth dipped in different concentrations of solutions**



**Fig 10: Soaked cotton cloth**



Fig 11: Drying of cotton cloths



Fig 12: Inverted plate placed on the lamp



Fig 13: Black soot deposited on steel plate



Fig 14: Formulations of kajal

#### Physical evaluation:

**Colour & shape:** Colour and shape was checked by naked eye.

**Odour:** The smell of formulation was checked by applying preparation on hand and feels the fragrance of perfume.

**pH:** The pH of the prepared soap was assessed by touching a pH strip to the freshly formulated soap and jointly by dissolving 1 gram in 10 ml water with the help of digital pH meter.<sup>[3]</sup>

#### Irritability Test:

A tiny amount of the product was applied to the skin and left for a few minutes and noted the irritability.

**Spreadability:** Excessive amount of kajal sample was taken in glass slides and the weight was placed on the slides for 5 minutes to press the kajal samples to the same thickness. Weight is added on pan. The time required to separate out two slides from each other was taken as a measure of the spread.

It was calculated using the formula.

$$S = \frac{M \cdot L}{t}$$

Where M = the weight (g) tied to the upper glass slide

L = the length (cm) moved on the slide

t = time to separate the slide

### III. RESULTS AND DISCUSSION:

The present study involves the formulation and evaluation of herbal kajals. Seven different herbal kajals were prepared by different concentrations of herb extracts. Different concentrations of orange peel extract and bhring raj leaf extracts were used for the formulation. The formulations were examined for the physicochemical properties, pH, IR, TGA, irritability and spreadability. All formulations showed better results. These formulations will be used for beatification purpose. Among the seven formulations formulation no.F1 and F2 are considered as best as it shows near to skin pH.

All formulations were black in colour, characteristic odour, smooth texture, and smooth consistency. No formulation experiences irritability. All formulations were stable for three months. All formulations possess spreadability ranges from 2.5 to 3.8. All formulations possess pH ranges 6.85 to 7.3.

IR spectrum of formulation F1: 3452.40(-OH hydrogen bonded, str), 2923.92(-CH alkane, str.), 2853.05(-CH alkane, str.), 1745.65(C=O cyclic ketone, str), 1465.75(-CH<sub>2</sub> bend.)

IR spectrum of formulation F2: 3769.66(-OH, str), 3703.29(-OH,strt),3642.46(-OH,strt),2937.16 (-CHalkane,strt.),2868.40 (-CH alkane,strt.),1751.60(C=O cyclic ketone,strt),1467.44(-CH<sub>2</sub> bend.)

IR spectrum of formulation F3: 3472.03(OH- hydrogen bonded,strt),3006.12(-CH.Aro,strt),2925.02(-CH alkane,strt.),2854.10 (-CH alkane,strt.),1746.43(C=O cyclic ketone,strt),1464.92(-CH<sub>2</sub> bend),1163.57(C-O-C,strt ).

IR spectrum of formulation F4: 3465.14 (OH- hydrogen bonded,strt), 3006.23(-CH,Arom,Strt),2924.52(-CH alkane,strt.), 2853.69(-CH alkane,strt.),1745.80 (C=O cyclic ketone,strt),1464.40(-CH<sub>2</sub> bend.),1377.32((-C-O-H,strt),1163.57(C-O-C,strt )

IR spectrum of formulation F5: 3465.97 (OH- hydrogen bonded,strt),3006.18(-CH,Arom,Strt.), 2924.39 (-CH alkane,strt.),2853.54 (-CH alkane,strt.),1745.98(C=O cyclic ketone,strt),1464.83(-CH<sub>2</sub> bend.),1377.33(b),1238.16(h),1163.49(C-O-C, strt).

IR spectrum of formulation F6: 3450.29 (OH- hydrogen bonded,strt),30006.08( -CH,Arom ,strt), 2924.68 (-CH alkane,strt.),2853.71 (-CH alkane,strt.),1746.10 (C=O cyclic ketone,strt),1465.02(-CH<sub>2</sub> bend.),1377.49(-C-O-H,strt) ,1164.26(C-O-C, strt).

IR spectrum of formulation F7: 3466.64(OH- hydrogen bonded, strt),3006.00 (-CH, arom.strt),2924.38 (-CH alkane,strt.), 2859.54 (-CH alkane,strt.),1746.10 (C=O cyclic ketone,strt),1465.26 (-CH<sub>2</sub> bend.), 1377.36 (-C-O-H, strt),1238.79 (-C=O, strt.),1163.58 (-C-O-C,strt).

The thermograms of formulation F2, F3 and F4 were showed that they were formulated as carbon black showing the degradation at 25<sup>o</sup>C.

Thus, in this research work, the prepared poly kajals can be used as beauty regime which the exhibit satisfactory results. Hence, this study was concluded as the formulated herbal kajals can be used as for the beautification purpose.

**Table2: Evaluation parameters of the herbal kajal**

| S. No . | Parameters    | F1                | F2                | F3                | F4                | F5                | F6                | F7                |
|---------|---------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 1       | Colour        | Black             | Black             | Black             | Black             | Black             | Black             | Black             |
| 2       | Odour         | Characteristic    | Characteristic    | Characteristic    | Characteristic    | Characteristic    | Characteristic    | Characteristic    |
| 3       | Consistency   | Smooth appearance | Smooth appearance | Smooth appearance | Smooth appearance | Smooth appearance | Smooth appearance | Smooth appearance |
| 4       | texture       | smooth            | smooth            | smooth            | smooth            | smooth            | smooth            | Smooth            |
| 5       | Irritability  | No                | no                | No                | no                | no                | No                | No                |
| 6       | Stability     | stable            | stable            | stable            | stable            | stable            | Stable            | Stable            |
| 7       | Spreadability | 2.6               | 3.5               | 2.9               | 2.5               | 2.7               | 3.8               | 3.1               |
| 8       | pH            | 7.2               | 7.2               | 7.3               | 7.25              | 7.35              | 6.85              | 6.9               |

#### IV. CONCLUSION:

Seven different kajal formulations were prepared by using different concentrations of bhring raj and orange peel extracts. The herbal kajal formulations prepared well and evaluated for the physicochemical properties, pH, IR, TGA irritability and spreadability. Among the F1nad F2 formulations are found better among them.

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