

A Review On, “Formulation and Evaluation of Herbal Shampoo for Hair Care”.

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Submitted: 05-05-2023

Accepted: 15-05-2023

ABSTRACT:

Shampoos are perhaps the largest sales market among hair care products as they are part of the cosmetics of everyday life. Synthetic preservatives and synthetic detergents can cause adverse effects on consumers. A more radical approach to reducing synthetic ingredients is to incorporate natural extracts that have functional parity with synthetic ingredients. Shampoo is a hair cleansing aid and one of the most important beauty products. B. conditioning, smoothing the hair surface, good hair health, d. H. Expect dandruff, dirt, grease, lice free hair and most of all safety benefits. The scalp is one of the most receptive parts of the body, so products applied to the scalp enter the blood directly without being filtered. Numerous skin and hair ailments occur in scenarios of dietary changes, stress levels and environmental conditions that depend on it. Ocimum Sanctum (Tulsi), Aloe Vera (Aloe), Hibiscus Rosa Sinensis (Porcelain Rose), Embelica Officinalis (Amla), Lawsonia Inner mis (Henna), Citrus Lemon (Lemon), and other proven hair care agents. By combining multiple plant-derived ingredients, we have achieved a highly effective dry powder shampoo. A laboratory-scale formulation was performed and evaluated on a number of parameters to confirm its safety and efficacy.

Key Words: Herbal Shampoo, Hair Cleaning, Evaluation of Shampoo.

I. INTRODUCTION:

Shampoo is a liquid or creamy preparation made from soap or detergent for washing hair. Shampoo is usually a hair care product. In the form of a viscous liquid used to clean hair. The purpose of using shampoo is to remove unwanted build-up, Condition hair without stripping it of unruly sebum¹. Shampoo is the most common hair

type process. Shampoo is primarily a product for washing the hair and scalp. In the current scenario, it seems unlikely.

Herbal shampoos have better performance and safety than their synthetic counterparts, but are popular with consumers. Another one a fundamental approach to popularizing herbal shampoos is to change consumer expectations for shampoos, safety and efficacy²⁻³. The English shampoo is derived from Hindustani Shampoo. Shampoo is usually 10 ~30 ingredients.

HAIR

Hair is a protein filament that grows from follicles found in the dermis. Hair is one of the defining characteristics of mammals. The human body, apart from areas of glabrous skin, is covered in follicles which produce thick terminal and fine vellus hair. Most common interest in hair is focused on hair growth, hair types, and hair care, but hair is also an important biomaterial primarily composed of protein, notably alpha-keratin.

Attitudes towards different forms of hair, such as hairstyles and hair removal, vary widely across different cultures and historical periods, but it is often used to indicate a person's personal beliefs or social position, such as their age, sex, or religion.

Ideal Properties of Shampoo

- To make the hair smooth and shiny.
- Produce good amount of foam.
- Should not cause irritant to scalp, skin and eye.
- Should completely, effectively remove dirt.
- Impart pleasant fragrance to hair.

Functions of Shampoo

- It should effectively and completely remove dirt or soil.
- It should effectively wash the hair.

- c) It should produce a good amount of foam to satisfy the user.
- d) It should be readily removed by rinsing with water.
- e) It should impart a pleasant fragrance to the hair.
- f) It should not have any side effects or causes irritation to the skin and eye

OBJECTIVE OF SHAMPOO

To formulate the herbal shampoo using an extract of amla, ritha, shikakai and understand the uses or application of the ingredients in day-to-day life⁵. To evaluate the herbal shampoo prepared from the extract of amla, ritha, shikakai to understand the stability and applicability of the shampoo. To understand the advantages of herbal shampoo over chemical-based shampoo and reduce side effect. To understand various applications⁶⁻⁷. To study evaluation of herbal shampoo and effect on hair.

Material and Method

Amla-

Strength the scalp and hair Reduce premature pigment loss from hair or greying. Stimulate hair growth Reduce hair loss Prevent or treat dandruff and scalp Prevent or treat fungal and bacterial hair and scalp infection Improve overall appearance of hair.

Figure No. 1 Amala

2. Shikakai

Cleanses hair Add more shine to the hair. Prevent greys. Provide nourishment to the hair and promote healthy and rapid hair growth. Prevent spilt ends.

Figure No.2 Shikakai

3. Aloe-vera

Calm and itchy scalp. Deep cleans oily hairs, and strengthen. Aloe vera contains proteolytic enzyme which repair dead skin cells on scalp. Promote hair growth Smooth natural curls Reduce fizziness.

Figure No. 3 Aloe vera

4. Lemon Juice

Add more shine. Get rid of dandruff Split ends Reduce hair fall.

Gives natural colour to hair Promote growth of hairs.

Used to reduced excess oil.

Figure No. 4 Lemon juice

5. Ritha

It is used in preparation of shampoo. It is used as a foaming agent in the shampoo. Can be used as a cleanser for hair. It is also used for removing lice from hair.

Figure No. 5 Ritha

6. Hibiscus

Stimulate hair growth and lost hair volume. Condition hairs. Treat dandruff and itchy scalp. Prevent premature greying.

Figure No. 6 Hibiscus

7. Liquorice

Nourishes the scalp and hair root. Heal damage. Promote blood circulation. Add shine to hair and prevent from hair fall.

Figure No. 7 Liquorice

8. Sidr

Natural hair wash. Maintain natural hair colour. Reduce scalp irritation. Strengthen dry, fine, damaged Hair.

Figure No. 8 Sidr

9. Soap Nut

Mainly used for hair soften. Make strong to hair and provide lusture. Better cleaning.

Figure No. 9 Soapnut

10. Bringraj

It is believed to maintain and rejuvenate hair and also used in hair darkening and as hair growth promoter.

It is very beneficial to prevent hair fall due to its hair growth enhancer property.

Figure No. 10 Bringraj

FORMULATION OF HERBAL SHAMPOO

Weighted all the ingredients according to the formula Soak it for overnight next morning (all ingredients become puffy and filled with water after soaking overnight).boiled ingredients in the same water on medium flame the cool the mixture

and filter it⁸. 1ml of lemon juice was also added with constant stirring .then preservatives was added

and developed shampoo was stored in a suitable container and used for the further evaluation.

Table formulation 1. Composition of formulated herbal shampoo.

Sr. No.	Material	Quantity
1.	Reetha extract	2.5 g
2.	Amla extract	2.5 g
3.	Sheekakai extract	2.5 g
4.	Sidr extract	2 g
5.	Lemon juice	1 mL
6.	Methyl paraben	1 mL of 0.05% solution
7.	Gelatin solution	q.s
8.	Citric acid	q.s
9.	Essential oil	1.1 ml

Evaluation of herbal shampoo

Physical appearance/visual inspection:

The formulations prepared were evaluated in terms of their clarity, foam producing ability and fluidity.

Determination of pH:

The pH of 10% shampoo solution in distilled water was determined at room temperature 25°C³. Determine percent of solids contents: A clean dry evaporating dish was weighed and added 4 grams of shampoo to the evaporating dish. The dish and shampoo was weighed. The exact weight of the shampoo was calculated only and put the evaporating dish with shampoo was placed on the hot plate until the liquid portion was evaporated. The weight of the shampoo only (solids) after drying was calculated⁹.

Wetting time:

The canvas was cut into 1-inch diameter discs having an average weight of 0.44g. The disc was floated on the surface of shampoo solution 1%w/v and the stopwatch started. The time required for the disc to begin to sink was measured accurately and noted as wetting time.

Rheological evaluations:

The viscosity of the shampoos was determined by using Brookfield Viscometer (Model DV-1 Plus, LV, USA) set at different spindle speeds from 0.3 to 10 rpm³. The viscosity of the shampoos was measured by using spindle T95. The temperature and sample container's size was kept constants during the study¹⁰.

Dirt dispersion:

Two drops of shampoo were added in a large test tube contain 10 ml of distilled water. 1

drop of India ink was added; the test tube was stoppered and shakes it ten times. The amount of ink in the foam was estimated as None, Light, Moderate, or Heavy.

Cleaning action:

5 grams of wool yarn were placed in grease, after that it was placed in 200 ml. of water containing 1 gram of shampoo in a flask¹¹. Temperature of water was maintained at 35°C. The flask was Shaked for 4 minutes at the rate of 50 times a minute. The solution was removed, and sample was taken out, dried and weighed. The amount of grease removed was calculated.

Surface tension measurement:

Measurements were carried out with a 10% shampoo dilution in distilled water at room temperature. Thoroughly clean the stalagmometer using chromic acid and purified water. Because surface tension is highly affected with grease or other lubricants.

Detergency ability:

The Thompson method was used to evaluate the detergency ability of the samples. Briefly, a crumple of hair was washed with a 5% sodium lauryl sulphate (SLS) solution, then dried and divided into 3g weight groups. The samples were suspended in a n-hexane solution containing 10% artificial sebum and the mixture was shaken for 15 minutes at room temperature. Then samples were removed, the solvent was evaporated at room temperature and their sebum content determined¹²⁻¹³. In the next step, each sample was divided into two equal parts, one washed with 0.1 ml of the 10% test shampoo and the other considered as the negative control. After drying, the resided sebum

on samples was extracted with 20 ml n-hexane and re-weighed. Finally, the percentage of detergency power was calculated.

Foaming ability and foam stability:

Cylinder shake method was used for determining foaming ability. 50 ml of the 1% shampoo solution was put into a 250 ml graduated cylinder and covered the cylinder with hand and shaken for 10 times. The total volumes of the foam contents after 1 minute shaking were recorded. The foam volume was calculated only. Immediately after shaking the volume of foam at 1-minute intervals for 4 minutes were recorded¹⁴.

Skin sensitization test:

The guinea pigs were divided into 7 groups (n=3). On the previous day of the experiment, the hairs on the backside area of guinea pigs were removed. Shampoos were applied onto nude skin of animals of groups. A 0.8% v/v aqueous solution of formalin was applied as a standard irritant on animal. The animals were applied with new patch/formalin solution up to 72 hours and finally the application sites were graded according to a visual scoring scale, always by the same investigator. The erythema scale was as follows: 0, none; 1, slight; 2, well defined; 3, moderate; and 4, scar formation (severe)¹⁵.

Eye irritation test:

Animals (albino rats) were collected from animal house. About 1% shampoo solutions was dripped into the eyes of six albino rabbits with their eyes held open with clips at the lid. The progressive damage to the rabbit's eyes was recorded at specific intervals over an average period of 4 seconds. Reactions to the irritants can include swelling of the eyelid, inflammation of the iris, ulceration, haemorrhaging (bleeding) and blindness.

Surface characterization:

Surface morphology of the hairs was examined by scanning electron microscopy (Leo

430, Leo Electron Microscopy Ltd., Cambridge, England). The hair samples were mounted directly on the SEM sample stub, using double side stitching tape and coated with gold film (thickness 200nm) under reduced pressure (0.001 mm of Hg). The photomicrographs of suitable magnification were obtained for surface characterization¹⁶⁻¹⁷.

Stability studies:

The thermal stability of formulations was studied by placing in glass tubes and they were placed in a humidity chamber at 45°C and 75% relative humidity. Their appearance and physical stability were inspected for a period of 3 months at interval of one month.

Evaluation of herbal powder shampoo

Solubility:

Solubility is defined as the ability of the substance to soluble in a solvent. One gram of the powder is weighed accurately and transferred into a beaker containing 100 ml of water. This was shaken well and warmed to increase the solubility. Then cooled and filter it, the residue obtained is weighed and noted¹⁸.

Loss on drying:

Loss on drying is the loss of mass expressed in percent m/m. Two gram of the powder was weighed accurately and transferred into a dry Petri dish.

Swelling index:

The swelling index is the volume in millilitres occupied by one gram of a drug, including any adhering mucilage, after it has swollen in an aqueous liquid for 4 hour. Accurately weighed 1 g of the powder and transferred it into glass stopper measuring cylinder containing 25 ml of water. Then it is shaken thoroughly at every 10 minutes for 1 hour. After that it was kept for 3 hours at room temperature. The volume was measured in ml¹⁹⁻²².

Observation Table

Evaluation Test	Formulated shampoo
Colour	Brown
Transparency	Clear

Odour	Good
Foam type	Dense small
Wetting time	120 s

Table No. 2 Observation of Product

II. RESULT AND DISCUSSION

Shampoos were formulated by mixing equal amounts of aqueous extracts of all ingredients and soap nuts (Table 1). The above plant extracts contain plant components such as saponin, a natural surfactant with detergency and foaming power. An ideal shampoo should have sufficient viscosity and many natural substances have good viscosity. A gelatin solution (10%) behaves like a pseudoplastic forming a clear solution. Lemon Juice (1ml) added to the shampoo acts as an anti-dandruff, natural antioxidant, chelating agent and maintains the formula's acidic pH.

Fig No. 11 Herbal Shampoo

The main aim of this research was the development of stable and functionally effective shampoos. This research was carried out with the aim of creating a herbal shampoo that is safer than chemical conditioning agents and gives a smooth and smooth effect to the hair. Herbal shampoos are traditionally formulated with aqueous extracts of medicinal plants commonly used to cleanse and smooth hair. To provide effective conditioning benefits, the present study uses Mooring, Aloe vera Hibiscus, Shikakai, and Ritha extracts instead of synthetic cationic conditioning agents. Factors such as UV rays and the use of aggressive chemical products have direct and indirect effects on hair. Current research focuses on the potential of herbal extracts for cosmetic purposes. Therefore, we conclude that the formulation of Mooring Herbal Shampoo is effective in providing a smoothing and lustrous effect as well as better conditioning benefits.

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