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### FORMULATION AND EVALUATION OF CLEANSING CREAM USING WALNUT SHELL POWDER

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#### ABSTRACT

The Juglans regia, Persian walnut, English walnut, especially in Great Britain, common Walnut, or especially in the US, California walnut, is an Old World walnut tree species Native to the region stretching from the Balkans eastward to the Himalayas and southwest China. The largest forests are in Kyrgyzstan, where trees occur in extensive. The walnut tree has a long history of medicinal use, being used in folk medicine to treat a Wide range of complaints. The leaves are alterative, anti-helminthic, anti-inflammatory, Astringent and depurative. They are used internally for the treatment of constipation, chronic coughs, asthma, Diarrhoea, dyspepsia etc. The leaves are also used to treat skin ailments and purify the blood. AIM: The aim of the present study is to formulate and evaluate cleansing cream by using Walnut shell powder prepared by using bees wax-borax type/emulsified type method. METHOD: In our present study we formulated 3 different formulations F1, F2, F3 by incorporating different concentrations of liquid paraffin and Bees wax and evaluated by using various parameter such as physical appearance , viscosity, pH, phase separation, moisture absorption studies, test for microbial growth, Spread ability, Stability studies, Irritability, wash ability, and got fruitful results with all the tests. RESULTS: Among the three formulations (F1, F2, and F3), the formulation F2 was having characteristic Odour, light brown in color, non-irritant to the skin and quite elegant. Also the formulations F1 and F3 showed no redness or edema or erythema and irritation during irritancy studies. CONCLUSION: The stable formulations were safe and skin irritations and allergic sensitizations were scarce. All the formulations passed the microbial limit test which included some parameters like total bacterial count and fungal count, pathogens like E.Coli, Bacillus were also absent.

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## INTRODUCTION

Creams are defined as “a semisolid dosage form containing one or more drug substances dissolved or dispersed in a suitable base” They are formulated using hydrophilic or hydrophobic bases to provide preparations that are essentially miscible with the skin secretion. Semisolid emulsions of either O/W or W/O type emulsions.

Cleansing cream<sup>1-6</sup> is useful for keeping the body clean. It is the most important and primitive need to on account of personal hygiene and beautification which leads to the need of cosmetics. They are used for the purpose of removing makeup, surface grime (layer of dirt on skin) and secretions of skin from the face and throat respectively.

## AIM AND OBJECTIVE

To prepare cleansing cream with using walnut shell for a better quality than the available ones in the market.

### Objectives:

1. To determine the materials used in preparation of cleansing cream of high quality.
2. To examine the method involved in preparing the cleansing cream that does not have huge financial involvement.

## WAL NUT SHELL<sup>7,8,9</sup>:

A Walnut is the nut of any tree of the *genus- Juglans Family- Juglandaceae*.

**Characteristics:** Walnuts are rounded, Single-seeded stone fruits of the walnut tree commonly used as a meat after fully ripening. The seed kernels of walnuts are enclosed in a brown seed coat which contains anti-oxidants.

The two most common major species of walnuts are grown for their seeds– English walnut (*J. regia*), originated in Iran(Persia),and the Black walnut (*J.nigra*) is native to eastern North America.

**Benefits of walnuts<sup>7</sup>:** Improve heart function, boost bone health, improve metabolism, Control diabetes prevents Cancer, reduces Inflammation, skin care, Astringent properties, weight management etc.



Figure 1: Wal nut species–(*Juglans. Regia*) and Wal nut Shell powder.

## WAL NUT SHELL POWDER<sup>10</sup>

Crushed walnut shell is hard fibrous material ideal as abrasive. Its grit is extremely durable, angular and multi- faceted, yet considered a soft abrasive.

By using the shell of the walnut in a skin care product cosmetic, scientists can create a different and more unusual marketing story. Exfoliating creams and scrubs help to remove dead cells from the surface layers of the skin and prepare the skin to take moisturization and anti -ageing treatments.

### Properties of wall nut shell powder<sup>10</sup>:

**Particle size:** passes through 40 mesh (sieve size of 0.42mm).

**Color:** Fine light brown powder.

**Odour:** Characteristic.

**Solubility:** Insoluble in water.

## FORMULATION OF CLEANSING CREAM

### BEESWAX-BORAX TYPE/EMULSIFIED TYPE<sup>11,12,13</sup>:

#### Method of preparation:

STEP-1: Weigh the quantity of liquid paraffin, Bees wax, Borax, Methyl paraben, Rose oil, distilled water. Required quantity of Bees wax and liquid paraffin were taken in a beaker and heated on a water bath up to 70° c to obtain a molten mass(phase-A)/ oily phase.

STEP-2: In other beaker take Borax, water and heated up to 80° c (phase-B)/ aqueous phase. Then add walnut shell powder and mix it such that it should not form any clumps.

STEP-3: Mix both solution by adding both phases with continuous stirring till a cream like consistency is formed. Then add preservative (methyl paraben) and perfume (rose oil) and pack it in a suitable container.

Table 1:Formulation of Wal nut Cleansing cream

S.NO	INGREDIENTS (QUANTITY)	F1	F2	F3
1	Walnut shell powder	10gm	10gm	10gm
2	Liquid paraffin	40ml	45ml	50ml
3	Bees wax	15gm	10gm	5gm
4	Borax	1gm	1gm	1gm
5	Methyl paraben	0.5ml	0.5ml	0.5ml
6	Rose oil	0.5ml	0.5ml	0.5ml
7	Distilled water	28ml	28ml	28ml

**EVALUATION OF CREAM<sup>14,15,16</sup>**

The prepared Semi -solid preparation is evaluated for various specifications

**1. Appearance:** The prepared formulations were inspected visually for their color, homogeneity and consistency.

**2. pH of the formulation:** The pH of the formulation was measured by taking 5gm of formulation in 45ml of water then pH of this solution was determined with help of pH meter.

**3.Phase Separation:** The formulated cream was kept intact in a closed container at 25 – 300 °C not exposed to light. Phase separation was observed carefully every 24 hrs for 30 days. Any change in phase separation was checked.

**4.Moisture absorption studies:** About 50 mg of cream was taken on a watch glass. A beaker was taken with full of water and was kept in a desiccator without adsorbents and allowed to get saturated. Watch glass with cream was introduced into the desiccator. It was left for 24 hrs.

**5. Test for microbial growth :**The formulated creams were inoculated on the plates of agar media by streak plate method and a control was prepared by omitting the cream. The plates were placed in to the incubator and are incubated at 37 °C for 24 hours. After the incubation period, plates were taken out and checked for the microbial growth by using colony counter and then comparing it with the control.

**6.Spreadability:**The herbal cream formulation was placed over one of the slides. The other slide was placed on the top of the formulation, such that the cream was sandwiched between the two slides weight was placed upon the upper slides so that the cream between the two slides was pressed uniformly to form a thin layer.

The weight was removed and the excess of formulation  $\times l / t$

$m =$  weight tied to the upper slide (30g)  $l =$ length of glass slide (5cm)  $t =$ time taken in seconds.

**7. Stability Studies<sup>16</sup>:** Stability studies was performed as per ICH guidelines. The purpose of stability testing is to provide evidence on how the quality of a drug substance or drug product varies with time under the influence of a variety of environmental factors such as temperature, humidity and light. Therefore, stability studies provide data to justify the storage condition and shelf-life of the drug product. For drug substance, such studies establish the retest date in addition to the storage condition of raw material. Stability studies were performed for selected formulation with  $25 \pm 2^\circ \text{C}$  and  $60 \pm 5\% \text{RH}$  and  $40 \pm 2^\circ \text{C}$  and  $75 \pm 5\% \text{RH}$  conditions for 6 months. The samples were analyzed at 0, 3 and 6 months interval for colour, physical appearance and pH.

**8.Irritancy :** Test Mark an area (1sq.cm) on the left hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs and reported.

**9. Wash ability:** A small amount of cream applied on hand & washed under running tap water.

## RESULTS AND DISCUSSION

Table :2 Evaluation of Cleansing Cream formulations

S.NO	EVALUATION PARAMETERS	F1	F2	F3
1	Appearance(color, odour, texture)	light brown, characteristic, smooth	Light brown, characteristic, smooth	Light brown, characteristic, smooth
2	PH of the formulation	6.85	7.51	7.10
3	Phase separation	No Phase Separation	No Phase Separation	No Phase Separation
4	Moisture absorption studies	No absorption of moisture	No absorption of moisture	No absorption of moisture
5	Test for microbial growth(Bacillus, E.coli)	Absent	Absent	Absent
6	Spread ability (time)	8.3(14sec)	8.9(13sec)	8.7(14sec)
7	Stability Studies(At RH 65% and 30 ± 40oC )	Stable, No separation	Stable, No separation	Stable, No separation
8	Irritancy	Nil	Nil	Nil
9	Washability	Easily washable	Easily washable	Easily washable

## CONCLUSION

The prepared body cream was o/w type emulsion, hence can be easily washed with plain water which gives better customer compliance. Our study indicated that they were more stable. The prepared formulations showed good spread ability, no evidence of phase separation.

These formulations F2 had almost a constant PH, emollient properties; they were not greasy and easily removable after the application.

The stable formulations were safe and skin irritations and allergic sensitizations were scarce.

All the formulations passed the microbial limit test which included some parameters like total bacterial count and fungal count, pathogens like E.Coli, Bacillus were also absent.

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