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Formulation and Evaluation of Medicated Herbal Kajal

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ABSTRACT

In India, kohl has been used for cosmetic purposes for centuries it is use as cosmetic and treats the eye problems. Kajal is mainly used for eye makeup. Herbal kohl is a product used as a medicine because a cosmetic was a new prescribing method. The aim of the preparing formulation that is medicated herbal kajal is to treat eye inflammation and eliminate redness of the eye. Stability and patient-friendly nature are the main advantages of these products. The medicinal products Triphala, Rosa rubiginosa, Almonds powder, Coconut oil and Ghee are used to formulate the herbal kajal. Evaluation of the medicated herbal kajal is carried out by using the different parameter like pH, Spreadability, Physical evaluation etc, the black soot (kajal powder) is prepared by using copper plate and evaluated by microbial activity. Prepared medicated herbal kajal are evaluated by antimicrobial activity. Evaluation of the triphala for In-vitro biochemical characterization for anti-inflammatory activity.

Keywords: Kajal, Kohl, Triphala, Rosa rubiginosa, Anti-inflammatory

I. INTRODUCTION

Kajal is worn for a variety of reasons, including culture and beauty, to prevent "evil eyes." People use kajal in the eyes of children to drive away evil as a symbol of protection. In the Ayurvedic language, kajal is known as Anjanum or eye ointment. There are many types of medicinal plants used for eye diseases. The fight against eye diseases and side-effect-free chemicals remains a challenge for the healthcare system. However, Ayurvedic herbs have the power to overcome the limitations associated with traditional medicines. For this reason, great efforts have been made to identify new medicinal plants. This is because its effectiveness, side effects are relatively small, and its cost is relatively low. A popular eye product, kohl is described in almost all human cultures as being cool and clean for the eyes and used for the prevention and treatment of eye diseases.

1.1 Benefits of applying medicated kajal:

- 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.

Increase circulation in eyes and provide better nutrition to cell. In this formulation, Rosa rubiginosa

and Triphala herbs were selected to formulate kajal from a variety of extracts. The polyherb composition is known from Ayurveda Triphala. The triphala is composition of the Amalaki (Emblica officinalis),Vibhitaka(Terminalia bellerica),Haritaki (Terminalia chebula).Triphala is most commonly associated with phenolic acids, flavonoids, and tannins. The antioxidant effects shows gallic acid, esoteric acid, and ascorbic acid. The effects of rose water is cooling, cell loss protection, dark circles are remove, also comfortable for eyes and eye washing Medicated kajal was thought to be a revolutionary solution as the cosmeceutical drug in the fight against eye infections and enzyme.

II. MATERIAL AND METHOD

2.1 Material –

Table 1. Composition of formulation of medicated 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	3 ml
3	Almond powder	6gm	4gm	4gm
4	Rose Water	1.5ml	2ml	1.ml
5	Cow Ghee	14gm	15gm	15gm
6	Honey	2ml	2ml	1.ml

2.2 Methodology -

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.

Fig.1Lit the lamp and put the inverted copper plate

Fig.2Black soot is obtained on copper

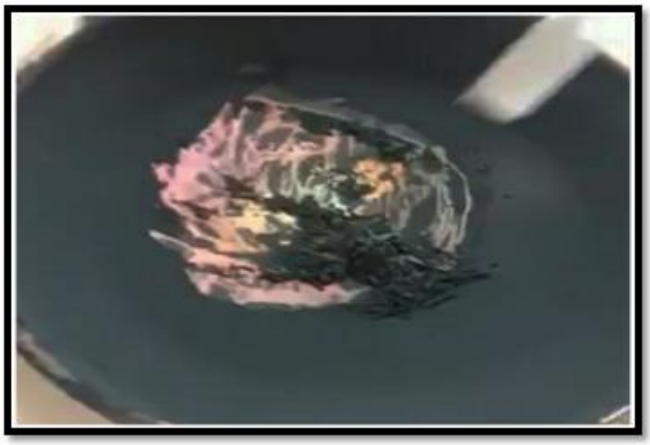

Fig.3 Scrape the black soot and collect it.

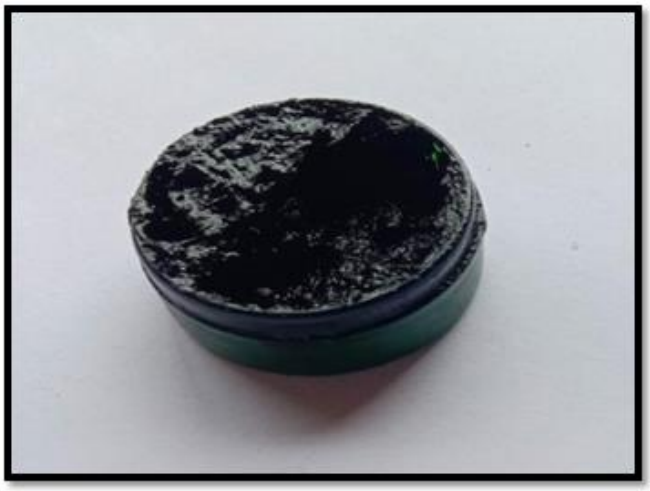

Fig.4 Formulated medicated herbal kajal

III. EVALUATION OF HERBAL KAJAL

3.1 Physical Evaluation -

The formulations of medicated herbal kajal were evaluated for physical parameter like colour, odour, texture and consistency.

3.2 pH determination –

The pH of the prepared formulation is measured by a pH meter. 1gm of kajal sample was measured and dispersed in 25 ml of DMSO (Dimethyl Sulfoxide) & stored for 2 hours. The pH value of the kajal composition was recorded three times and average taken.

3.3 Antimicrobial Activity –

Antimicrobial activity of prepared formulation kajal was performed using the agar well diffusion techniques. For 48 hr. at 37°C sterile agar was incubated with the bacterial culture (*Staphylococcus aureus*) for. The bores was made by using the sterile bores diameter 8mm. and the bores was loaded with the diluted kajal solution prepared using the DMSO. The plate was incubated for 48 hr. at 37°C. Zone of inhibition was measured.

3.4 Spreadability –

To obtain a spreadability of kajal formulations take an 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 for the split of two slides was taken as a measure of the spread.

Calculated using the formula: S = M. 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.

3.5 Stability Studies-

Physical parameters such as color, odour, texture and consistency were determined at room temperature and 40°C

3.6 In-Vitro Study-

Inhibition of protein denaturation assay for Anti-inflammatory Activity:

In this activity either egg albumin or bovine serum albumin are used for protein denaturation of assay. Control solution is prepared: 0.45 ml egg albumin, 1.4 ml phosphate buffer whose pH is 6.4.The standard solution is prepared by using the marketed Diclofenac sodium gel various concentration. 0.45 ml fresh egg albumin and 10 ml phosphate buffer saline whose pH is 6.4. A reaction mixture consists of various concentration of triphala of 100- 400µg/ml, take 10 ml of each concentration. Take 0.45 ml egg albumin. 1.4 ml phosphate buffer saline, the mixtures is incubated at 37 °C for 15 min and then heated at 70°C for 5 min. After the cooling reaction mixture the absorbance is measured at 660nm. Using the following formula percent inhibition for protein denaturation is calculated:

% Inhibition of denaturation = (1- D/C) X 100

Where, D is the absorbance of test sample
C is the absorbance of control

3.7 Evaluation of Base-

The evaluation of base that is ghee was evaluated by Acid value and Saponification value.

3.7.1 Acid value-

The acid value is to neutralize the free acid in 1 g of substance the number of mg of potassium hydroxide is required. Determined by the following method Weigh accurately about 10 g of the substance in the 250 ml of conical flask and add 50 ml of alcohol and add 1 ml of phenolphthalein. Warm up on water bath if necessary until substance was dissolved. Titrate with 0.1 N potassium hydroxide. Shake constantly shake until pink colour is obtained. Note the number of ml required and calculate the acid value by using the formula:

Acid value = a x 0.00561 x 1000/W

Where, a = number of ml of 0.1 potassium hydroxide required

W = weight of g of substance taken.

3.7.2 Saponification value-

The Saponification value is the number of mg of potassium hydroxide required to neutralized fatty acid determined by following method .Add 40 gm of potassium hydroxide in 20 ml water and add sufficient alcohol to make volume 1000ml. Allow it overnight. Weigh 4g of ghee in 250 ml of conical flask add alcoholic solution of potassium hydroxide , attach to the reflux condenser set another reflux condenser as blank with other reagents. For hr boil on water bath. Add 1ml of phenolphthalein. Titrate with o.5 N hydroxide acid. Note the number of ml required and calculate the Saponification value by using the formula:

Saponification value = (b-a) x28.05/W

Where, W = weight in g of substance taken

a = sample solution reading.

b = blank solution reading

IV. RESULT

Following evaluation parameters were performed to ensure superiority of prepared medicated kajal.

4.1 Physical evaluation- The finished product is a glossy black with a characteristic odour .The texture was smooth .consistency is semisolid.

Table 2 Physical evaluation

Srno	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	Slightly Smooth
4	Consistency	Semisolid	Semisolid	Semisolid

4.2 pH determination- pH was measured pH meter, result are showed in table no 3

4.3 Antimicrobial Activity –

Prepared medicated kajal formulations exhibited antimicrobial activity. Triphala powder and Almond powder soot on copper plate was responsible for significant result of antimicrobial activity. In the table no 3 result is shows.

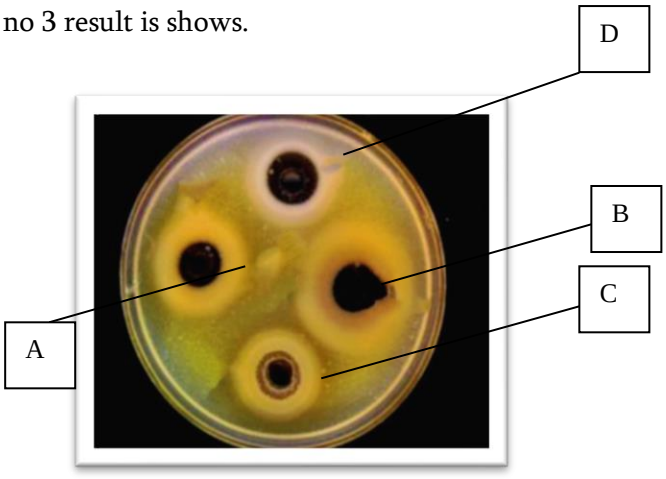

Fig. Antimicrobial activity of kajal

A = Antimicrobial activity of batch A
B = Antimicrobial activity of batch B
C = Antimicrobial activity of batch C
D = Antimicrobial activity of kajal powder

4.4Spreadability-

The prepared formulation possesses optimum spreadability. Spreadability is in the range of 7.32 ± 0.223. The obtained result is showed in table no 3.

Table no 3 Result of pH, Anti-microbial activity, and Spreadability

	pH Reading	**Diameter of zone of inhibition (mm)**	**Spreadability**
Batch A	8.11 ± 0.05	11 ± 0.321	7.32 ± 0.223
Batch B	7.72 ± 0.07	16 ± 0.235	9.2 ± 0.3012
Batch C	7.94 ± 0.03	14 ± 0.211	8.21 ± 0.351
Kajal powder	-	13 ± 0.451	-

4.5 Stability Studies- The stability study was performed at room temperature and at 40℃, there are no change occurs in colour, pH, odour, texture and consistency.

Table 4 Stability study

Sr. No	Parameter	At room temperature	At 40℃
1	Colour	No change	No change
2	Odour	No change	No change
3	Texture	No change	No change
4	Consistency	No change	No change
5	pH	7.72 ± 0.07	7.82 ± 0.04

4.6 In-Vitro Study:

Table 5 Anti-inflammatory activity of triphala by inhibition of protein denaturation assay

Test	Concentration	Percentage Inhibition of denaturation (%)
Marketed Diclofenac sodium gel	100	175.50
	200	180.42
	400	190.72
Triphala	100	57.01
	200	62.19
	400	70.72

4.7.1 Acid value –

Acid value is calculated by using formula –

Acid value = a x 0.00561 x 1000/W where a is 2.1 and W is 10,

Acid value = 2.1 x 0.00561 x 1000/ 10

Acid value =1.178

4.7.2 Saponification value

Saponification value is calculated by using formula-

Saponification value = (b-a) x28.05 /W

Saponification value = (58.6-23.3) x28.05 /4

Saponification value = 247.5412

V. DISCUSSION

Medicated herbal kajal is prepared and evaluated by different parameter. The physical evaluation test result shows in Table no 2 pH, Anti-microbial, spreadability result shows Table no 3, the triphala was evaluated for the anti inflammatory activity by the inhibition of protein denaturation assay. 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 ± 0.321to 16± 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.

VI. 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. The In- Vitro study of the triphala as the Anti inflammatory was evaluated and which shows the anti inflammatory activity. 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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