

A Research Article on Formulation and Evaluation of Herbal Shampoo

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Abstract: *The goal of this research is to create a herbal shampoo that promotes hair growth and strength without harming or destroying it. The herbs reetha, amla, neem, fenugreek, hibiscus, and shikakai were chosen using a traditional system. Shampoo is used to clean the hair while also conditioning, smoothing, and maintaining hair health, keeping it free of dandruff, filth, grease, and lice. Above all, it is meant to provide safety benefits. Antimicrobial agents can be classed as either bactericidal (killing bacteria) or bacteriostatic (slowing the growth of germs). Antibacterial agents are crucial in the fight against infectious diseases. As a result, we discovered good qualities for herbal shampoo in our study, and we will continue to optimise the benefits of herbal shampoo for human usage as a cosmetic product.*

Keywords: Cosmetics, Herbal Shampoo, Reetha, Fenugreek.

I. INTRODUCTION

Herbal medicine is the study of pharmacognosy and the application of medicinal herbs as a foundation for traditional medicine. Chemical formulations made up of many compounds that can heal hair problems but also cause hair damage. According to certain worldwide study, the ingredients in herbal shampoo cause cancer. Surfactants (synthetic) are added to synthetic shampoos for their cleansing and foaming properties, but long-term use causes major side effects such as eye irritation, scalp irritation, hair loss, and hair dryness. Shampoos containing natural herbs can be used as an alternative to synthetic shampoo.

1.1 Dandruff

Dandruff is a common condition that causes the skin on the scalp to flake. It isn't contagious or serious. But it can be embarrassing and difficult to treat. Mild dandruff can be treated with a gentle daily shampoo.

1.2 Shampoo

Shampoo is a basic hair care product that accounts for the majority of hair care products. Shampoo comes in a viscous liquid state, with the exception of a waterless solid form such as a bar. Shampoo was created to replace soap in the cleansing of the scalp and hair by removing undesirable sebum, dandruff, dust, and hair care product residues.

A. Need of Shampoo

Sebum is a fatty fluid produced by the skin of our heads. It's made to protect the hair by coating the entire head with it. This gives the hair a healthy sheen, but too much of it makes the hair look unclean.

B. Ideal Properties of Shampoo

- To make the hair silky and lustrous.
- Make a substantial amount of foam.
- It should not irritate the scalp, skin, or eyes.
- It should be able to remove dirt fully and effectively.
- Give your hair a pleasant scent.
- The hand should not be rough and chapped.

1.3 Objectives

- To develop herbal shampoo
- To test herbal shampoo.
- To decrease the negative effects of chemical formulations and hair loss.
- To encourage hair growth.

1.4 Functions of Shampoo

- It must remove dirt or soil thoroughly and effectively.
- It should thoroughly clean the hair.
- It should generate enough foam to please the user.
- Rinsing with water should easily remove it.
- It should leave the hair with a lovely scent.
- It should have no negative side effects or cause skin and eye discomfort.

II. MATERIAL AND METHOD

2.1 Ingredients

Sr. No.	Constituents	Biological source	Family	Use
1.	Hibiscus leaves	Dried leaves of Hibiscus rosea	Malvaceae	Prevent hair loss and growth promoter.
2.	Neem leaves	Dried leaves of Azadirachta indica	Meliaceae	Prevent the dryness of hairs and flaking of hairs, antimicrobial agent.
3.	Sandal wood	Heartwood of the stems and santalim album Linn.	Santalaceae	Antibacterial property, perfume.
4.	Amla fruit	Dried ripe fruits of Embelica officinalis.	Phyllanthaceae	Darkening of hair and hair growth promoter.
5.	Aloe vera	Dried latex of aloe leaves.	Asphodelaceae	Conditioner and moisturizing effect.
6.	Shikakai fruit	Dried pods of Acacia concinna.	Fabaceae	Foam base and antidandruff.
7.	Reetha fruit	Dried fruits of Sapindus mukorossi.	Sapindaceae	Detergent, foaming property and antidandruff.
8.	Coffee powder	Dried ripe seeds of Coffea arabica.	Rubiaceae	Detoxification of scalp.
9.	Papermint powder	Dried leaves of Mentha piperment.	Lamiaceae	Antimicrobial activity, prevent hair loss, cooling effect.
10.	Fenugreek powder	Dried ripe seeds of T. foenum graecum.	Fabaceae	Prevent hair loss.
11.	Xanthum gum	-	-	Gelling agent.
12.	Almond	Dried ripe seeds of prunus amygdalus.	Rosaceae	Preservative, sedative, demulcemy.
13.	Distilled water	-	-	Vehicle.

Table 1: Ingredient Profile

III. METHODOLOGY

- We used the formula to weigh all of the ingredients.
- One part water was used to make a decoction of hibiscus, neem, amla, alovera gel, papermint powder, and fenugreek powder.
- In another part of the water, a decoction of shikakai and reetha was made.
- Using muslin cloth, filter both solutions. Separately collect the filtrate.
- Continuous stirring was used to mix the aforementioned filtrate together.
- As a thickening agent for herbal shampoo, mixed xanthum gum is semisolid in nature.

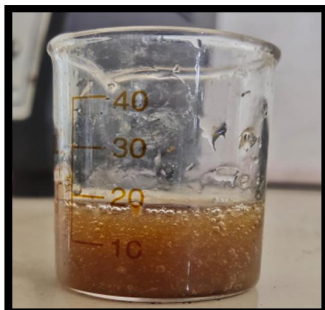


Fig. 1 Formulation of herbal shampoo

1.2 Composition

Sr. No.	Ingredient and Excipient	Quantity [20 ml]
1.	Hibiscus leaves	1 gm
2.	Neem leaves	1 gm
3.	Sandal wood	1 gm
4.	Amla fruit	2 gm
5.	Aloe vera	1ml
6.	Shikakai fruit	3 gm
7.	Reetha fruit	3 gm
8.	Coffee powder	1 gm
9.	Papermint powder	1 gm
10.	Fenugreek powder	1 gm
11.	Almond	0.8 gm
12.	Xanthum gum	0.2 gm
13.	Distilled water	Q. S.

Table 2: Composition of Herbal Shampoo

III. EVALUATION TEST

The shampoo was tested for the following parameters:

Organoleptic Evaluation:

1. **Colour:** The formulation's colour was tested against a white background.
2. **Odour:** The odour of the formulation was assessed by smelling it.

Physicochemical Evaluation

- **Determination of pH:** Within 24 hours of preparation, the pH was tested with a digital pH metre.
- **Determine percent of solid content:** Weigh an evaporating dish that was clean and dry, then add 3 grams of herbal shampoo to it. Only the exact weight of shampoo was estimated, and the evaporating dish with shampoo

was placed in a hot air oven to evaporate the liquid component. Only the weight of the shampoo (solid) was calculated.

- **Dirt dispersion test:** In a test tube containing 10 mL of distilled water, two drops of shampoo were introduced. One drop of ink was put to the test tube, which was then stopped and shaken for 5 minutes. None, light, heavy, or moderate amounts of ink were assessed in the foam.
- **Foaming ability:** 5ml shampoo was placed in a test tube, which was covered with a hand and shaken 10 times. After a one minute shake, the total volume of foam content. All that was calculated was the foam volume.
- **Stability test:** The stability and acceptability of the formulation's organoleptic qualities (odour and colour) after two months of storage demonstrated that it is chemically and physically stable.
- **Eye irritation test:** The herbal shampoo passed the eye and skin irritation test with flying colours, indicating that it has no negative effects on the skin or eyes. Due to the lack of synthetic surfactants, this is the case. The majority of synthetic surfactants cause eyelid inflammation and corneal discomfort. However, all of the elements in this herbal shampoo recipe are derived naturally. As a result, it has no negative impact on the skin or eyes.
- **Biological activities:** The beneficial or harmful effects of a medicine on living matter are referred to as biological activity or pharmacological activity in pharmacology. Biological activity refers to a molecular entity's ability to have a certain biological effect on a target.
- **Antimicrobial activity:** Antimicrobial activity is a broad phrase that encompasses all active principles (agents) that impede bacterial development, prevent the formation of microbial colonies, and may even kill microorganisms.
- **Antifungal activity:** An antifungal medicine, also known as an antimycotic medication, is a fungicide that is used to treat and prevent mycosis such as ringworm, candidiasis, and other fungal infections.

IV. RESULT AND DISCUSSION

Table 3: Results of evaluation tests

Sr. No.	Evaluation tests	Result obtained
1.	Physical appearance	Light brown, good foaming
2.	Transparency	Clear
3.	Texture	Smooth
4.	Odour	Good
5.	pH	5
6.	Percent of solid content	2.5%
7.	Dirt dispersion	Light
8.	Stability test	Stable after 2 months
9.	Eye irritation	No
10.	Foaming ability and foaming stability	5ml

Biological Activities:

Table 4: Results of biological activities

Type of Evaluation	Parameter	Zone Of Inhibition	Result
Microbial Evaluation	Antifungal Activity	Zone of Inhibition Observed Diameter of Zone : 20 mm	Antifungal Activity Present
	Antibacterial Activity	Zone of Inhibition Observed Diameter of Zone : 23 mm	Antibacterial Activity Present



Fig. Antifungal Activity



Fig. Antibacterial Activity

V. CONCLUSION

The goal of this research was to create an all-natural shampoo that could compete with synthetic shampoos on the market. Not only was the designed shampoo safer than chemical conditioning products, but it also significantly reduced hair loss during combing and strengthened hair growth. We made a herbal shampoo with plant extracts that have been used for centuries in Asia and are known for their hair-cleansing properties. Instead of utilizing cationic conditioners, we employed plant extracts such as Shikakai, Neem, Aloe, Peppermint, Amla, and others to promote hair development and conditioning. We used almond powder to preserve the food and thus avoided the dangers of chemical preservatives. To keep the acidic scalp, the pH of the shampoo was adjusted to 5. The herbal mixture has antifungal and antibacterial properties. To eliminate the risk of chemical preservatives, a physicochemical technique was adopted to preserve the formulations. Physical characteristics such as colour, odour, pH, eye irritation test, dirt dispersion, foaming ability, and stability studies were assessed for the prepared formulations polymers. This mixture can be used as a herbal shampoo. It may be concluded from the research that the created herbal formulation produced satisfactory results.

ACKNOWLEDGEMENT

We owe a debt of gratitude to the Rural Education Institutes and Samarth Institute of Pharmacy, Belhe, Pune, for their invaluable advice and assistance.

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