



A REVIEW PAPER ON FORMULATION AND EVALUATION OF HERBAL SHAMPOO

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ABSTRACT

The main object of this present study is to prepare and evaluate an herbal Shampoo and determine physiochemical function that emphasizes on safety, Efficacy and quality of the product Herbal Shampoo is the natural hair care product, Which is use to remove grease, dirt, dandruff and promote hair growth, Strengthens and darkness of the hair. It is also supplying softness, smoothness, and Shines for the hair. Various drugs are used for the pre mixture of cosmetics Shampoo. Such drugs show different side effects such as hair loss, high scaling, Scratching, discomfort, nausea and headache. Therefore, an experiment is made to prepare herbal shampoo that is free from side effects.^[1] The aim of the present study is to Formulate and evaluate herbal Anti dandruff Shampoo containing natural ingredients with an Emphasis on safety and efficacy.^[2]

INTRODUCTION

Herbal Shampoo are probably the most widely used cosmetic products for cleansing Hairs and scalp in our daily life Herbal shampoos are the cosmetic preparations That with the use of traditional Ayurveda herbs are meant for cleansing the hair and scalp just like the regular shampoo. They are used for removal of oils, dandruff, environmental pollutions etc. shampoo is a type of cosmetic mixture that uses herbs from plants as an alternative to the synthetic Shampoo available in the market. The herbal shampoo is important, as people today prefer herbal products than chemical ones for, they proved to enhance.^[1]

Shampoos are most probably used as cosmetics. Shampoos are most likely utilized as beautifying agents and are a viscous solution of detergents containing suitable additives, preservatives and active ingredients.^[3] It is a harmless, chronic condition that occurs when the scalp becomes dry or greasy and produces white flakes of dead skin that appear on the hair or on shoulders. People most often think of it as anything that produces a flaky scalp.^[7] A good shampoo should almost immediately form abundant foam irrespective of the type of water used or the nature of soil or fat to be removed from hair. Concept of foam formation is not related to the cleansing effect, but people psychologically always prefer a high foam product. Some good shampoos are found to have side effects like drying effect on the hair. This leaves the hair too dry to handle or comb. Hence proper conditioning of the hair is also an important consideration; some shampoos cause irritation to the eye and a lasting corneal cloud. These should be^[19]

Types of Shampoo

Shampoos are of the following types

1. Powder Shampoo
2. Liquid Shampoo
3. Lotion Shampoo
4. Cream Shampoo
5. Jelly Shampoo
6. Aerosol Shampoo
7. Specialized Shampoo
8. Conditioning Shampoo
9. Anti - dandruff
10. Shampoo
11. Traditional shampoo
12. Herbal shampoo
12. Solid shampoo

Traditional Shampoo: The most common hair care cosmetic product is shampoo. Arora et al. reported that it can be described, primarily, as a cosmetic preparation, packed in a form convenient for use, generally applied for cleaning hair and scalp from dirt, residues of previously applied hair styling products and environmental pollutants

Herbal Shampoo:- Interestingly, there is a large number of plants having beneficial effects on hair and being commonly used in shampoos for their content of vitamins, amino acids,

sugars, glycosides, Phyto-hormones, bio flavonoids, fruit acid sand essential oils useful protocols for the artificial soiling of hair, various cleaning processes and the analysis of the lipids remaining on the hair by gas chromatography.^[10]

Solid Shampoo:- Solid shampoos present some additional advantages compared to the traditional ones. In particular, they are easy to transport and can be used for a longer time, thanks to more Microbiological stability than liquid formulations.

Powder Shampoo:- It is available in the form of Dry powder, initially it was prepared from dry Soaps, but now a days dry synthetic detergents are used for their preparation. Powder shampoo is Prepared where addition of water or other solvent Reduces the activity of the components, especially in case of medicated shampoo. Now a days these Shampoos are not used due to the difficulty Experienced in their application

Ingredients	Biological sources	Uses
Amla fruit	Ripe fruits of <i>E. officinalis</i>	Hair darkening Hair growth Promoter
Neem	Dried leaves of <i>A. indica</i>	Anti- dandruff agent Antibacterial agent
Shikakai fruit	Dried pods of <i>A. concinna</i>	Foaming agent Anti- dandruff agent
Tulsi	Dried fruits of <i>O. sanctum</i>	Anti- dandruff agent
SLS	38%	Cleansing and foaming agent
Cetyl alcohol	7%	Moisturizer
Water	Up to 100%	Vehicle
Colour, perfume	q. s	Fragrance
Bahera	Dried fruits of <i>T. Billerica</i>	Hair darkening Hair growth Promoter
Brahmi	Dried fruits of <i>C. asiatica</i>	Support health of hair
Heena	Dried fruits of <i>L. inermis</i>	Hair conditioner

Liquid Shampoo:- These are clear liquid mixture that are most widely used. They are usually made by using detergent of low cloud Point. Some of these shampoos may be transparent.

SLS	40%	Cleansing and foaming agent
Nacl (to desired viscosity)	2 - 4%	Thickener
Water	Up to 100%	Vehicle
Perfume colour, preservatives	q. s	Fragrance
Preservatives	q. s	Prevent the microbial growth

Cream Shampoo: These are called as lotion Shampoos which are modification of clear liquid Cream shampoos. Solubilizing agents such as magnesium stearate is also used to dissolve the Added opacifier.

Jelly Shampoo:- These are transparent and thick usually produce by incorporating a gelling agent, (e.g., cellulose). There is great use in hair salon and beauty parlours. The principal ingredient is detergent which can be used either alone or in combination with soap. By altering the proportion of detergent, gel of required consistency can be obtained. Addition of methyl cellulose to clear Liquid shampoo and its successive thickening also show rise to gel shampoo.

Alkyl dim ethyl benzalkonim k chloride	15%	Antimicrobial agent
TLS (40 %)	28%	Baby Shampoo
Coconut dimethenamid	7%	Stabilize the form
HPMC	1%	Foam enhance and stabilizer thickeners, emulsion stabilizer
Water	Up to 100%	Vehicle
Colour, perfume, preservatives	q. s	Fragrance, prevent the microbial growth

Aerosol Shampoo:- They are called aerosol Shampoos because they are packed in aerosol Containers. Their formulation, preparation and Packing is complex as an additional propellant is included. The propellant added must be united and should not reduce the activity of Shampooing ingredients. The container space is provided with a valve. Shampoo comes out foam when the valve is pressed. Consequently, also called as Foam type shampoo.

TLS	60%	Baby Shampoos
Coconut diethanolamine	2%	Stabiles foam
Water	Up to 90%	Vehicle
Propellant	10%	Cleaner
Colour, perfume, preservative	q. s	Fragrance, prevent the micro bial growth

Definition Herbal Shampoo:- are most probably used as beautifying It is a hair care product that is used for cleanse scalp and hair in our daily life. Shampoos are most likely utilized as beautifying agents and are sticky solutions of detergents containing suitable additives preservatives and active Ingredients. It is usually applied on wet hair, massaging into the hair, and cleansed by in sing with water. The purpose of using herbal shampoo is used to remove dirt that is make up on the hair without stripping out much of the sebum. Many artificial shampoos are present in the current market both medicated and non-medicated, however, shampoo popularized due to natural origin which is safe, increases consumer demand and free from side effects.^[16] HS is defined as a preparation of a surfactant(surface active material) in suitable form liquid solid or power which when used under the conditions specified will remove surface grease, dirt an skin debr is from the hair shaft and scalp without affecting adversely the hair, scalpor health of the user. HS has many types are powder, liquid, lotion,

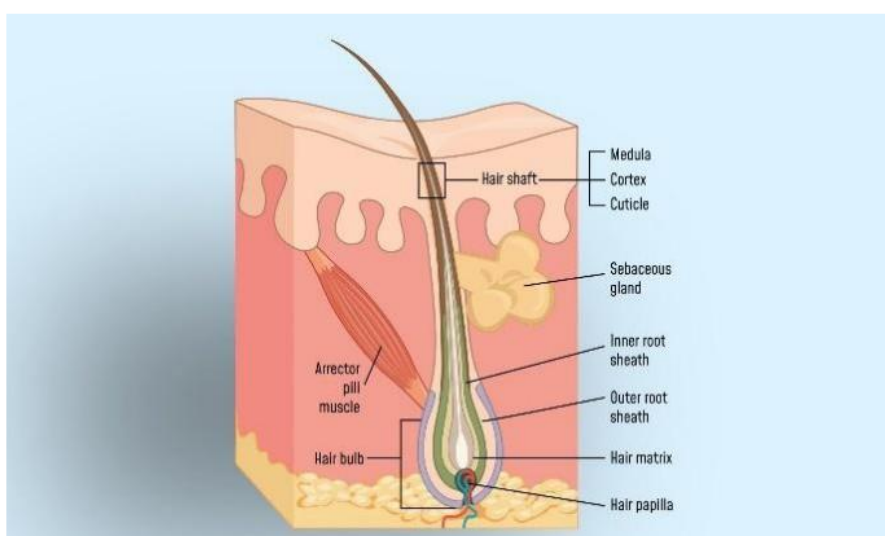
cream, jelly, aerosol, specialized HS (Conditioning, Antidandruff, Baby, Two Layers). But the future of HS is going to be herbal Shampoo it contains all the natural ingredients with herb extract. It helps hairs to improve their standard of moisture, shine, growth, thickening, strength of hair roots.^[17] Shampoos are may be the most widely used the cosmetic product for cleansing hair sand scalp in your daily life. A shampoo is Shampoos are may be the most widely used the cosmetic product for cleansing hair sand scalp in your daily life. A shampoo is basically a solution of a detergent containing suitable additives for other benefits such as hair conditioning, lubrication, medication etc. Now a days many synthetic, herbal, medicated and non-medicated shampoos are available in the market [Ishii–1997]. But popularity of the herbal shampoos among consumers is on rise because of their belief.^[4]

Human Hair

Parts of Hair

Dermal papillae: The dermal papilla is responsible regulating the hair cycle and hair growth, and is also comprised of androgen receptors that are Sensitive to the presence of DHT.

Matrix: The matrix surrounds the dermal papillae and contains all the active conceded for hair Growth and for the development of the different Parts of the hair, particularly the outer root sheath, the inner root sheath and the hair shaft. Combined, the matrix and the dermal papillae make up the hair.



Bulb. Outer roots heath: The outer roots heath, or, is the outer most part of the hair and is Keratinized. Inner root sheath: internal root sheath is comprised of three parts: the Henley layer, Huxley layer, and Cuticle.

IDEAL PROPERTIES OF HERBAL SHAMPOO: It should effectively and completely remove dust or soil, excessive sebum or other fatty Substances and loose corneal cells from the hair. It should produce a good amount of foam to satisfy the psychological requirements of the user.

1. It should be easily removed on rinsing with water
2. It should leave the hair non - d r y, soft, shiny with good manage ability minimum fly away.
3. It should impart a pleasant perfume to the hair.
4. It should not cause any reaction / irritation to skin or eye.
5. It should not make the hand rough and chapped.^[4,5]

MATERIAL AND METHOD

Amla:- Amla is also as the Indian Gooseberry. Amla contains Vitamin- C which increases the number of antioxidants in our body. It is added to the herbal hair dyes like henna to enchan, The colour of dye. It helps to boost the volume of hair and reduce the hair lice. Amla is also rich in tannins, iron, calcium, and phosphorus.

Biological Name:- *Phyllanthus emblica*

Family:- Euphorbiaceae

Chemical Constituents:- Gallicacid, Vitaminc.

Uses:- Promote hair growth, Anti-bacterial, Anti-fun



Reetha:- Reetha commonly is called as Indian soap berry, washnut and soapnut Reetha belongs to the family sapindaceous. Reetha prevents the hair dandruff.

Reetha is anti-bacterial and anti-fungal in nature, so it helps to treat the scalp infections and head lice. Reetha when combined with egg they help to control the hair fall.

Biological Name: Sapindus mukorossi

Family: Sapindaceae Chemical

Constituents: Saponins, sugar

Uses: Hair follicle strengthening, Anti-fungal, Anti-dandruff



Shikakai-: It provides shine to the hairs and also prevents the graying of hairs. It is an herbe specially used for controlling hair fall and dandruff. It has cleansing and antifungal properties. It boost the hair growth. It prevents split ends.

Biological Name: Acacia concinna

Family: Fabaceae

Chemical Constituents: Lactone, Glucose, Lupeon

Uses: Controlling hair fall, Dandruff



Bhringraj:- Bhringraj is a well- known medicinal herb widely used in ayurvedic formulations for hair care. It is commonly known as “King of Hair” because it helps in promoting hair growth and preventing hair fall. The plant has important bio active compounds that nourish the scalp and strengthen hair roots

Biological Name: Eclipta Alba (Eclipta prostrata)

Family: Asteraceae

Chemical Constituents: The main constituents present in Bhringraj are Wedelolactone, Ecliptine, Flavonoids, Alkaloids and Triterpenes.

Uses: Prevents hair fall



Sr. No.	Common Name	Botanical Name	Parts Used	Category
1	Reetha	Sapindus mukorossi	Fruit/ Pericarp	Natural cleansing agent/ Surfactant
2	Amla	Embilica officinalis	Fruit	Anti- dandruff
3	Shikakai	Acacia concinna	Powder	Detergent
4	Bhringraj	Eclipta prostrata	Leaves, flower	Hair growth
5	Aloe vera	Aloe barbadensis	Leaf	Coolant

METHOD OF PREPARATION:

1. First, required quantities of reetha, Shikakai, Amla and Bhringraj extracts were taken in a clean beaker.
2. All the herbal extracts were mixed properly with continuous stirring to obtain a uniform mixture.
3. Aloe vera gel and glycerine were added to the mixture and stirred Properly to provide moisturizing and conditioning effect
4. Xanthan gum was added slowly with constant stirring to increase the viscosity of the shampoo.
5. After that sodium benzoate was added as a preservative to increase the shelf life of the formulation
6. Then lavender essential oil was added for fragrance
7. Finally distilled water was added to make the final volume up to 100 ml and the mixture was stirred well to obtain a homogeneous herbal shampoo.

Formulation Of Herbal Shampoo

Sr. No	Name of Ingredient	Quantity Required	Function
1.	Reetha Extract	10 ml	Natural foaming and cleansing agent
2.	Shikakai Extract	10 ml	Natural cleanser and hair conditioner
3.	Amla Extract	10 ml	Hair strengthening and hair growth
4.	Bhringraj Extract	10 ml	Prevents hair fall and promotes hair growth
5.	Aloe Vera gel	10 ml	Moisturizer and scalp conditioner
6.	Glycerine	5 ml	Humectant and moisturizing agent
7.	Xanthan gum	1 g	Thickening agent
8.	Sodium Lauryl Sulphate	3 g	Cleaning and Foaming
9.	Sodium Benzoate	0.5 g	Preservative
10.	Rose Oil	2-3 drops	Fragrance
11.	Distilled Water	q. s to 100 ml	Vehicle /solvent

ADVANTAGE OF HERBAL SHAMPOO:

1. Cleansing properties• Improving hair hygiene.
2. Treating scalp conditions
3. Treatment for dry scalp •Treatment for hair loss.
4. Treatment for greasing or oily hair. •Relieves itch and irritation
5. Repairs damaged hair.
6. Shampoo keeps hair silky or smooth.
7. Keeps your hair beautiful and blossomed.
8. Pureand Organic Ingredient
9. Free from Side Effects
10. No Surfactants eg:- SLS
11. No Synthetic Additives
12. No Animal Testing
13. Earth and Skin Friendly^[6,2]

FUNCTION OF HERBAL SHAMPOO

1. Lubrication
2. Conditioning
3. Hair Growth
4. Maintenance of Hair Colour
5. Medication^[6]

BENEFITS OF HERBAL SHAMPOO

1. More Shine
2. Less Hair Colour
3. Long Lasting Colour
4. Stronger and More Fortified Hairs
5. All Natural, No Chemicals
6. Won't Irritate Skin or Scalp
7. Keep Healthy Natural Oils^[2]

Composition of shampoo

1. Principal surfactant
2. Secondary surfactant
3. Antidandruff agents
4. Conditioning agents
5. Pearlescent agent
6. Sequestrates
7. Thickening agents
8. Colours, perfumes and preservatives^[11]

Principal Surfactant:

Surfactant are cleaning agents that substituted soap they act through the weakening of the physico chemical adherence forces that bind impurities and residues to the hair. Surfactant dissolve these impurities preventing them from binding to the shaft or the scalp. The cleansing ability of a shampoo depends on how well it removes greases as well as the type and number of surfactants used.^[13]

Conditioner agent:- Conditioner are used to decrease friction, detangle the hair, minimize frizz and improve combability. Conditioner act by neutralizing the electrical negative charge of the hair fibre by adding positive charges and by lubricating the cuticle that reduces fibre hydrophilicity.

Functions of the conditioners:

Improve combability

Mimicize the hair natural lipid outer layer

Restore hydrophobicity

Seal the cuticle

Avoid or minimize frizz, friction: Neutralize the negative charged net

Enhance shine, smoothness and manage ability.^[13]

Colour perfumes and preservatives^[14]

As most of the surfactants typically used in shampoos have a straw/yellow colour, the variety of colours that can be achieved are limited. Green, yellow and orange are easier to obtain than pastels the other cover when adding colour to a shampoo is the stability of the colour. Blue tends to turn green, reds tend to turn Orange and green tend to turn yellow. These colour changes can occur whether the shampoo is exposed to UV light or can occur just from heat and aging.

Secondary surfactants: improved detergency, foam and hair condition.

Conditioning agents: Lanolin, mineral oil, fenu greek, herbal extracts, and Henna egg derivatives.^[20]

Evaluation of Herbal Shampoo

Characterization of Herbal Shampoo

- PH: 1%shampoo solution was used to determine the PH by using the PH meter.
- Percent of Solid: Weighed a clean dry evaporating dish and recorded the initial weight of evaporating dish. 4Gm of shampoo Formulation (notthe1% solution) was taken in the evaporating dish. Weigh the dish and shampoo and record Initial weight of shampoo and dish. Calculated the exact weight of the shampoo only and recorded the initial Weight of shampoo only. Place the evaporating dish with shampoo on the hot plate until the liquid portion has Evaporated. After drying, weighed the dishand shampoo solid and results were noted.
- Foam formation: (Shake Test)Took 50ml of the1% shampoo solution in 250ml graduated cylinder and recorded the volume. Then cover the Cylinder with hand and shaken 10 times. The total volume of the contents was recorded after shaking. Calculate the volume of the foam and recorded the size of the bubbles.
- Foam quality and retention: Immediately behind the shake test, time was recorded. Recorded the volume of foamat 1-minute intervals for 5 Minutes
- Surface tension: Shampoo was taken in the beaker and then slowly added distilled water. After thorough mixing of shampoo and Water the surface tension was uniform by using

stalagmometer

- Skin irritation test: the solution of prepared shampoo on skin and kept for 5 minutes and observed for redness of skin and Irritation there, were no any red coloration and the irritation to the skin.
- Visual stability: To prepared shampoo was tested for the visual stability for 21days at room temperature with relative humidity 65+_5, and observed for colour change and PHT here were no change din colour and PH of shampoo within 21 Day and no any phase separation between oil and water.
- Viscosity: Viscosity was determined by using the Ostwald viscometer. 8
- Dirt dispersion test: To 10ml of purified water two drops of cleanser were included and taken in a wide mouthed test tube. To the Formulated shampoo, added one drop of Indian ink and shaken for 10 min after closing the test tube with a Stopper. The volume of seal in the froth was measure dand the result was graded in terms of none, slight, medium, or heavy Testing of wetting-Wetting time was calculated by noting the time required by the canvas paper to sink completely. Aduck paper weighing 0.44g was cut into a disc of diameter measuring 1-inch. Over the shampoo^[15]

CONCLUSION

1. The formulated shampoo was not only performed antimicrobial, antifungal Activity butal so greatly reduces the hair loss during combining as well as strengthens the hair growth.
2. The pH of the shampoo was adjusted to 6.2, to retain the acidic mantal of scalp.
3. The physico chemical approachused for preservation of the formulations to avoid the risk posed by chemical preservatives.
4. The clarity of the laboratory shampoo was not comparable with the marketed shampoos.
5. In the present scenario, it seems improbable that herbal shampoo, although better in performance and safer than the synthetic cones, will be popular with consumers.
6. There is a strong need to change the consumer perceptions of a good Shampoo and the onus lies with the formulators

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