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FORMULATION AND EVALUATION OF HERBAL KAJAL BY USING INDIAN TRADITIONAL METHOD

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Abstract:

Kajal, also referred to as surma or kohl, is used as an eye-catching accessory. The concept of utilising medicinal herbs for enhancement in the production of herbal kajal is an innovative and inventive approach. Improved patient compliance, increased durability, water resistance, and an affordable shaping curve are the main benefits of these cosmetics. Utilising two therapeutic ingredients and viz. dill seed and camphor set out to determine each other's ability to administer herbal kajal for an extended period of time. Standardised herbs were used with specific physiochemical criteria to identify within the specified ranges. The anti-microbial efficacy of the herbal kajal has been evaluated using a comparison of certain criteria in order to determine the values that fell goods.

Keywords: Kohl, Herbal kajal, Surma, Herbal kohl.

Introduction:

The eye is the essential conduit between the external and internal realms. The pitta dosha in Ayurveda represents the element of fire and light, which governs our eyes. The eyes are therefore a crucial organ in our body^[1-5]. to preserve and improve eye beauty Numerous safe, effective, and organic methods are offered by vedic science. With the help of Ayurvedic science, numerous plants and herbs were used to make Ayurvedic cosmetics that both improved skin appearance and shielded the body from outside influences. For practical purposes like moisturising, whitening, colouring, sunscreen, antioxidants, immune stimulants, cleaning, thickeners, and preservatives, plant materials are also used in cosmetics^[20].

Given that kajal is one of those products, its significance in eye care products cannot be emphasised^[1,3]. There are several reasons to wear kajal, such as tradition, aesthetics, and defence against the "evil eye." According to the sunna, the Islamic religion's traditional behavioural guidelines, wearing kohl is encouraged and is widely believed to have medical benefits for the eyes^[2,4,8]. as stated in several old Indian texts, including Astanghriday, Ras Tarang, Bhav Prakasha, Sushrut Samhita, Charak Samhita, and NayanDrastam.Ophthalmic diseases can be treated using a variety of plants, either as single agents or in combination^[23,25]. Many eye diseases and ailments, like Abhishy and (conjunctivitis), Adhimanth (glaucoma), Timir (cataract), etc., have a long history of being recorded in the Indian medicinal system Ayurveda. The causes of the treatments have also been explained. Prescription of a range of herbal medicines in several dose forms, including extract, arkas (aqueous distillate), kajal (collerium), fomentation, and washing with different extracts, has also been customary practice^[3]. This area of concern includes the use of materials and substances originating from animal origins in addition to the use of animals in scientific testing. The standards and quality of pharmaceuticals and cosmetics manufactured and supplied in the india^[4]. Kajal, sometimes referred to as kohl, is a classic eye cosmetic that is used extensively to enhance the appearance of the eyes in many different cultures^[15]. Traditionally, natural components have been used to make kajal, which is said to have both therapeutic and cosmetic benefits. Herbal formulations have seen a rise in popularity as people become more conscious of the possible health dangers linked to synthetic chemicals in cosmetics. Because herbal kajal is made from plant-based materials, it is a safer and more environmentally responsible option^[20].

Materials & Methods:

Materials:

Table No.:1 Formulation table of Herbal Kajal

Sr. No.	Ingredients	Quantity
1	Dill Seed	5gm.

2	Cow ghee	20gm.
3	Coconut oil	10ml.
4	Cotton	2gm.
5	Camphor	2gm.

Method of Preparations:

Keep three pieces of brick in the same way as the hearth is made.



Placing a inverted copper plate on it.



Then take muslin cloth piece, in these piece add cotton, shepa and coconut oil in it & make a wick, that lighten in mud lamp by adding ghee in it.



The burning wick of the lamp should touch the plate.



After that a dark color will appear on the surface of the copper plate and the oil will be brown.



The black soot was collected in a clean, dry porcelain dish and add coconut oil to it after which kajal will be ready ^[21,22,30,35].

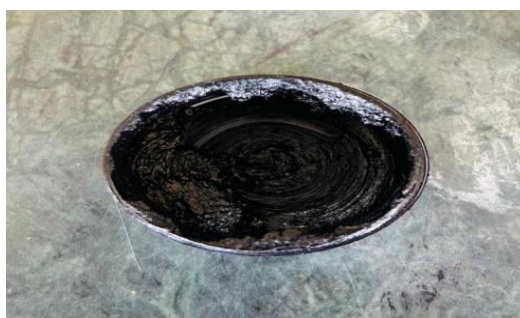


Fig.1:Formulation of Herbal Kajal



Fig. 2:Light the lamp and put the inverted copper plate

Evaluation:

1. Physical Evaluation

The formulations of medicated herbal kajal were evaluated for physical parameter like colour, odour, texture and consistency^[32].

2. pH determination

The pH of the prepared formulation is measured by a pH meter. 1gm of kajal sample was measured and dispersed in 25ml of DMSO (Dimethyl Sulfoxide) & stored for 2 hours. The pH value of the kajal composition was recorded three times and average taken^[5].

3. Antimicrobial Activity

Antimicrobial activity of prepared formulation kajal was performed using the agar gel diffusion techniques. For 48 hr. at 37°C sterile agar was incubated with the bacterial culture (Staphylococcus aureus). 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^[33].

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 of 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^[34].

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^[31].

5. Stability Studies

Physical parameters such as color, odour, texture and consistency were determined at room temperature and 40°C^[12].

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, 14.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- 400g/ml, take 10 ml of each concentration. Take 0.45 ml egg albumin. 14. 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:

$$\% \text{ Inhibition of denaturation} = 1 - (D/C) \times 100$$

Where, D is the absorbance of test sample, C is the absorbance of control^[9].

7. Evaluation of Base

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

7.1 Acid value

The acid value is to neutralize the free acid in 1 g of substance the number of mg of potassiumhydroxide is required. Determined by the following method Weigh accurately about 10 g of the substance in the 250 ml of conical flask and add 50ml of alcohol and add 1ml 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:

$$\text{Acid value} = a \times 0.00561 \times 1000 / W$$

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

W = weight of g of substance taken^[8].

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 0.5 N hydroxide acid. Note the number of ml required and calculate the Saponification value by using the formula:

$$\text{Saponification value} = (b-a) \times 28.05/W$$

Where, W= weighting of substance taken

a=sample solution reading.

b=blank solution reading^[5,2].

Result & Discussion:

Evaluation test of herbal kajal

Table 2. Evaluation Parameter

Sr. No.	Evaluation Parameter	Inference
1.	Colour	Dark Black
2.	Odour	Characteristics odour
3.	Texture	Smooth
4.	pH determination	6.5
5.	Acid Value	1.180
6.	Saponification Value	239.567
7.	Spreadability	294.10cm.gm/sec.
8.	Stability	No Change
9.	Antimicrobial activity	No microbial growth

Physical Test:

The Colour, Odour, Texture & Consistency of preparation is observed as Dark black colour, Characteristic, Smooth & Semi Solid respectively.

pH Test: The pH was determined by using the pH meter was 6.5

Stability test:

Table 3: Stability Test

Sr. no.	Parameter	At room temperature	At 40°C temperature
1	Colour	No change	No change
2	Odour	No change	No change
3	Consistency	No change	No change

Spreadability Test:

The cream sample was applied between the two glass slides and was compressed between the twoglass slide to uniform thickness by placing 100 gm of weight for 5 minutes then weight was added to the weighing pan. The time in which the upper glass slide moved over the lower slide was taken as a measure of spreadability is 294.10cm.gm/sec.

Anti-Microbial activity:

There was no signs of microbial growth after 24 hours of incubation at 37°C and it was comparable with the control.

Evaluation of base:

Acid Value: the acid value was calculated by given formula & it was 1.180

Saponification Value: the Saponification value was calculated by formula & it observed as 239.567.

Conclusion:

Over 70% of people in India get their medical care from herbal cosmetics. When formulating herbal kohl, scientific consideration is given to the selection of ingredients^[46]. Herbal kajal products are made with a variety of natural ingredients, such as plant parts like leaves, waxes, oils, and natural colours and fragrances. Herbal kohl has several benefits, including being safer to use, inexpensive, and free of negative effects on the environment. In addition, it has a bright future ahead of it when compared to synthetic makeup^[41,44]. The field of herbal cosmetics will grow tremendously and significantly if these herbs are properly regulated and standardised^[20]. Formulating and evaluating herbal Kajal involves careful

selection of natural ingredients, precise formulation techniques, and thorough testing to ensure the product is effective, safe, and user-friendly. Proper evaluation ensures the final product meets consumer expectations and safety standards^[50].

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We declare that this work was created by the author named in this article and that all liability related to claims related to the content of this article rests with the author.

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