



THE FORMULATION AND EVALUATION OF HERBAL SHAMPOO

¹Aniket Pawar, ²Rakesh Pomnar, ³Mahesh Sawant, ⁴Rohit Aher,

⁵Komal suryawanshi

Swami Vivekanand Sanstha Institute of Pharmacy, Mungase, Malegaon, Nashik,
Maharashtra, India, 423201

Abstract

Aim and Objective: The aim of this presents formulation and evaluation herbal shampoo and to assess its physicochemical function that emphasis on safety, efficacy, eliminating harmful ingredient, and substitute with safe natural ingredients.

Material and Methods: The formulation of shampoo using the extracts of Drumstick, Hibiscus.

Ritha, Alovera, and Shikakai in different proportions. Evaluation of organoleptic, physicochemical, and performance tests in terms of wetting time test, pH, solid contents, surface tension, dirt dispersion, foam Stability, and Viscosity was performed.

Results: 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.

Conclusion: The physicochemical evaluation of the formulated shampoo showed ideal results. However, to improve its quality, product performance, and safety, further development was required.

Keywords: Herbal shampoo Patanjali herbal, Ayur herbal, Evaluation of shampoo.

Introduction

Shampoo is a polyherbal formulation that consist of extracts of Moringa oleifera (drumstick), Rosasinesis (Hibiscus) and Aloe vera gel shikakai, Ritha . These herbs have been selected on the basis of a traditional system and scientific justification with modern uses. Many synthetic shampoos are present in the current market both medicated and non medicated; however, herbal shampoo popularized due to natural origin which is safer, increases consumer demand and free from side effects. Moringaoleifera, belongs to family Moringaceae. It is indigenous to south asia, mainly in Himalayas foothills, India. Moringaoleifera is a nature's gift to mankind as it is the most nutrient-rich and multipurpose plant discovered. DOSAGE OF Moringa oleifera Leaf: 10–20ml. juice; Root bark: 2–5 g powder; Stem bark: 2–5g powder; Seed: 5– 10 powder Leaf, Flower, Fruit, Seed, Bark, root—1–8 g powder; 50–100 ml decoction. The practice of Moringa consumption, with full credence has been in tradition among many tribes of Asia. As the authenticity of Moringa benefits have been confirmed through several years, therefore, many pharmaceutical and herbal healthcare industries sell various Moringa products like Moringa-capsules, Moringa-tea, Moringa-oil, Moringa-soap, Moringa-shampoo, Moringaantiwrinkle cream etc. Moringa is actually a versatile tree and a nature's medicine cabinet. The high behenic acid content is the reason why the oil is known commercially as —Benl or —Behen oil. Japaku sum (Hibiscus rosasinensis. L flower) flower is indicated as Keshya (hair growth promoter)

Literature Review

Suchita Gokhale, et al, June 2020- 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. The herbal shampoo was Formulated using natural ingredient like Moringa, Aloe vera, and Hibiscus 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 herbal shampoo. The formulation at laboratory scale was done and evaluated for number of parameters to ensure its safety and efficacy.

Priya D. Gaikwad et. 2018- The objective of this study is to formulate and evaluate poly-herbal shampoo for cosmetic purpose from herbal ingredients. Hibiscus powder, Neem powder, Henna powder, Amla powder, Shikakai powder, Ritha powder, Alo-vera gel was procured from local market in powdered form also gel form Banyan root powder and Soya milk is prepared by homemade method, then prepared decoction of these ingredients and mixing with each other and evaluated for its organoleptic and physico-chemical characteristics. Herbal shampoo is used to cleansing of the hair also conditioning, smoothing, of the hair surface, good health of hair, hair free of dandruff, dirt grease and lice above all, its safety benefits are expected.

Dhayanithi S et. 2021- The aim of the article is to formulate a pure herbal shampoo and to evaluate its physicochemical properties. The shampoo is enriched with herbal extracts without any synthetic additives. The herbal extracts used in formulation are Sapindus mukorossi, Glycyrrhiza glabra, Azadirachta indica, Nardostachys jatamansi, Ocimum tenuiflorum, Lavandula angustifolia, Musa acuminata.

Authentication of Herbal plants

Herb authentication is a quality assurance process that ensures the correct plant species and plant parts are used as raw materials for herbal medicines. The proper authentication of herbal raw materials is critically important to the safety and efficacy of herbal medicines.

The major methods employed in the authentication of herbal materials are macroscopic and microscopic examination, and chromatography. In addition, some pharmacopoeial monographs include chemical identification tests.

Macroscopic examination involves the comparison of morphological characters that are visible with the naked eye or under low magnification with descriptions of the plant or botanical drug in floras or monographs. Characters such as size, shape and color of leaves (or leaf fragments), flowers or fruits are commonly used in macroscopic identification.

Microscopic examination focuses on anatomical structures in the plant material that are visible only with the help of a microscope.

Plant Description

Moringa leaves, seeds, bark, roots, sap, and flowers are commonly used in traditional medicine. The leaves and seed pods are used as food. Safety studies involving leaf extracts indicate moringa is very safe. No harmful effects were reported in association with human studies.

Sometimes referred to as a bean, this long, rigid pod grows on a tree. Its hard, green outer covering is rigid enough to earn its common name of drumstick. They are a popular ingredient in vegetable curries. These long, slender pods are tricky for those not brought up to eat them.

Scientific name : Moringaoleifera

Family : Moringaceae

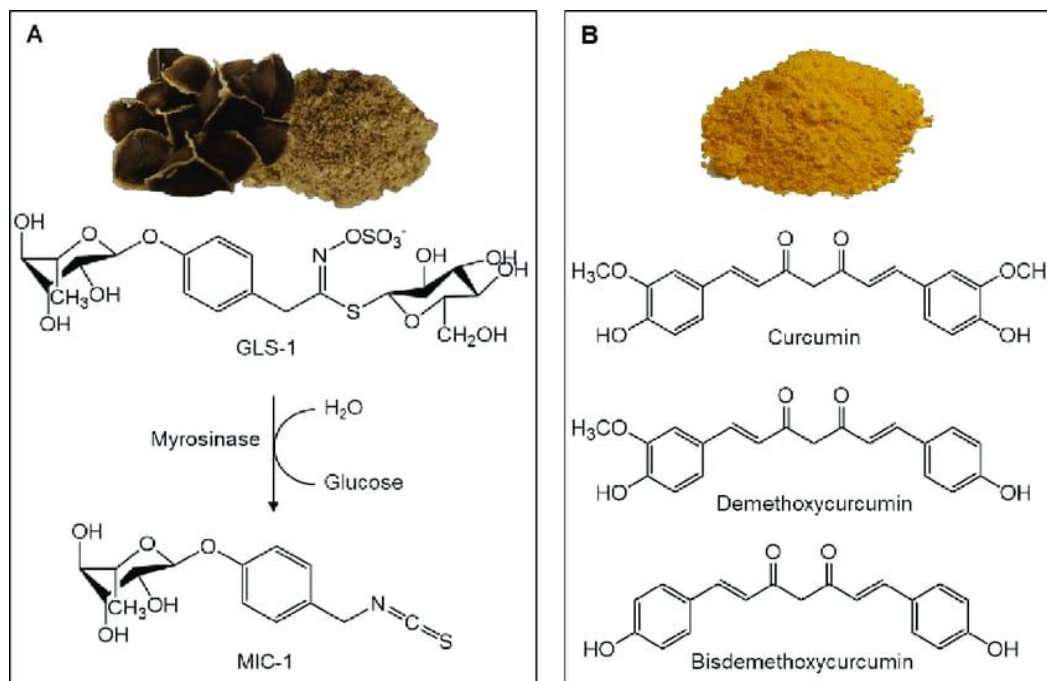
Order : Brassicales

Kingdom : Plantae

Taste :- It tastes like matcha that has been spiked with notes of spirulina-like blue-green algae. When added to water, the light powder dissolves easily, providing a distinctly “green” flavor that is bitter and slightly sweet. Dried Moringa leaf powder can also be sprinkled into smoothies, yogurts, and juices.

Moringa Oil Hair Benefits :-Hydrates, prevents and treats dry skin conditions. Acts as an anti-pollution shield

Chemical Constituent and Chemistry of Constituent



oleifera seed oil revealed that the main fatty acid, sterol, phenol and tocopherol were oleic acid, β -sitosterol, ferrulic acid and α -Tocopherol. The given results also revealed that the investigated Moringa seed oil contained a number of bioactive-compounds.

Aim: The aim of this presents formulation and evaluation herbal shampoo

Objective: 1. Herbal shampoos for hair fall are made out of natural ayurvedic ingredients, natural oils, minerals, and herbal extracted compounds. These ingredients work on to improve the moisture in your hair by hydrating the follicles and roots of your hair.

2. Herbal shampoos for hair growth are made to strengthen the hair follicles by giving essential oils and nourishment all through the root and follicles. This, in turn, promotes hair growth and stimulates the formation of new and healthy hair roots

3. Regular usage of Herbal shampoos can do wonders for your hairs. Our scalps need to maintain a perfect balance of oil and pH levels in order to have beautiful, healthy, and strong hair. By using Herbal shampoos, you can get the perfect oil balance.







4. Herbal shampoos are made out of natural and essential antiseptic properties that prevent our hair and scalp from the harsh UV rays of the sun thus preventing skin infections.



5. Ayurvedic Herbal shampoos are made of natural ingredients suitable for every type of skin. So, there is no need to worry about any skin allergies with the use of herbal shampoos.

6. Hair grows healthy with regular usage of herbal shampoos thus giving your hair a lustrous, shiny, and bouncy hair.

7. Herbal shampoos also keep the natural color of your hair and with regular usage, even enhance them. Along with this, they keep the hair healthy, shiny, bouncy with a well-balanced and healthy scalp.

Table 1 :- Description of ingredient of herbal shampoo :

Sr. No.	Common Name	Pictures	Botanical Name	Parts used	Category
1	Drumstick		MoringaOliefera	Seed	Core ingredient
2	Alovera		Aloe Barbadensis	Pulp	Smoothing agent
3	Hibiscus		Rosa Sinesis	Flowers	Conditioning agent
4	Shikakai		Acacia concinna	Fruits	Antifungal, Nourish follicles, Curb dandruff
5	Ritha		Sapindusmukorossi	Fruits	soapberry, soapnut, washnut, aritha.
6	Sodium Lauryl Sulphate		Sodium dodecylsulfate	Powder	Fat Emulsifier, Wetting agent, Detergent in Cosmetics.

7	Methyl Cellulose		Hypromellose	Powder	Thickening Agent, Stabilizing Agent.
8	Rose Water		Rosa damascena	Liquid	Flavoured water, Perfume agent.

Drumstick (Moringa) :-

Moringa trees can reach a height of about 9 metres (30 feet) and have corky gray bark. The leaves are bi- or tripinnately compound and have oval-shaped leaflets with conspicuous swellings (pulvini) where the parts join. The plants bear scented clusters of white pealike flowers with five stamens (male parts) held to one side. The angled daggerlike fruits sometimes grow to 45 cm (18 inches) long and are explosively dehiscent.

Moringa has been used for centuries due to its medicinal properties and health benefits. It also has antifungal, antiviral, antidepressant, and anti-inflammatory properties.

Moringa, (*Moringaoleifera*), also called horseradish tree or drumstick tree, small deciduous tree (family Moringaceae) native to tropical Asia but also naturalized in Africa and tropical America. Flowers, pods, leaves, and even twigs are cooked and eaten. The leaves, which can also be eaten raw when young, are especially nutritious and are high in iron, potassium, and vitamin C. A horseradish-flavoured condiment is prepared from the crushed roots. Ben oil, extracted from the seeds, is used by watchmakers and in cosmetics; perfume makers value it for its retention of scents.



Fig 1. Drumstick (Moringa)

Moringa seed oil is beneficial for protecting hair against free radicals and keeps it clean and healthy. Moringa also contains protein, which means it is helpful in protecting skin

cells from damage. It also contains hydrating and detoxifying elements, which also boost the skin and hair.

Alovera (Aloe Barbadensis):-

Aloe vera gel: The simplest thing to do is scoop out the aloe vera gel, blend it well, and apply that directly on the scalp. Massage this well and keep it on for an hour or so. Based on the hair problem you want to address, you can also add other ingredients to this blend, like essential oils, carrier oils, etc. For example, if you face dandruff problems, use tea tree oil. Tea tree oil and aloe vera, when combined, can treat dandruff effectively because of their antifungal and antibacterial properties.

Products with aloe vera: Most of the over-the-counter products are too harsh on the hair because they contain harmful chemicals. However, the next time you choose a hair product, look for one with aloe vera as the main ingredient. The Tru Hair Tea Tree Shampoo, Onion Shampoo, Apple Cider Vinegar Shampoo, Herbal Hair Powder, and more have aloe vera as one of their key ingredients. These products are also free of harmful chemicals like LLPs, Sulphates, Parabens, etc. Aloe vera in a product is highly beneficial as you can use it without going through the hassle of extracting the gel by yourself.



Fig 2. Alovera (Aloe Barbadensis)

Benefits Of Aloe Vera For Hair:

Moisturising: The high water content of aloe vera helps keep the scalp and hair hydrated. It helps lock in moisture, fighting dryness. Using aloe vera gel on your scalp will result in smooth, soft locks that look and feel healthy.

Reduces dandruff: Aloe vera has been proven to reduce dandruff significantly. Dandruff caused by dryness is out of the question if the scalp is kept moisturised. Aloe vera has

properties that fight fungal and bacterial microbes. This helps keep the scalp clean and clear of dandruff-causing microbes. Tea tree oil and aloe vera are one of the best combinations to deal with stubborn dandruff.

Helps itchy scalp: An inflammatory skin condition named seborrheic dermatitis can make your scalp red and itchy. The soothing property of aloe vera helps reduce itchiness. The fatty acids in the plant have anti-inflammatory properties that keep flaky and itchy scalp away. It also has antiseptic properties to help heal infections and other scalp infections that may be causing itchiness.

Cleanses the scalp: Aloe vera is a natural cleanser that helps remove dead skin cells, dirt, excess sebum, and even tough product build-up. The antimicrobial property of aloe vera keeps the scalp clean without stripping it off of its natural oils or making the scalp too dry.

Protect the hair: Hair problems caused by UV radiation are often ignored. The damage caused to the hair because of constant subjection to the sun's harsh rays is a matter of concern. The high collagen content in aloe vera makes it the perfect opponent to fight sun damage and cool the scalp.

Styling product: Aloe vera can be used to style the hair. The plant's gel has a serum-like slimy texture that will help in styling your hair the way you want to.

Reduces frizz: Aloe vera makes the hair soft. It helps retain your natural oils that, in turn, keep frizzy hair away. The hydrating and moisturising property of aloe keeps dryness away and, with it, frizzy hair.

Improves hair growth: By improving blood circulation and providing the scalp with the many important nutrients needed for hair growth, it contributes to better hair growth. Vitamins A, C, and E in aloe vera improve cell turnover, promoting new hair growth. It also has nutrients like vitamin B12 and folic acid, known to reduce hair fall. So, the combined result of reduced hair fall and boosted hair growth is healthy, long, and thick hair.

Balances hair pH: Most over-the-counter hair products have the wrong pH for the hair, disrupting the balance. However, aloe vera has a pH similar to that of hair. Using aloe vera regularly will help bring the balance back, which may have been changed due to using the wrong kind of products.

Somewhere in the corner of your garden is a forgotten pot of aloe vera. And somehow, this forgotten plant flourishes better than the rose plant you give all your attention to. This ability to thrive with the bare minimum is only the tip of what aloe vera is capable of.

From healing burns to lowering blood sugar, aloe vera can help with a range of benefits, one of which is hair care. The succulent has translucent flesh that can be used in multiple ways to improve your hair health.

Aloe vera has 75 potentially active constituents: vitamins, enzymes, minerals, sugars, salicylic acids, amino acids, and more. These combined nutrients can help you deal with hair problems like dandruff, hair fall, frizz. This elixir of a plant can be used by itself or be combined with other ingredients to enhance the results.

Hibiscus (Rosa Sinesis) :-

Hibiscus Conditioner For Smoother Hair. The amino acids (Keratin) in Hibiscus make it an excellent conditioner. Hibiscus nourishes the hair follicles, soften the hair and make it more manageable.

To reap the nourishing benefits of Hibiscus for your hair, you can use conditioners that have Hibiscus as the key ingredient.



Fig 3.Hibiscus (Rosa Sinesis)

How To Use Hibiscus Flower For Hair

1. Hibiscus Oil For Hair Nourishment

In Ayurveda, Hibiscus is one of the most renowned herbs for promoting hair growth. Yes, you read it right! Those bright and beautiful flowers growing in the gardens all around you have extraordinary healing properties.

If you suffer from hair loss, then Hibiscus flowers and leaves will serve as the perfect remedy for you and stop hair fall. Both hibiscus flowers, as well as hibiscus leaves, are used to cure hair problems.

Studies suggest that complete recovery from dormant hair follicles and bald patches is possible by using Hibiscus flowers.

Benefits Of Hibiscus For Hair

If you're only just discovering the benefits of Hibiscus for hair, we've listed all of them to help you understand Hibiscus better and see if it's a fit for your hair care needs.

1. Stimulates hair growth

Lost hair volume and luster over the years? The naturally occurring amino acids in hibiscus flowers provide the hair with the nutrients help in promoting hair growth. These amino acids produce a special kind of structural protein called keratin, which is the building block of hair.

Keratin binds the hair makes them less prone to breakage. It also promotes the overall thickness of hair strands and makes hair more manageable. So, instead of turning to expensive keratin treatments that damage hair, you can start using Hibiscus on your hair.

2. Conditions hair

The chemicals present in most of the shampoos strip the hair away from its natural oils. Have you noticed your hair turning dry and dull? Don't worry, you can use Hibiscus to nourish your hair and seal its natural moisture content!

Hibiscus flowers and leaves contain a high amount of mucilage which acts as a natural conditioner. It's because of this naturally occurring conditioner that crushed Hibiscus flowers and leaves feel slimy to the touch. Hibiscus flowers and leaves for hair

3. Prevents baldness

Many research papers have been published after studying the use of hibiscus extract for treating baldness. All of these papers suggest that using hibiscus is a safe way for re-growing hair.

The use of hibiscus is as effective as the drugs used to treat baldness (Minoxidil and Finasteride). In addition to being equally effective, Hibiscus doesn't cause any of the harmful side effects associated with these drugs!

4. Treats dandruff and itchy scalp

Does your scalp suffer from excessive oil secretion causing problems like dandruff and itchy scalp? Hibiscus acts like an astringent and reduces the oil secretion by the glands. Using Hibiscus leaves for hair maintains the pH balance of hair in addition to providing an overall soothing and cooling effect.

5. Prevents premature greying

Traditionally, Hibiscus was used as a natural dye to mask grey hair. The antioxidants and vitamins present in Hibiscus help in producing melanin, the naturally occurring pigment that gives hair its natural color.

In Ayurveda, Hibiscus is one of the most renowned herbs for promoting hair growth. Yes, you read it right! Those bright and beautiful flowers growing in the gardens all around you have extraordinary healing properties.

If you suffer from hair loss, then Hibiscus flowers and leaves will serve as the perfect remedy for you and stop hair fall. Both hibiscus flowers, as well as hibiscus leaves, are used to cure hair problems.

Studies suggest that complete recovery from dormant hair follicles and bald patches is possible by using Hibiscus flowers.

Shikakai (Acacia concinna) :-

Shikakai, also known as Shika in Tamil, Seekaaya in Telugu, and Soap pod in English, is a powerful ayurvedic plant that has been used for generations as a cleanser for healthy, long hair, dandruff management and relief in skin diseases.

Shikakai, also known as *Acacia concinna* in scientific terms, is a shrub-like tree native to Central India. *Acacia concinna* (Leguminosae), a climbing shrub with oblong-shaped dark brown pods, bipinnate leaves, and pink flowers. It is typically found in the Indian subcontinent's tropical woods.¹

Therapeutic Uses of Shikakai:

Shikakai is a plant that is used in India to treat long hair, dandruff, and skin disorders.

This herb has been discovered to have activity to treat constipation, jaundice, gum infections, leprosy, malarial fever and ingredient of contraceptives.

Shikakai is also known to have many medicinal properties. These include

Anti-dandruff, Wound healing, Anti-hair fall properties,
Anti-inflammatory, Antifungal activity, Antibacterial activity,
Anti-oxidant activity, Hair growing property.



Fig 4. Shikakai (Acacia concinna)

Reetha (Sapindus mukorossi) :-

Reetha is widely used in preparations like shampoo. The dried fruit powder is used as a foaming agent in shampoos. It cleans the oily secretions in the skin and can be used as a cleanser for hair and a hair tonic as it forms a natural lather. It is also used for removing lice from hair.



Fig 5.Reetha (SapindusMukorossi)

Benefits of Reetha for Contraceptive property:

The spermicidal (sperm killing) activity of the saponins present in Reetha makes it beneficial as a contraceptive. The human spermatozoa (sperm cells) show morphological (structural) changes when exposed to saponins.

These morphological changes cause the sperm cells to disrupt. It has been used in a contraceptive cream due to its spermicidal activity. Reetha, scientifically known as *Sapindus mukorossi*, is a large deciduous tree of the Sapindaceae family.

It is commonly known by many names like soapberry, soapnut, washnut, aritha, dodan, and dodani. In countries like Japan and China, Reetha has been used for centuries. In Japan, it has been used as a life-prolonging pericarp (the part of a fruit enclosing the seeds) and in China as a fruit for managing illnesses.

The plant is well known for its folk medicinal values.

1 Reetha is found in the hilly regions of the Himalayas in India. The fruit of Reetha has been used in Indian Ayurvedic medicine for decades.

2 Reetha is a popular ingredient of many Ayurvedic shampoos and cleansers.

The major constituents present in Reetha are saponins, sugars and mucilage.

1 The seed kernels of Reetha are a rich source of proteins and show a balanced amino acid composition as per the World Health Organization.

2 In addition to proteins, sugars and fibres are also present.

3 Phytochemicals like polyphenols and saponins are also present.

4 The seed oil contains vitamin E and beta-sitosterol.

5 The nutritional value is mentioned in the table below.

Sodium Lauryl Sulphate (Sodium dodecylsulfate) :-

It is formed by combining sulfonic acid and dodecanol in a process known as esterification. This product is then neutralised with sodium carbonate to give sodium lauryl sulphate.

Produced :- SLS can be synthetic or naturally derived. This chemical is synthesized by reacting lauryl alcohol from a petroleum or plant source with sulfur trioxide to produce hydrogen laurylsulfate, which is then neutralized with sodium carbonate to produce SLS

Two main types of sulfates are used in shampoo :- Sodium laurylsulfate and sodium laurethsulfate. The purpose of these sulfates is to create a lathering effect to remove oil and dirt from your hair. If your shampoo easily makes a lather in the shower, there's a good chance it contains sulfates.

Added Moisture Retention: Unsurprisingly, sulphate free shampoos help the scalp with moisture retention. Especially useful for those suffering with dry or damaged hair, retaining natural moisture will help with overall hair health.



Fig 6.Sodium Lauryl Sulphate (Sodium dodecylsulfate)

Methyl Cellulose (Hypromellose) :-

Methyl cellulose (or methylcellulose) is a chemical compound derived from cellulose. It is sold under a variety of trade names and is used as a thickener and emulsifier in various food and cosmetic products, and also as a bulk-forming laxative. Like cellulose, it is not digestible, not toxic, and not an allergen.

HPMC is especially useful in surfactant systems for its foam enhancing properties, helping with the formation of bubble structure, leading to richer, longer lasting lather. HPMC has a high tolerance for both salt and alcohol.

This medication is used to treat constipation. It increases the bulk in your stool, an effect that helps to cause movement of the intestines. It also works by increasing the amount of water in the stool, making the stool softer and easier to pass.

CMC has properties of thickening, bonding, dispersing, suspending, homogenization, emulsifying and stabilizing in the cosmetics industry, so CMC can be applied in any skincare cream, skin whitening cream, face powder, depilatory cream, sunscreen cream, shampoo, shower gel, facial mask, lipstick, and other cosmetics.



Fig 7.Methyl Cellulose (Hypromellose)

Rose Water (Rosa Damascena):-

Dilute the shampoo in rose water to wash the hair. The hydrating properties and pH of rose water will be especially helpful for cleansing. Many people use different brews or cold water as the last rinse. Rose water can be used as a last rinse for hydrating the hair and imparting a shine.

Rose Water Improves Hair Growth. The vitamins A, B3, C and E of rose water promote the growth of your hair, by nourishing the scalp and promoting hair growth.

Side effects of rose water

For most, there should be no side effects of rose water; however, if you are allergic to rose petals, you may find that it causes burning, redness, or itching if it is applied to the scalp.



Fig 8. Rose Water (Rosa Damascena)

Material

Table 2 :- Formulation of Herbal Shampoo :-

Sr. No.	Ingredients	Quantity
1	Drumstick	10 gm
2	Alovera	5 ml
3	Hibiscus	4 ml
4	Shikakai	8 gm
5	Ritha	8 gm
6	Sodium Lauryl Sulphate	6 gm
7	Methyl Cellulose	1 gm
8	Rose Water	10 ml

Decoction method (Procedure) :-

weighed all the ingredients according to the formal.

Decoction of Drumstick, Aloe vera, Hibiscus was prepared in one part of water.

filter it by using muslin cloth, collect filtrate

Decoction of shikakai and Ritha was prepared in another part of water.

filter it, by using muslin cloth, collect filtrate.

mixed to each other of above filtrate with constant stirring.

mixed to sodium lauryl sulphate in foaming.

mixed to methyl cellulose as a thickening agent to maintain consistency of herbal shampoo of a semisolid nature.

preservatives and Rose water this perfume was added. Lastly.

Discussion :-**Evaluation of Herbal Shampoo**

Appearance :- A shampoo like any other cosmetic preparation should have good appealing physical appearance. The formulated and marketed shampoos were evaluated for physical characteristics such as colour, odour and transparency (Table 3). Our prepared shampoo was transparent, light green and had good odour. No significant difference was observed in terms of odour, transparency and foaming characteristics between commercial and formulated shampoo except for colour.

Colour :- Black Brown, Dandruff Cleansing Shampoo - 50 ml

pH :- The pH of formulated shampoo was 6, falling within the ideal pH range for shampoo which is between 4.33 and 4.73. The formulated shampoo is acid balanced which is near to the skin pH. The pH of shampoo is important for improving and enhancing the qualities of hair, minimizing irritation to the eyes and stabilizing the ecological balance of the scalp. Mild acidity prevents swelling and promotes tightening of the scales, thereby inducing shine.



Fig 9. PH

Viscosity :- The viscosity of shampoo plays an important role in determining its shelf life stability, the ease of flow on removal from packing and spreading on application to hair and product consistency in the package. The viscosity of formulated shampoo was found to be 50 millipoise which was good enough for its applicability.

Foaming Stability :-The stability of the foam was determined using cylinder shake method. About 50 ml of formulated shampoo (1%) solution was taken in a graduated cylinder of 250 ml capacity and shaken for 10 times vigorously. Foam stability was measured by recording the foam volume of shake test after 1 min and 4 min, respectively. The total foam volume was measured after 1 min of shaking. From the consumer point of view, foam stability is one of the important needs of a shampoo. Important parameter that was considered in the shampoo evaluation was determination of foaming stability. The foam volume produced by the formulated shampoo is above 50 ml. The prepared shampoo generates uniform, small sized, compact, denser, and stable foam. The foam volume remains same throughout the period of about 5 min showing that the generated foam by the shampoo has good stability.



Fig 10.Foaming Stability

Surface Tension :-Measurements were carried out with a 10% shampoo dilution in distilled water at room temperature. Thoroughly clean the stalagmometer using chronic acid and purified water. Because surface tension is highly affected with grease or other lubricants. The data calculated by following equation given below:

$$R3=(w3-w1)n1 \times R1/ (W2-W1)n2 \times R2$$

Where, W1 is weight of empty beakor.

W2 is weight of beaker with distilled water.

W3 is Weight of beaker with shampoo solution.

n1 is no. of drops of distilled water.

n_2 is no. of drops of shampoo solution.

R_1 is surface tension of distilled water at room temperature.

R_2 is surface tension of shampoo solution.

Wetting time:- Wetting time was calculated by noting the time required by the canvas paper to sink completely. A canvas paper weighing 0.44 g was cut into a disc of diameter measuring 1-inch. Over the shampoo (1% v/v) surface, the canvas paper disc was kept and the time taken for the paper to sink was measured using the stopwatch.

Cleaning action :- About 1 g of grease is spread on non-adsorbent cotton and kept in conical flask containing 1% shampoo solution. The conical flask is shaken for 1 hr in mechanical shaker. Cotton is collected, dried and weighed. The amount of grease removed is determined by using the equation given below: $DP = 100 (1 - T/C)$

Where, C - Weight of grease in control sample.

T - Weight of grease in test sample.

DP-Percentage of detergency power.

Dirt dispersion :- Shampoo that causes the ink to concentrate in the foam is considered poor quality; the dirt should stay in water. Dirt that stays in the foam will be difficult to rinse away. It will redeposit on the hair. The estimated amount of ink in foam was light and so results indicate that prepared formulation is satisfactory.

solid contents (%) :- A Clean dry china dish was weighed and 4 grams of shampoo was added to it. The weight of dish and shampoo was noted. The exact weight of shampoo was calculated. Place the china dish with herbal shampoo on hot plate until the liquid portion was evaporated. The weight of shampoo (solids) after drying was calculated.

Result :- 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.

Table 3 :- Evaluation Test

Parameters	F1	F2
Appearance	Clear	Clear
Colour	Black Brown	Black Brown
PH	4.33	4.73
Viscosity	15.251 CP	18.72 CP
Foam Volume (ml)	166	164
Surface Tension	31.12	33.65
Wetting Time	43 Sec	58 Sec
Cleaning Action	Good	Good
Dirt Dispersion Test	Moderate	Heavy
Solid Contents	10.3	15.5

Conclusion:-

The main purpose behind this investigation was to develop a stable and functionally effective shampoo. The present study was carried out with the aim of preparing the herbal shampoo that provides smooth and straight effect to hairs, safer than the chemical conditioning agents.

Herbal shampoo was formulated with the aqueous extract of medicinal plants that are commonly used for cleansing and smoothening hair traditionally.

To provide the effective conditioning effects, the present study involves the use of mooring, aloevera, hibiscus, Shikakai and Rithaextracts instead of synthetic cationic conditioners. The factors like UV radiations, use of harsh chemical products have direct and indirect impact on the hair.

The present work focuses on the potential of herbal extracts from cosmetic purposes. Hence we conclude that the formulation of mooring herbal shampoo is effective in providing smoothening and shiny effect and better conditioning effect.

Reference:-

1. The Ayurvedic pharmacopoeia of India, Department of Indian systems of Medicine & Homeopathy New Delhi, Part –I, Vol. II, 155-157.
2. The Ayurvedic pharmacopoeia of India, Department of Indian systems of Medicine & Homeopathy New Delhi, Part –I, Vol. IV, 24-131.
3. Aghel N, Moghimipour B, Dana RA. Formulation of a herbal shampoo using total saponins of *Acanthophyllum squarrosum*. *Iran J Pharm Res* 2007;6:167-72.
4. Al Badi K, Khan SA. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos. *Beni-Suef Univ J Basic Applied Sci* 2014; 3:301-305.
5. Anusha Potluri*, Harish. G, B. Pragathi Kumar, Dr. Durraivel. Formulation and evaluation of herbal antidandruff shampoo *Indian Journal of Research in Pharmacy and Biotechnology* 2013-p.835.
6. Badi KA, Khan SA. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoo. *Beni-Suef Univ J Basic Appl Sci* 2014;3:301-5.
7. Baran R, Maibah HI. Cosmetic dermatology in children. In: *Text Book of Cosmetic Dermatology*. 2nd ed. London: CRC Press; 1998. p. 507-8.
8. Bhavamishra. Puspavarga. Bhavaprakasha Nighantu, Vidyotini edited hindi commentary by Shri Bramhashankara Mishra & Rupaly Vaidya, 10th ed. Varanasi: Chaukhamba Sanskrit Sansthan; 2002. p. 506.
9. Bhupendra Koul and Neikuozo Chase. *Journal of Chemical and Pharmaceutical Research*, 2015, 7(6):687-707
10. Boonme P, Pakpayat N, Yotmanee K, Kunlawijitrunge S, Maneenuan D. Evaluation of shampoos containing silicone quaternary microemulsion. *J Appl Pharm Sci* 2011; 1(1): 59-63.
11. Klein K. Evaluation of shampoo foam. *Cosmet Toilet Mag* 2004;119:32-5.
12. Mainkar AR, Jolly CI. Formulation of natural shampoos. *Int J Cosmet Sci* 2001;23:59-62.
13. Maithani Alok, Azadirachta indica (neem) leaf: a review. *Journal of Pharmacy Research*, 2011. Vol. 4(6), 1824-1827.
14. Ogunsina B.S., Indira T.N., Bhatnagar A.S., Radha C., Debnath S., Gopala Krishna A.G. Quality characteristics and stability of *Moringa oleifera* seed oil of Indian origin. *J. Food Sci. Technol.* 2014;:503–510. [PMC free article] [PubMed 51] [Google Scholar]
15. Potluri A, Asma SS, Rallapally N, Durraivel S, Harish GA. Review on herbs used in anti-dandruff shampoo and its evaluation parameters. *Indo Am J Pharm Res* 2013 3266-78.

16. R Paliwal; V Sharma; APracheta. Asian Journal Biotechnology., 2011, 3317-328.
17. Sagarin E, Balsam MS, Cosmetics Science and Technology. Wiley: India Edition; 2 ed (Vol2).p.73-75.
18. Sarath C, Vipin KV, Ann RA, Lindumol KV, Arun S. Development and evaluation of antidandruff shampoo based on natural sources. J PharmPhyther 2013 1:10-4.
19. Sharma VR et al., —Phytochemical analysis and evaluation of antioxidant activities of hydro-ethanolic extract of *Moringaoleifera* Lam. Journal of Pharmaceutical Research, Volume: 4: Page no.: 554 – 557.
20. Vijayalakshmi A, Sangeetha S, Ranjith N. Formulation and evaluation of herbal shampoo. Asian journal of pharmaceutical and clinical research.
21. Baran R, Maibah HI. Cosmetic dermatology in children. Text book of cosmetic dermatology. 2nd ed. London: CRC Press; 1998. p. 5078.
22. Cosmetic science Text book. Aijoz A Sheikh sciencefor.or, subhash v. Deshmane, Dr. Kailash R. Biyani, Dr. mid-Rangeebmd. usman page no. 123 to 129 .
23. International Journal of advanced research of paper publish Miss. Ashwini H. Pawshe, Priyam S. Pawar & Srushti P. Patil Page No. 1392 to 1396.
24. B. M. Mithal and R. N. Saha, Handbook of cosmetics, first edition, VallabhPrakashan 2003: 1-10, 110-121.