

Research on Formulation and Evaluation of Herbal Shampoo

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Abstract: Shampoo is among the cosmetic products. It's a sort of cosmetic product where the major ingredient is surfactant. When used as directed, it can eliminate dirt, grease, irritation, and skin debris from hairs without having a negative effect on the user. In light of the potential negative effects that synthetic shampoo may have on the hair and scalp, the goal of this study is to develop and assess pure herbal shampoo. amla, hibiscus, neem, tulsi, shikakai, reetha, aloe vera, reetha, cinnamon and lemon juice were used to produce the herbal shampoo. It was then assessed for organoleptic properties, powder characteristics, foam test, dirt dispersion test, and surface tension measurement. As the chosen medications have been used for a considerable amount of time, either alone or in combination. The benefits of herbal cosmetic which have the negligible side effects, reduce allergic reaction, no chemicals added. Thus in present work, we found good properties for the herbal shampoo and further optimization study benefits of herbal shampoo on human used as beautifying agent

Keywords: beautifying agent, aesthetic attributes, cosmetic, viscous solution

I. INTRODUCTION

Hairs are the integral part of human. Hair is also a crown for humans for this reason, hair require special care to keep it shiny, smooth, difficult to broken and easy to combed. People are using herbal products for managing hair, cleaning, and beautifying purpose since ancient era.

Shampoos are mostly used as a cosmetic product it is a hair care product that is used for cleaning, beautifying, managing hair in our daily life. Shampoo is one of the cosmetic product that are used to cleanse dirt that is build up on the hair. Shampoos are a viscous solution detergent containing suitable additives preservative and active ingredients.

Nowadays many herbal, synthetic, medicated and non- medicated shampoos are available in market. As the time has passed synthetic agent have taken a large share but today people are getting aware of there harmful effects on hair, skin and eyes. However herbal shampoo popularized due to natural origin which is safer, increases consumer demand and negligible side.

Shampooing is the most common form of hair treatment. Various shampoo formulations are associated with hair quality, hair care habit and specific problems such as treatment of oily hairs, dandruff and for androgenic alopecia.

Shampoos are liquid, creamy or gel like preparations. Indian women use herbals such as Shikakai, Gooseberry and Reetha that are natural cleansing agents without harmful effects

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. If that doesn't work, a medicated shampoo may help. Dandruff is a mild form of seborrheic dermatitis. The exact cause of seborrheic dermatitis is not known, but it's likely a combination of things like too much skin oil (sebum) in the oil glands and hair follicles a type of yeast found on the skin called Malassezia.



Fig: HAIR DANDRUFF

HAIRFALL

Hair loss in women occurs when people assigned female at birth lose more than 125 hairs per day. This can cause shedding, bald spots and thinning hair. A dermatologist can help you determine what caused your hair loss and recommend treatment options.



Fig: HAIRFALL

FRIZZINESS

Dry hair develops when your hair doesn't get or retain enough moisture. This reduces its sheen and can make it appear frizzy and dull. Dry hair can affect men and women of any age, but you're more likely to develop it as you get older.



Fig: Frizzy

A mild shampoo does not contain cruel chemicals and is exceptionally delicate on the scalp and hair. It contains conditioning specialists which are not displayed in standard shampoos, making this elective a great choice. These shampoos too contain normal fixings which give fundamental supplements to advance great hair wellbeing. They won't chafe the scalp or cause hair loss.

Hair shampoos battle dryness and oiliness

What's indeed way better than a conditioning cleanser? The conditioning shampoos offer assistance in making them smooth and hydrated like never sometime recently. Utilizing shampoos extraordinarily made for dry hairs and scalp evacuates the dryness viably conjointly brings up the delicate strands. On the other hand, utilizing shampoos for sleek hairs does the opposite best thing to your hair. Over oily scalp is something that no one needs at all, and in this way, it is obligatory for you to begin utilizing great shampoos to control both dryness and sleekness in your hairs

Soothes itch and irritation

Nothing may ever be more awful than a tingling and irritation-prone scalp. To soothe the scalp aggravation, you ought to treat a small hairs treatment employing a great shampoo. Conditioning them will assist you to calm your nerves and evacuating those annoying chips. Subsequently, the application of the cleanser will in the long run alleviate your scalp making it smooth like never sometime recently.

Evacuates the redness

Redness can happen to those who most habitually utilize the assortment of unforgiving and chemical arranged items on the hairs. In this case, individuals with touchy skin can effortlessly get aroused skin which inevitably leads to numerous other hair-related issues. The standard utilization of mellow and tall- quality items can deliver you superior comes about in each way.

Keeps your hair lovely and blossomed

One of the major preferences of utilizing hairs shampoos on a standard premise is that they make them see excellent. And most vitally they include a scent to your hair strands and scalps that keep you new all day long. Moreover, issues like dryness, sleekness, and everything else can be effortlessly freed of.



Fig. Herbal Shampoo

CLASSIFICATION of SHAMPOO

1. Based on Appearance.

- Powder shampoo
- Liquid shampoo or lotion shampoo
- Gel shampoo or Solid shampoo
- Cream shampoo
- Oil shampoo
- Miscellaneous anti dandruff shampoo or medicated shampoo

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2. Based on Use or Function.

- Conditioning shampoo
- Antidandruff shampoo
- Therapeutic shampoo
- Baby shampoo
- Balancing shampoo
- Clarifying shampoo

3. Based on origin:

- Herbal shampoo
- Egg shampoo

IDEAL PROPERTIES OF SHAMPOO

1. To give the hair a glossy, smooth finish.
2. Make a sizable volume of foam.
3. Shouldn't irritate the skin, eyes, or scalp.
4. Must eliminate dirt entirely and efficiently.
5. Give your hair a nice scent.

USES OF SHAMPOO

1. The dirt or soil should be removed thoroughly and effectively.
2. The hair should be thoroughly cleaned.
3. To please the user, a sufficient amount of foam should be produced.
4. Rinsing with water should be an easy way to get rid of it.
5. It ought to give the hair a pleasing scent.
6. It shouldn't irritate the skin or eyes or have any negative side effects. physiochemical controls such as pH, density and viscosity.

II. LITERATURE REVIEW

1. Disha S. Nipurte et.al: Vol 1, Issue 3, 2022. A Review on Evaluation of Herbal Shampoo. Shampoo is one of the beautifying agent. It is a cosmetic type of products using surfactant as the main compound which when used under the specified conditions will remove surface grease, dirt, dandruff problems, irritation, skin debris from the hairs without adversely affecting the users. The purpose of this study is to formulate and evaluate pure herbal shampoo because synthetic shampoo may causes the various harmful effect on hairs and scalp. The herbal shampoo was prepared by using Bahera, Amla, Hibiscus, Neem, Tulsi, Shikakai, Brahmi, Reetha, Alo-vera, Fenugreek evaluated for Organoleptic, powder characteristics, foam test, dirt dispersion test, surface tension measurement. As the selected drugs being used since long time as a single drug or in combination. The benefits of herbal cosmetic which have the negligible side effects, reduce allergic reaction, no chemicals added. Thus in present work, we found good properties for the herbal shampoo and further optimization study benefits of herbal shampoo on human used as beautifying agent.

2. Rimjhim Arora et.al: PCJ 2019, Formulation and Evaluation of Herbal Shampoo by Extract of Some Plants. The aim of the present investigation was to formulate and evaluate herbal shampoo containing natural ingredients with an emphasis on safety and efficacy, which will avoid the risk posed by chemical ingredients. The main objective of this study was to eliminate harmful synthetic ingredient from shampoo formulation and substitute them with safe natural ingredients. An attempt has been made to combine modern formulation technology into a formula based on natural ingredients. It clears sebum, dirt, dandruff, promotes hair growth, strengthens, and darkens the hair. Moreover, it also acts as a conditioning agent and performs all these actions without affecting or damaging hair. The shampoo was prepared by taking the extracts of Aloe vera, Hibiscus rosa-sinensis, Phyllanthus emblica, Acacia concinna, Azadirachta indica, Sapindus mukorossi, Glycyrrhiza glabra and Eclipta prostrata. Evaluation of organoleptic properties, physicochemical and performance test were carried out. The results indicated that this can be used as a potential

alternative for cleaning and managing hair in a natural and effective way instead of synthetic source. The findings of this investigation reveal that chemicals have sometimes been the cause of adverse effects among consumers. The present work confirmed the successful preparation of herbal

shampoo using natural ingredients. All the ingredients used to formulate shampoo are safer and the physicochemical evaluation showed ideal results.

3. Vijayalakshmi et.al: Vol 11, Special Issue 4, 2018, AJPCR. Formulation and Evaluation of Herbal Shampoo. The aim of this present study is to prepare and formulate an herbal shampoo and to assess its physiochemical function that emphasis on safety, efficacy, eliminating harmful synthetic ingredient, and substitute with safe natural ingredients. The formulation of shampoo using the extracts of *Embllica officinalis*, *Hibiscus rosa-sinensis*, *Acacia concinna*, *Sapindus indica*, *Eclipta prostrata*, *Aloe barbadensis*, and *Cassia auriculata* in different proportions. Evaluation of organoleptic, physicochemical, and performance tests in terms of visual assessment, wetting time test, pH, assurance of solid contents, surface tension, detergency, dirt dispersion, conditioning performance, foam volume, and stability was performed. The created cleanser was clear and good appealing. It demonstrated good froth stability, detergency, good cleansing, small bubble size, low surface strain, and execution of good conditioning. The physicochemical evaluation of the formulated shampoo showed ideal results. However, to improve its quality, product performance, and safety, further development was required.

4. Miss Waghmode Monika Vasant et.al: Vol 10 Issue VI June 2022. Formulation and Evaluation of Herbal Shampoo.

*8:19 pm, 9/4/2024+ Vaishnavi Mali: The shampoo sector is probably the largest unit sale among the hair care products since shampoos are one of the cosmetic products used in daily life. Synthetic preservatives and detergents have sometimes been the cause of adverse effects among consumers. A more radical approach in reducing the synthetic ingredients is by incorporating natural extract whose functionality is comparable with their synthetic ingredients. A shampoo is a cleaning aid for the hair and is counted among the foremost beauty products. Today's shampoo formulations are beyond the stage of pure cleaning of the hair. Additional benefits are expected, e.g., conditioning, smoothing of the hair surface, good health of hair, i.e., hair free of dandruff, dirt, grease and lice and, above all, its safety benefits are expected. As the scalp is one of the most absorbent part of the body, products applied to the scalp go directly to the blood, without being filtered in any way. In the scenario of changing food habits, stress level and dependent environment conditions, number of skin and hair disorders are encountered. This herbal shampoo was formulated using natural ingredient like Fenugreek seeds, *Acacia concinna* (shikakai), *Sapindus mukorossi* (reetha), *Ocimum sanctum* (tulsi), *Aloe vera* (aloe), *Hibiscus rosa sinensis* (china rose),

Embellica officinalis (amla), *Lawsonia inermis* (henna), *Citrus lemon* (lemon), with proven efficacy of hair care preparation is prepared. The combination of several such ingredient of herbal origin has made it possible to secure highly effective dry powder shampoo. The formulation at laboratory scale was done and evaluated for number of parameters to ensure its safety and efficacy.

5. Tanya Malpani et.al: JPP 2019, Formulation and Evaluation of Pomegranate based Herbal Shampoo. The aim of the present study was to formulate and evaluate herbal shampoo containing natural ingredients with an emphasis on safety and efficacy. It clears dirt, dandruff, promotes hair growth, lustre, strengthens and darkens the hair. The shampoo was prepared by taking the extracts of Pomegranate (active ingredient), Curry Leaves, Ginger, *Aloe vera*, and *Reetha* in different proportions. Several physicochemical tests were performed for visual assessment, wetting time, pH, assurance of solid contents, surface tension, detergency, dirt dispersion, conditioning performance, foam stability. The formulated herbal shampoo is black in color with demonstrable good froth stability, detergency, good cleansing, low surface tension, optimum pH and conditioning activity. Dirt dispersion of herbal shampoo is light along with 46 ml foam height. All these are the ideal characters for good quality of the herbal shampoo to be used in daily life. However, further scientific investigation is required for validation of its overall quality.

6. Ashwini Sukhdev Pundkar et. al: vol 9, Issue 5, WJPR 2020. Formulation and Evaluation of Herbal Liquid Shampoo. A liquid or cream preparation of soap or detergent to wash the hair is called as shampoo. Shampoos are the products which removes surface grease, dust from the hair shaft and scalp. Shampooing is the most common form of hair treatment. Shampoos are primarily being products aimed at cleansing the hair and scalp. In the present scenario, it seems improbable that herbal shampoo, although better in performance and safer than the synthetic ones, will be popular with the consumers. A more radical approach in popularizing herbal shampoo would be to change the consumer

expectations from a shampoo, with emphasis on safety and efficacy. The main objective of this study was to eliminate harmful synthetic ingredient from herbal shampoo formulation and substitute them with a safe natural ingredient.

7. Swarnlata Saraf et. al: RJC Jan 2021 Formulation and evaluation of Herbal Shampoo containing Extract of Allium Sativum. Allium sativum, family Alliaceae possesses antioxidant, antimicrobial, antitumour, antimutagenic, anti-inflammatory, antiviral and antiulcer properties. The aim of this study was to take the benefit of the nature of A. sativum extract and prepare shampoo incorporating in the herbal constituent base and evaluate this natural herbal shampoo. The herbal shampoo formulations comprising of aqueous extract of Allium sativum (5% to 30% w/w), coconut oil, castor oil, olive oil, fragrance were prepared and evaluated for physicochemical parameters and the results showed the production of stable herbal shampoos. The pH (6.22 ± 0.01 to 5.01 ± 0.02), percentage of solids (23.21 ± 0.02 to 25.41 ± 0.04), dirt dispersion, surface tension (37.25 ± 0.45 to 39.87 ± 0.15), viscosity (6.5 ± 0.2 to 5.4 ± 0.2), skin irritation test (no irritation) and visual stability. Formulations were clear, had good foam formation, foam quality and retention with proper rheological properties and skin compliances. The formulations with 10 % extract showed best results of evaluation parameters. The efficacy was in the range 10 % extract containing shampoo (F2) > 5 % extract containing shampoo (F1) > 20 % extract containing shampoo (F3) > 30 % extract containing shampoo (F4).

8. Km. Shiva, Suraj Mandal et. al: Jan 2021 IJSDR vol 6, Formulation and Evaluation of Topical Antifungal gel of Fluconazole using Aloe vera gel. The Present research is based on developing Topical gel formulation of fluconazole with the help of natural Aloe Vera gel. Fluconazole is a Triazoles derivative and used to prevent and treat candidiasis. Taking fluconazole by oral administration is not considered appropriate as it has many side effects. Commercially fluconazole topical gel preparations are available in market which is formulated with the help of synthetic polymer. Thus, this formulation is made for better patient compliance and to reduce the dose of drug and to avoid side effect like liver damage kidney damage and safe in pregnancy. Methods: The gel was formulated by changing the synthetic polymer. Various formulations like (F1, F2, F3, F4, F5 and F6) were developed by using natural polymer aloe Vera. The formulation was evaluated for % yield, spread ability, extrudability, wash ability and viscosity in vitro release study, Skin irritation study, stability testing. Result: Carried out viscosity studies of various formulations evident that formulation F1 was better to compare to other. From among all the developed formulation F1 show better drug diffusion, good rheological properties, pH of F5 formulation is sufficient to treat the skin infection. Result indicated that the concentration of aloe Vera significantly affected drug release and rheological properties of the gel. Conclusion: it was calculated that formulation F1 was the best formulation among this formulation. Hence formulation F1 should be further developed for scale-up to industrial production.

III. AIM & OBJECTIVE

AIM: FORMULATION and EVALUATION OF HERBAL SHAMPOO

OBJECTIVE:

1. 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 life.
2. To evaluate the herbal shampoo prepared from the extract of amla, ritha, shikakai to understand the stability and applicability of the shampoo.
3. To understand the advantages of herbal shampoo over chemical based shampoo and reduce side effect.
4. To reduce side effect of chemical formulation
5. To improve hair structure

PLAN Of WORK

- Exhaustive literature survey
- Selection of suitable drug and excipients
- Morphology activity
- Microscopic characteristic
- Identification test

- Formulation and development of herbal shampoo
- Optimize the formulation by performing the evaluation test of herbal shampoo

IV. METHODS & MATERIALS

Ingredients used in formulation

1) Shikakai

Biological source- Dried pods of *Acacia concinna*. Family -Mimosaceae

Uses - Foam base, cleansing agent and anti dandruff.



Fig: Shikakai

2) Reetha

Biological source-Dried fruits of *Sapindus mukorossi*. Family-Sapindaceae

Uses -Detergent, cleansing agent and antidandruff



Fig: Reetha

3) Amla

Biological source- Dried ripe fruits of *Embelica officinalis*. Family- Euphorbiaceae

Uses - Darkening of hairs and hair Growth promoter.



Fig: Amla

4) Neem

Biological source-Dried leaves of *Azadirachta indica*. Family-Miliaceae

Uses -Prevent the dryness of hairs and Flaking of hairs.



Fig: Neem

5) Cinnamon

Biological source- dried inner bark of the shoots of coppiced trees of *Cinnamomum zeylanicum*.

Family-lauraceae

Uses- stimulate hair growth, maintain the hair natural texture.



Fig Cinnamon

6) Lemon Juice

Biological Sources- dried outer part of pericarp of *citrus limonis* and *citrus medica*.

Family- Rutaceae

Uses-anti dandruff, reduce hair fall.



Fig: Lemon

7) Hibiscus

Biological Source- Hibiscus rosa- sinensis, known colloquially as Chinese. Hibiscus.

Family- Malvaceae, also known as Mallow family. Uses- hair stimulating, prevent baldness.



Fig: Hibiscus

8) Aloe vera

Biological Sources- Aloe vera, Aloe Barbadensis, Aloe ferox, Aloe Perryi Family- Liliaceae

Uses- Strengthens hair, reduce frizzy

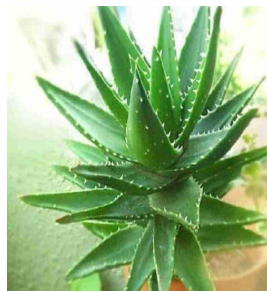


Fig: Aloe vere

APPLICATION Of INGREDIENTS

1) Shikakai Cleanses hair

Add more shine to the hair Prevent grays

Provide nourishment to the hair and promote healthy and rapid hair growth.

2) Reetha

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

3) 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

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4) Neem

Prevents dandruff and Itchy Scalp. Promotes hair growth.
Neem actively cleanses and strengthens hair follicles. Hydration for damaged hair ends.
Saves from premature greying.

5) Cinnamon

Cinnamon may stimulate circulation. Encourage hair growth and reduce hair loss. Antifungal properties.
Helps to treat dandruff.

6) Lemon Juice

Add more shine.
Get rid of dandruff. Split ends.
Reduce hair fall.
Gives natural colour to hair. Promote growth of hair.

7) Hibiscus

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

8) Aloe vera

Calm and itchy scalp. Deep cleans oily hairs Strengthens
Aloe vera contains proteolytic enzyme which repair dead skin cells on scalp.
Promote hair growth. Smooth natural curls. Reduce frizzy-ness.
Detangle hairs.

V. FORMULATION OF SHAMPOO

Sr. No.	Name of Ingredients	Quantity
1.	Sikakai	14.2gm
2.	Reetha	14.2gm
3.	Amla	3.7gm
4.	Neem	3gm
5.	Cinnamon	1.5gm
6.	Lemon Juice	0.5gm
7.	Hibiscus	2gm
8.	Aloe vera	2gm
9.	Essential oil	2ml
10.	Water	15ml

VI. METHOD OF PREPARATION

Take 14.2 gm powdered of Shikakai, 14.2gm Powdered Reetha, Take 3.7gm powdered of Amla, Take 3gm of Neem powder, 1.5gmcinnamon powder Fresh spring rosemary (optional). few drops of your favorite essential oil (lavender, rosemary, peppermint, etc.) And water. Prepare it by combining all herbs. Once the ingredients start to foam, keep a watch on it. Do not bring it to boil. Heat it on low flame without covering for 15 minutes. Use a washcloth or a filter to sieve out the oil. Remember, it will take a lot of time to drain. Collect this in a cup or bowl. Now, you can add your choice of essential oils. Then add water and transfer to a better container for regular usage.

EVALUATION TEST

The prepared formulation was evaluated for product performance which includes organoleptic characters, pH, physicochemical characterization, and for solid content. To Guarantee the nature of the items, particular tests were performed for surface tension, foam volume, foam stability, and wetting time using standard protocol.

1. Visual assessment

The formulated shampoos were evaluated qualitatively for their clarity, Odour and colour.

2. pH determination

The pH of 10% v/v formulated herbal shampoo solution in distilled water Was determined by using pH analyzer at room temperature.

3. Determination of Solid Content

Weight a clean dry evaporating dish and recorded the initial weight of evaporating dish. 4 gram of shampoo Formulation (not the 1% Solution) Were placed in clean, dry and weighed evaporating dish. Weighed dish and shampoo and recorded initial weight of shampoo and dish. It was then weighed again to confirm the exact weight of the shampoo. Put the evaporating dish with shampoo on the hot plate until the liquid portion has evaporated. The weight and percentage of the solid content of shampoo left after complete drying was calculated.

4. Surface tension measurement

The surface tension of 10% w/v shampoo in distilled water was measured using stalagmometer at room temperature. The surface tension of water at same condition was also measured Which used as a control.

5. Wetting time test

To test the efficacy of the shampoo, wetting ability of a surfactant needs to be calculated which depends on the concentration of surfactant. A canvas paper was cut into 1-inch diameter discs having an average weight of 0.44 g. The smooth surface of disc was placed on the surface of 1% v/v shampoo solution and the stopwatch started. The time required for the disc to begin to sink was noted down as the wetting time.

6. Foaming index

Cylinder shake method was used for determining ability. 5ml of shampoo was taken into measuring cylinder and volume was made up to 25ml and shaken properly for ten times. Then 5 test tubes were taken and stock solution was measured as given in following observation table. And each test tube was adjusted for volume up to 10ml by adding water. Then foam in each test was measured in cm and foaming index was calculated.

7. Dirt dispersion test

Two drops of formulated shampoo were added in a test tube contain 10 ml of distilled water test tube. to this solution, one drop of India ink was added and the test tube was stoppered and shaken ten times. The amount of ink in the foam was indicated by the rubric such as none, light, moderate or heavy.

8. Skin irritation test

Applied the solution of prepared shampoo on skin and kept for 5 min and observed for redness of skin and irritation there, were no any red coloration and the irritation to the skin.

OBSERVATION TABLE

Sr. No.	Parameter	Observation
1.	Colour	Brownish
2.	Odour	Pleasant
3.	pH	5.5
4.	Texture	Gritty
5.	Foaming Index	500
6.	Dirt Dispersion Test	Light
7.	% Solid Content	8.25%
8.	Skin Irritation Test	No Irritation

VII. RESULT

Herbal shampoo prepared is brownish in colour pleasant odour of rose oil fragrance with pH stability suitable for all skin types and stable in all evaluation parameter.

VIII. CONCLUSION

Nowadays, our new generation facing lot of problems like hair fall, itching in scalp, irritation, dandruff problems. Synthetic Shampoos tends to increase more problems such as eye, skin irritation, we probably putting ourselves at the risk of cancer and other disease. So as to compare commercial shampoo, herbal shampoo is always a better option because they have negligible side effects. The pH of the shampoo was adjusted to 5.5, to retain the acidic mantle of scalp. It was found to be harmless ,more effective and economical.

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