CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

https://zenodo.org/records/13191483

https://www.iajps.com/volumes/volume11-august-2024/05-issue-08-august-24/

Available online at: http://www.iajps.com Research Article

FORMULATION AND EVALUATION OF KAJAL USING HAIRS OF COCONUT SHELL

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Article Received: July 2024 Accepted: July 2024 Published: August 2024

Abstract:

Kajal is an inseparable part of women's beauty because of its cosmetic and medicated effect on human eyes. In India, kajal is mainly used as a cosmetic for eye makeup and some spiritual causes like to get protection from evil eyes. Herbal kajal is used to treat eye inflammation and eliminate redness in the eyes. In this attempt, we try to prepare kajal using hairs of coconut shell, cow ghee, and rose oil which is the best alternative for the kajal which is chemically prepared. The kajal has been evaluated based on selected criteria and shown promising results.

Keywords: *Kajal, Coconut Shell, Eye Makeup, Eye Inflammation*

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Please cite this article in press **Chitralekha G. Therkar** *et al* ***Formulation And Evaluation Of Kajal Using Hairs Of Coconut Shell.,****Indo Am. J. P. Sci, 2024; 11 (08).*

INTRODUCTION:

The eyes are one of the sense organs which are helpful in vision and sight. The eyes are very important mediators between the inner and outer visible world. Eyes are known as *"The Window of Our Soul"* Eyes cosmetics have been used since prehistoric times to emphasize and highlight the eyes to enhance perceived attractiveness and beauty.[1]

Eye makeup has been used for a long time to improve personal appearance to get better self-confidence or to attract the interest of others. Amongst the commonest causes leading to eyelid dermatitis, cosmetics used for eyes include eyeliners, mascara, eyeshadow, eyelashes, and makeup Kajal due there certain chemical compositions that may lead to irritation or allergy to some people. Personal care products and facial cosmetics are commonly used by millions of consumers daily. These cosmetics are directly applied to the skin and effectively produce local effects due to certain materials used in the formulation.[2]

According to the Federal Food and Drug Cosmetic, Cosmetics means the articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body or any part for cleansing, beautification, promoting attractiveness, or altering the human appearance. In the science of Ayurveda, several herbs and floras have been used to make Ayurvedic cosmetics that beautify the skin and act as a shield against harmful external factors.[3]

Amongst those, Kajal is such a cosmetic, whose role in eye products has been delineated to date. Pitta dosha stands for the element of fire and light that governs our eyes in Ayurveda. Hence eyes are a very important organ in our body system. Vedic science offers several natural, safe, and effective techniques for the care and beautification of eyes. Kajal has been defined as ultra-fine powder comprising one or more substances like herbs, gemstones, pearls, etc. particularly used for the eye, as deciphered in Unani, Ayurveda, and Greco-Arabica systems of medicine.[4]

MATERIALS AND METHODS:

Collection of raw materials:

Coconut shells and ghee were procured from the general vendor. Rose oil has been purchased from the general stationary shop and the glycerin was purchased from the pharmacy shop.

Formula –

Table No. 01 – Formula for Kajal

SN	Materials	Quantity Taken
01	Coconut Shells	10 Whole
02	Ghee (Base)	15 Grams
03	Glycerin	10 ml
04	Rose Oil	0.5 ml

Procedure[5]**:**

- Take the shells of the coconut, and scrap the excessive hairs from it.
- Turn on the burner and then burn the outer shells of the coconut.
- Scrap the black soot of burnt hairs of coconut.
- Collect the whole soot in the mortar and pestle.
- Triturate the soot to get the fine powder, and grind if necessary.
- Sieve the powdered soot to get a uniform fine size of particles of soot.
- Add this soot to a china dish over a water bath with ghee.
- Stir until forms a uniform paste.
- Now, add a drop of glycerin and a few drops of rose oil to it.
- Take down the china dish, and stir continuously.
- After solidifying, transfer the formulation to a clean and dry container.
- Label the container and store at dry place.

Evaluation of Base:

Acid value - The acid value as the number of mg of potassium hydroxide is required to neutralize the free acid in 1 g of substance. It is determined by the following method, Weigh accurately about 10 g of the ghee in the 250 ml of conical flask add 50 ml of alcohol, and add 1 ml of phenolphthalein. Warm up in a water bath if necessary until the substance is dissolved. Titrate with 0.1 N potassium hydroxide. Shake constantly until pink color is obtained. Note the number of ml required.[6]

Calculate the acid value by using the formula,

Acid value = a x 0.00561 x 0.001W

Saponification value - The Saponification value is the number of gm of potassium hydroxide required to neutralize fatty acid determined by the following

method. Add 40 gm of potassium hydroxide in 20 ml water and add sufficient alcohol to make a volume of 1000 ml. Allow it overnight. Weigh accurately 4 gm of cow ghee in 250 ml of conical flask and add an alcoholic solution of KOH, attach it to the reflux condenser, and set another reflux condenser as blank with other reagents. For boil on a water bath. Add 1 ml of phenolphthalein. Titrate with 0.5 N hydroxide acid. Note the number of ml required. Determine the saponification value by using the following formula, [6]

Saponification value = (b - a) x 28.05/W

Evaluation Test of Herbal Kajal[6]

Physical Evaluation - The formulations of medicated herbal kajal were evaluated for physical parameters like color, odor, texture, and Consistency.

Melting point – The prepared kohl was tested for its melting point by taking a small portion of the sample in the capillary tube using a digital melting point apparatus. The starting range and final melting range of the temperature were then noted. The test was performed for three consecutive times.

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) and stored for 2 hours. The pH value of the kajal composition was recorded three times and the average was taken.

Skin Irritation – A small amount of kajal was applied to the palm and spread continuously and feel the grittiness if any found.

Spreadability – To obtain a spreadability of kajal formulations 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 taken samples to the equal thickness. Weight is added to the pan. The duration required for splitting of two slides was considered as a measure of the spreading of kajal.

Calculated the spreadability by using the formula,

S = M. L / t

RESULTS AND DISCUSSIONS:

1. Pre-formulation - The standardization of base i.e. cow ghee was done by acid value and saponification value as per IP 2018.

01. Acid Value –

Table No. 02 – Readings for Acid Value

SN	Weight of Base	Burette Reading
01	10 gm	2.3 ml
02	10 gm	2.4 ml
03	10 gm	2.3 ml

Table No. 03 – Acid Value

SN	Readings	Acid Value
01	n = 1	1.29
02	n = 2	1.34
03	n = 3	1.29

02. Saponification Value –

Table No. 04 – Readings for Saponification Value

SN	Weight of Base	Blank Reading	Sample Reading
01	2 gm	42 ml	09 ml
02	2 gm	44 ml	10 ml
03	2 gm	44 ml	12 ml

Table No. 05 – Saponification Value

SN	Readings	Saponification Value
01	n = 1	231.41
02	n = 2	238.34
03	n = 3	224.32

2. Physical Evaluation - Organoleptic properties of kajal were performed and the results are as follows,

Table No. 06 – Organoleptic Properties of Kohl

SN	Parameters	Results
01	Color	Dark Brown to Black
02	Odor	Rosy Scent
03	Texture	Smooth
04	Consistency	Fine, Semi Solid

3. Melting Point –

Table No. 07 – Melting Point of Kohl

SN	Melting Starts at	Melting ended at	Melting Point
01	33°C	36°C	34.5°C
02	34°C	36°C	35°C
03	34°C	37°C	35.5°C

4. pH Test - The pH was determined by using the pH strip, and it was found as follows,

Table No. 08 – pH of Kohl

SN	pH
01	7 - 8
02	6 - 7
03	7 - 8

5. Skin Irritation Test - No irritation was observed after application on the skin.

6. Spreadability Test –

Table No. 09 – Readings for Spreadability

SN	Weight of Kajal	Spreading Length	Removal Time
01	02 gm	5.9 cm	1.61 seconds
02	02 gm	6.1 cm	1.71 seconds
03	02 gm	6.0 cm	1.65 seconds

Table No. 10 – Spreadability of Kohl

SN	Readings	Spreading Coefficient
01	n = 1	7.32
02	n = 2	7.17
03	n = 3	7.27

SUMMARY:
Coconut shells are the major biowaste of Coconuts. So, for utilizing this bio-waste the shells can be further used to create various utility products like general and cosmetics. The cosmetics particularly include the Kohl, Surma, Scrub, Body wash, etc. The hairs of shells were burnt over the burner and then scraped it from the shell. After collecting the burnt hairs, they were crushed and ground the hairs to fine particles and sieved them further. Various Preformulation tests like acid value and saponification value of base were determined. After that, using all other excipients, the kohl was evaluated for its organoleptic properties and other post-formulation tests.

CONCLUSION:
Medicated herbal kajal using herbal ingredients was prepared and evaluated. Different parameters like physical evaluation pH, consistency, texture, odor, stability study, and spreadability are used for the evaluation of medicated herbal kajal which shows significant results. This study shows that the prepared herbal medicinal kajal is safe and used as the cosmeceuticals.

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