

## Beauty with Care: Herbal Medicated kajal

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### ABSTRACT:

Kohl or surma, historically known as kajal, has been used as an eye enhancer for centuries in India. A new and innovative approach has been taken to produce herbal kajal using medicinal plants, aiming to enhance its benefits. Two specific medicinal plants, Rosa Rubiginosa and Triphala, were used to create the herbal kajal and their potential for sustained ocular delivery was evaluated through standardized herbs and specific physiochemical parameters. The resulting herbal kajal was compared to reference products based on selected criteria and was found to have anti-microbial properties. The goal of creating a medicated herbal kajal was to not only serve as a cosmetic but also as a treatment for eye inflammation and redness. Stability and patient-friendly nature are the key advantages of these products, which are made from Triphala, Rosa rubiginosa, Almond powder, Coconut Oil, and Ghee. The evaluation of the medicated herbal kajal was done through different parameters such as pH, spreadability, physical evaluation, and microbial activity.[1]

### I. INTRODUCTION:

Kajal has been traditionally used for cultural and beauty purposes, as well as to ward off "evil eyes." In Ayurvedic language, it is referred to as Anjanum or eye ointment. There are many types of medicinal plants used to treat eye diseases, and finding effective and side-effect-free treatments remains a challenge for the healthcare system. However, Ayurvedic herbs have the potential to overcome the limitations associated with traditional medicines, and efforts have been made to identify new medicinal plants due to their effectiveness, low side effects, and relatively low cost. Kohl, a popular eye product, is described in almost all

human cultures as being beneficial and used for the prevention and treatment of eye diseases [1]. The Ayurvedic system of medicine has made great strides in screening phytochemicals, identifying pharmacological activities, and elucidating their mechanisms and sites of action. However, the quality and therapeutic efficacy of Ayurvedic products in the market can vary significantly due to differences in composition, and information on toxicity and potential ill effects of these formulations is often lacking [2].

### Benefits of applying medicated kajal:[3]

- Nourish stressful, raw, injured eyes.
- Give cooling effect to the eyes.
- Formulation is used as anti-inflammatory agent.
- It is use in treatment for eye redness or Itchy eye.

The formulation aims to improve eye circulation and provide better nutrition to cells, achieved by using Rosa Rubiginosa and Triphala herbs to make kajal. The polyherb composition is a known Ayurvedic remedy, with Triphala being a combination of Amalaki (*Emblica officinalis*), Vibhitaka (*Terminalia bellerica*), and Haritaki (*Terminalia chebula*), which is rich in phenolic acids, flavonoids, and tannins that exhibit antioxidant effects, including gallic acid, esoteric acid, and ascorbic acid. Rose water is also added for its cooling effects, protection against cell loss, removal of dark circles, and its comfortable nature for eye washing. The medicated kajal is considered a groundbreaking solution in the field of cosmeceutical drugs to combat eye infections and enzyme issues.

## II. MATERIALS AND METHOD:

Table No.01: Material Used in Herbal Kajal.

Sr No.	Name of Ingredients	Quantity (Batch A)	Quantity (Batch B)	Quantity (Batch C)
1	Triphala Powder	4gm	5gm	6gm
2	Coconut Oil	2.5ml	2ml	3ml
3	Almond Powder	6gm	4gm	4gm
4	Rose Water	1.5ml	2ml	1.5ml
5	Cow Ghee	14gm	15gm	15gm
6	Honey	2ml	2ml	1ml

Table No.02: Chemicals Used in Herbal Kajal

Sr.No.	Materials	Manufacturer (Brand)
1	Triphala Powder	Neuherbs
2	Coconut Oil	Parachute Pvt Ltd.
3	Almond Powder	Bellanuts
4	Rose Water	Dabur India Limited
5	Cow Ghee	Govardhan, Parag Milk Foods Limited
6	Honey	Dabur India Limited

### Method of preparation: [2,3,10]

Take dried powder of triphala for preparing the soot.



Take muslin cloth piece, in this piece triphala powder and Almond powder was taken and used as a wick and was lighted in a mud lamp containing ghee.



Now lit the lamp and put the inverted copper plate on it.



Then scrape the black soot and collected in a clean, dry porcelain dish.



Preparing the rose water. Add Rose water and Coconut oil in black Soot.



Make a paste form, kajal is ready.



Figure 1 Lit the lamp and put the inverted copper plate



Figure 2 Black soot is obtained on copper



Figure 3 the black soot scraped and collect it.



Figure 4 Formulated medicated herbal kajal

#### Evaluation Of Herbal kajal: [1, 11-15]

##### 1)Physical Evaluation:

The physical characteristics of the medicated herbal kajal formulations were assessed, including color, odor, texture, and consistency.

##### 2) pH Determination:

The pH of the prepared kajal formulation was measured using a pH meter. A 1g sample of kajal was dispersed in 25ml of Dimethyl Sulfoxide (DMSO) and stored for 2 hours. The pH value of

the kajal composition was recorded three times, and the average was calculated.

##### 3)Antimicrobial Activity:

The antimicrobial activity of the prepared kajal formulation was evaluated using the agar well diffusion technique. Sterile agar was incubated with the bacterial culture (*Staphylococcus aureus*) for 48 hours at 37°C. Boreholes with an 8mm diameter were created using sterile bores, and these bores were filled with diluted kajal solution prepared using DMSO. The plates were then

incubated for an additional 48 hours at 37°C, and the zone of inhibition was measured.

**4) Spreadability:**

To measure the spreadability of the kajal formulations, an excess amount of kajal sample was taken on glass slides, and a weight was placed on the slides for 5 minutes to ensure consistent thickness. The time required for the two slides to separate was recorded as a measure of spread. The spreadability was calculated using the formula:  $S = M \times L / t$ , where M represents the weight (in grams) attached to the upper glass slide, L is the length (in centimeters) moved on the slide, and t is the time taken for the separation of the slides.

**5) Stability Studies:**

The stability of the herbal kajal formulations was assessed by evaluating physical parameters such as color, odor, texture, and consistency at room temperature and 40°C.

**6) In-Vitro Study:**

**Inhibition of Protein Denaturation Assay for Anti-inflammatory Activity:**

To evaluate the anti-inflammatory activity, a protein denaturation assay was conducted using either egg albumin or bovine serum albumin. A control solution was prepared with 0.45 ml egg albumin and 1.4 ml phosphate buffer at pH 6.4. The standard solution was prepared using various concentrations of marketed Diclofenac sodium gel. A reaction mixture was created with different concentrations of triphala (100-400µg/ml), 0.45 ml fresh egg albumin, and 10 ml phosphate buffer saline at pH 6.4. The mixtures were incubated at 37°C for 15 minutes and then heated at 70°C for 5 minutes. After cooling the reaction mixture, the absorbance was measured at 660nm. The percent inhibition of protein denaturation was calculated using the formula: % Inhibition of denaturation =  $(1 - D/C) \times 100$ , where

D is the absorbance of the test sample and C is the absorbance of the control.

**Evaluation of Base:**

**1) Acid Value**

The acid value determines the amount of potassium hydroxide required to neutralize the free acid in 1g of the substance. Approximately 10g of the substance was accurately weighed in a 250 ml conical flask, and 50 ml of alcohol and 1 ml of phenolphthalein were added. The mixture was heated, if necessary, until the substance was dissolved. It was then titrated with 0.1 N potassium hydroxide, shaking constantly until a pink color was obtained. The number of milliliters required was noted, and the acid value was calculated using the formula: Acid value =  $a \times 0.00561 \times 1000/W$ , where a is the number of milliliters of 0.1 N potassium hydroxide required and W is the weight in grams of the substance taken.

**2) Saponification Value:**

The saponification value measures the amount of potassium hydroxide required to neutralize fatty acids. 40g of potassium hydroxide was added to 20 ml of water, and sufficient alcohol was added to make a volume of 1000ml. It was allowed to stand overnight. Then, 4g of ghee was weighed in a 250 ml conical flask, and the alcoholic solution of potassium hydroxide was added. Another reflux condenser was set up with other reagents as a blank. The mixture was boiled on a water bath for an hour, and 1 ml of phenolphthalein was added. It was then titrated with 0.5 N hydrochloric acid, and the number of milliliters required was noted. The saponification value was calculated using the formula: Saponification value =  $(b - a) \times 28.05/W$ , where W is the weight in grams of the substance taken, a is the sample solution reading, and b is the blank solution reading.

**III. RESULT:**

**1. PHYSICAL PARAMETER:**

Table No.03: Physical Parameters of Kajal

Sr No.	Parameter	Observation (Batch A)	Observation (Batch B)	Observation (Batch C)
1	Colour	Black Colour	Glossy Black Colour	Black colour
2	Odour	Characteristic odour	Characteristic odour	Characteristic odour

3	Texture	Gritty	Smooth	Slighty Smooth
4	Consistency	Semisolid	Semisolid	Semisolid

Every Batch has different texture and slight change in colour.

### 2. pH DETERMINATION:[15]

Table No.04: pH values Of Herbal Kajal

Batches	pH Readings
Batch A	8.11
Batch B	7.72
Batch C	7.94

According to cosmetic parameter pH of kajal should be Between 7 to 7.5, so **Batch B** is more Significant.

### 3. Spreadability:

Table No.05: Spreadability of Herbal Kajal

Batches	Spreadability
Batch A	7.32
Batch B	9.2
Batch C	8.21

Spreadability of our product was observed in the Range of 7.32 to 8.5.

### 4. Stability Studies:

Table No.06: Stability studies of Herbal kajal

Sr No.	Parameter	At Room Temperature	At 40°C
1	Colour	No Change	No Change
2	Odour	No Change	No Change
3	Texture	No Change	No Change
4	consistency	No Change	No Change

All the physical parameters observed in all batches have no change till one month.

### 5. Acid Value:

Table No.07: Acid Value of Herbal Kajal

Batches	Acid Value
Batch A	1.2
Batch B	1.4
Batch C	1.17



As standard acid value of ghee ranges between 1.4 to 2.5 and batch B lies in standard range. Hence Batch B is more significant.

#### 6. Saponification Value:

Table No.08: Saponification value Of Herbal Kajal

Batches	Saponification value
Batch A	203.5
Batch B	217.5
Batch C	205.3

As standard saponification value is 205-235 and batch B lies standard range. Hence Batch B is more significant.

#### 7. Antimicrobial Activity: [10,16]

Table No.09: Antimicrobial Activity of Herbal Kajal

Batches	Diameter of Zone of Inhibition(mm)
Batch A	11 ± 0.321
Batch B	16 ± 0.235
Batch C	14 ± 0.211

In this we Observed Batch B has greater zone of inhibition than other Batches and is considered to be more significant.

### IV. DISCUSSION

Medicated herbal kajal is prepared and evaluated by different parameter. The physical evaluation test result shows in Table No.03, results of pH are shown in Table no.4, spreadability result shows Table no 5, stability results are shown on table no. 6, and antimicrobial activity is shown in table no.9.The triphala shows the anti-inflammatory activity as the concentration of triphala is increases it shows the better anti-inflammatory activity. Also, the base (ghee) which is use in formulation was evaluated by the parameter like Acid value and Saponification value, which shows significant results. All Evaluation test result was meeting with cosmeceutical parameters. All formulations batch shows the antimicrobial activity against the Staphylococcus aurous. However, the antimicrobial activity of formulation was more satisfied in batch B. The zone of inhibition of all prepared formulation ranges in  $11 \pm 0.321$  to  $16 \pm 0.23$ . All the Physicochemical evaluation was determined and it was concluded that the batch B was shows the more satisfied results than other batch. The obtained value is in the range which meets the prescribing limits.

### V. CONCLUSION:

Medicated herbal kajal using herbal ingredient was prepared and evaluated. Different parameter like Physical evaluation, pH, Consistency, texture, odour, stability study, spreadability is use for evaluation of medicated herbal kajal and which shows the significant results. In the batch B more significant results are obtained than other batches. The Prepared formulations show the antimicrobial activity against the Staphylococcus aureus. This study shows the safety of the product. As the contain of the Triphala increases the greater the anti-inflammatory activity of kajal. This study shows that the prepared herbal medicinal kajal is safe and use as the cosmeceutical.

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