

Formulation and evaluation of herbal shampoo

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Abstract

Shampoos are used to clean the hair and scalp. shampooing is common form of hair treatment. The main aim of this study is to formulate pure herbal shampoo and evaluate the physicochemical properties. The herbal shampoo was prepared by adding fenugreek seeds (*Trigonella foenum graecum*), Ritha (*Sapindus mukorossi*), Amla (*Phyllanthus emblica*), Shikakai (*Acacia concinna*) and neem is used as preservative, Several evaluation tests are done for the formulated herbal shampoo which include physical appearance or visual inspection, PH, percent of solid contents, Rheological or viscosity, dirt dispersion, foaming ability and foam ability and foam stability

Keywords: Herbal Shampoo; Amla; Shikakai; Fenugreek Seeds; Ritha; Neem

1. Introduction

Herbal shampoos are a liquid or cream or cream or powder or solid preparation of a soap or detergent used to wash hair. The general purpose of any shampoo is to remove dirt or unwanted build up in between the hair without stripping out of sebum. Currently many synthetic shampoos both medicated and non – medicated are available in markets but herbal shampoos are becoming popular due to its natural origin which has fewer side effects and safer compared to synthetic shampoos. Surfactants which are synthetic are added in synthetic shampoos increase foaming and cleaning property but continues usage of synthetic shampoo can cause various side effects such as dryness of hair, hair loss, scalp irritation etc, So, alternative to synthetic shampoo, herbal shampoos can be used which contains natural herbs.

Herbs are the natural ingredients obtained by various species of plant and from different parts of the plant They are beneficial to human health and hygiene. Herbs are used since thousands of years for various preparations like medicines, cooking, flavouring agents etc.

In this herbal shampoo formulation it contains natural ingredients which are extracted from different parts of plants such as fruits (rather, amla), seeds (fenugreek), beans (shikakai), These are beneficial both economically and also regarding the health care. The main aim of herbal shampoo is to eliminate the harmful synthetic ingredients from the shampoo and providing safe natural ingredients.

1.1. Properties

- To make hair smooth and shiny
- To Produce good amount of foam
- It Should not cause irritation to scalp , eyes , skin
- It Should effectively remove dirt.

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1.2. Functions of shampoo

- It should remove dirt
- It should impart pleasant fragrance to hair
- It should produce good amount of foam
- It should not have any side effects

1.3. Ingredients

- Reetha
 - Shikakai
 - Fenugreek seeds
 - Amla
 - Neem
-

2. Materials and method

2.1. Plant collection

Neem leaves are collected from the surroundings.



Figure 1 Neem leaves

2.2. Extraction method



Figure 2 Extraction of Neem

Neem leaves were washed with distilled water, dried under shade in a clean environment. The dried leaves were powdered using a grinder. The powder was taken for methanolic extraction (15 gms of neem powder was diluted with 75 ml of methanol for 7 days). The decoction was subjected to filtration for clear neem extract.

2.3. Formulation table

Table Ingredients quantities and their use

Ingredients	quantity	uses
Fenugreek seeds	3.75 gm	Promote hair growth
Ritha	10.5 gm	Used as detergent
Amla	32 gm	Enhance hair texture
Shikakai	32 gm	Boots lusture
Neem	q.s	Preservative
Distilled water	350 ml	For soaking

2.3.1. Procedure

- Accurately weighed all the ingredients (fenugreek seeds, Amla, Ritha, shikakai)
- Soaked the ingredients for overnight in distilled water
- Boiled the ingredients in the same distilled water on medium flame
- The mixture was cooled
- Filtered the mixture
- To the filtered solution sufficient quantity of neem was added as preservative
- The formulated shampoo was stored in a suitable container and label it.
- Evaluation tests were carried out

2.4. Evaluation of herbal liquid shampoo

To evaluate the prepared herbal formulation

2.4.1. Physical appearance or visual inspection

The prepared herbal shampoo was evaluated in terms of foam producing ability and clarity,

2.4.2. Determination of Ph

The pH is determined for the prepared herbal shampoo by mixing 1 gm of shampoo with 9 ml distilled water.

2.4.3. Dirt dispersion

To determine the dirt dispersion of formulated herbal shampoo, 2 gms of shampoo was added to the test tube containing 10 ml distilled water, then 1 drop of indian ink was added to the test tube, test tube was stoppered and shaken for 10 times. The amount of ink was estimated in the foam as none, light, moderate or heavy,

2.4.4. Viscosity or rheological evaluation

To determine the viscosity, 10 ml of shampoo was taken in the beaker and spindle is dipped in it for 5 min, Reading was taken.

2.4.5. Determination of percent of solid contents

The clean evaporating dish was weighed, to that 4 gms of shampoo was added, the evaporating dish was placed on hot plate until the liquid was evaporated, the weight of solid after drying was calculated,

2.4.6. Foaming ability and foaming stability

Cylinder shake method is used for determining foaming ability. 50ml of the 1% shampoo solution is put in 250ml graduated cylinder, cover the cylinder with hand and shake for 10 times. The total volume of the foam contents after 1 minute shaking is recorded. The foam volume is calculated. Foam should retain for at least 5 mins.

2.4.7. Anti - microbial test

The formulated herbal shampoo was performed on micro-organism E. coli by using cup and plate method as per standard procedure,

Nutrient agar medium is prepared by dissolving beef extract, peptone powder, sodium chloride and agar powder in distilled water in a beaker. Then it is heated on a Bunsen burner until it forms a gel like consistency. Then it is transferred to boiling tubes, Sterilized in autoclave at 121 degree C for 1 hr. Petri plates were sterilized. The sterilized petri plates were taken and anti-microbial activity test against E. coli was done. Add the culture to the medium and then transfer to sterile petri plates under aseptic conditions. Allowed to solidify

After solidification hole is made in it with a cutter and cavity is filled with sample of shampoo. The plate is allowed to incubate for 24 hrs. After 24 hrs the plate was observed for zone of inhibition,

2.4.8. Stability studies

The stability studies of herbal shampoo was done by storing some amount of shampoo at different temperatures i.e., at room temperature, refrigerator, hot air oven for one week. There is no change in colour, odour, appearance,

3. Result and discussion

3.1. Physical appearance

The results of physical appearance of herbal shampoo



Figure 3 Physical appearance test

COLOUR: dark brown

SMELL: amla and shikakai smell

3.2. Determination of PH

PH is the important factor for preventing hair damage. The results of formulated herbal shampoo is: PH – 5.7

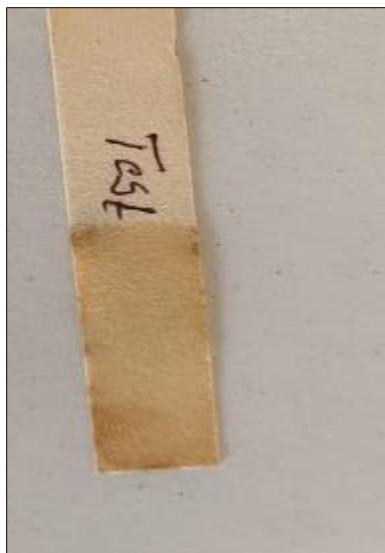


Figure 4 Ph test

3.3. Dirt dispersion

Dirt dispersion: No dirt is formed in the foam

The results indicate prepared formulation is satisfactory



Figure 5 Dirt desperation test

3.3.1. Viscosity or rheological evaluation

Viscosity – 1.2

3.3.2. Determination of solid percent of contents:

The solid content in shampoo

% of solid contents – 23 %

3.3.3. Foaming ability and foaming stability

The foaming stability of shampoo are

Foam volume – 80 ml

Foam time - 25 min

3.3.4. Antimicrobial test

The zone of inhibition of herbal shampoo was found to be 2cm



Figure 6 Antimicrobial test

3.3.5. Stability studies

There is no change in colour, odour and appearance

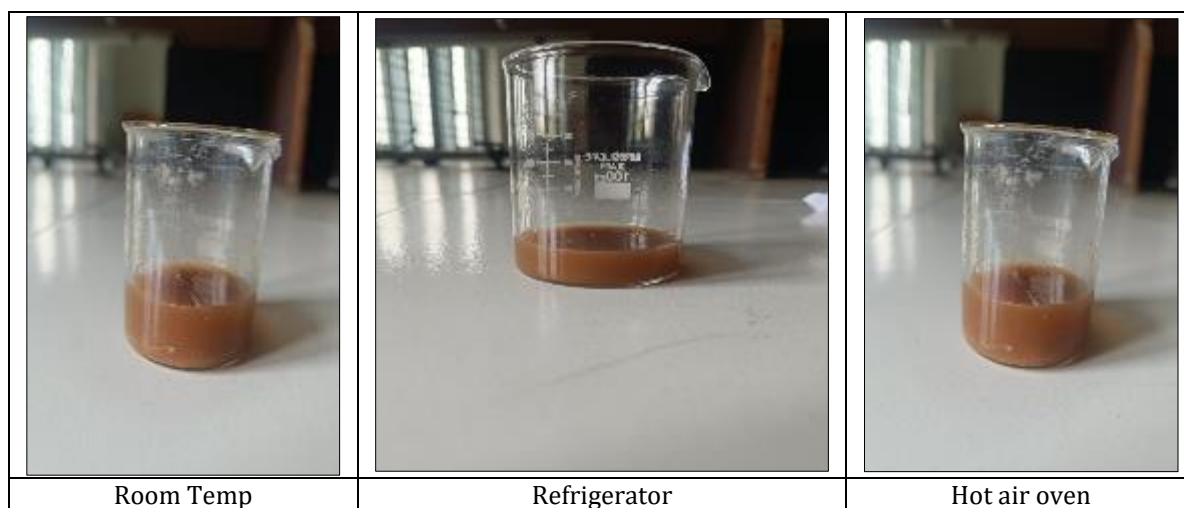


Figure 7 Herbal shampoo in different temperatures to check stability



Figure 8 Herbal shampoo



Figure 8 Bottled herbal shampoo



Figure 9 Labelled herbal shampoo

4. Conclusion

The formulated herbal shampoo is based on traditional knowledge it is not only safe compared to synthetic shampoos but also greatly reduce the hair loss. To reduce use of synthetic agents or surfactants which cause certain affects like scalp irritation, the present study focus only on use of natural herbs instead of synthetic. The ingredients used in this formulation is completely natural and has many benefits such as remove dirt from hair, make hair shiny, improve hair growth, nourish hair follicles, treat dandruff , prevent hairloss

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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