

A Review on Herbal Shampoo: Formulation and Evaluation

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ABSTRACT

Shampoo is primarily being product aimed at cleansing the hair and scalp. The pure herbal shampoo to evaluate and compare its physiochemical properties with the natural herbal shampoo. The natural herbal shampoo was formulated by adding extracts of Lawsonia Inermis, Azadirachta Indicia, Emblica Officinalis, Acacia Concinna in different Proportions. It seems improbable that herbal natural shampoo, although better in performance and safer than the synthetic shampoo. Synthetic Shampoos show harmful effect on the hair and scalp like dryness of hair and keratin loss. Due to these reasons natural herbal shampoos has evolved as an alternative to synthetic shampoo because of the safe and traditionally used ingredients. The main objective of this study was to eliminate harmful synthetic ingredient from herbal natural shampoo formulation and substitute them with a safe natural ingredient.

KEYWORDS: - Natural Shampoo, Cosmetics, Customary Ingredients, Ayurvedic Herbs, Evaluation, Formulation.

I. INTRODUCTION^[1,2,3]

The main objective of these study was to illuminate harmful synthetic ingredients from herbal shampoo formulation and substitute them with the safe natural ingredients. An essential component of human beauty is hair. Human hair is used for many functions, including sebum production, apocrine sweat, pheromonas production, thermoregulation, and defense against environmental aggressors. Herbal shampoo are cosmetics preparation that with the use of traditional ayurvedic herbs are meant for cleansing the hair and scalp just like the regular shampoo. They are used for removals of oils, dandruff, dirt, environmental pollution. Herbal shampoo contain all the natural ingredients and herb extracts it helps to improve their quality of moisture, growth, thickening, strength hair roots. Herbal shampoo are environmentally ecofriendly as they contain bio-degradable material rather than

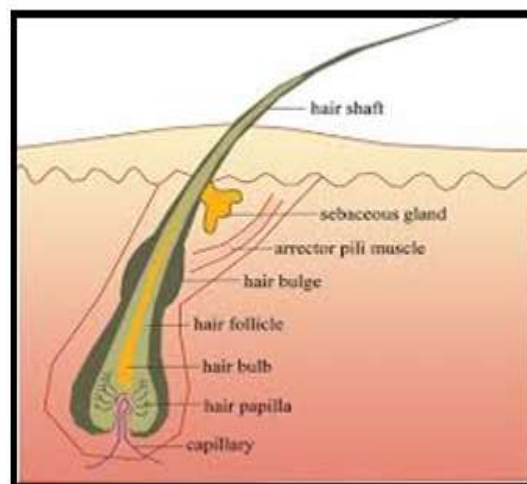
herb chemicals herbal shampoo are safe because contain all natural ingredients it is non allergic product. With make suitable for all skin type including sensitive and allergy prone skin Synthetic shampoo contains surfactants. Natural herbal shampoos are a good substitute for synthetic shampoos. It is quite challenging to formulate cosmetic products with entirely natural ingredients, but many medicinal plants that have been used for years to treat hair problems are included in shampoo formulation and have been used traditionally through the world. Herbal shampoos include no artificial additives or surfactants, are composed entirely of organic and pure components, and have no negative side effects. Unlike synthetic shampoo products, these shampoos are not subjected to animal testing. Shampoo is meant to get rid of undesirable build-up in between hair strands without removing too much sebum to make hair unmanageable. The most popular type of hair treatment is shampooing. Shampoos are products that are mostly used to clean the scalp and hair. Even though herbal shampoo performs better and is safer than synthetic shampoo, it doesn't seem likely that consumers will embrace it in the current environment. A more drastic strategy to make herbal shampoo more widely used would be to alter customer expectations by placing more of a focus on efficacy and safety in shampoos. When applied under the right circumstances, a shampoo is a preparation of a surfactant in an appropriate form—liquid, solid, or powder—that removes dirt, grease, and skin debris from the hair shaft without negatively impacting the user. Herbal shampoos are more popular among consumers these days than synthetic ones since natural sources are still particularly appealing when compared to synthetic ones. A shampoo is a surfactant preparation in a liquid, solid, or powder form that, when applied to hair under certain circumstances, removes dirt, grease, and skin debris

STRUCTURE OF HAIR^[4,5]

A hair can be defined as slender thread like out growth from a follicle in the skin. The hair are present all over the body except for the sole, palm, lips. Hair is composed of structural protein that makes up the nails and outer layer of skin. Hair is made up of two separate structures: the hair shaft, which is a fully keratinized nonliving portion placed above the skin's surface, and the follicle, which is the living portion beneath the skin. The dermo epidermal junction and the hair bulge area are separated by the arrector pili muscle. Sebaceous glands and, in certain cases, apocrine glands open into the follicle above the insertion of the arrector pili muscle.

Three layers make up the hair shaft: the cuticle, cortex, and, in some situations, the medulla. Proximally, cuticle cells with a square and flat shape are firmly attached to cortex cells. Cuticle cell motions at the periphery cause the distal free edge to point upward and result in significant overlap. These are important imbrications. Through interacting with the inner root sheath's cuticle cells, they support the hair's follicular anchoring during growth. Additionally, these imbricated surfaces make it easier to clean the scalp of debris and desquamated cells. Important barrier and protective qualities of the cuticle shield it from chemical and physical harm

The cells' morphologies become increasingly fusiform as they migrate from the hair bulb to produce the cortex. These cells align parallel to the shaft's axis and tightly coalesce. Each cortical cell is packed with axial keratin filaments, also known as microfibrils, which are made up of many hard α -keratin intermediate filaments. molecules. A macrofibril, which makes up over 50% of the cortex's substance, is formed when multiple microfibrils combine to form a bigger unit. The majority of the shaft is made up of the cortex, which also contains melanin

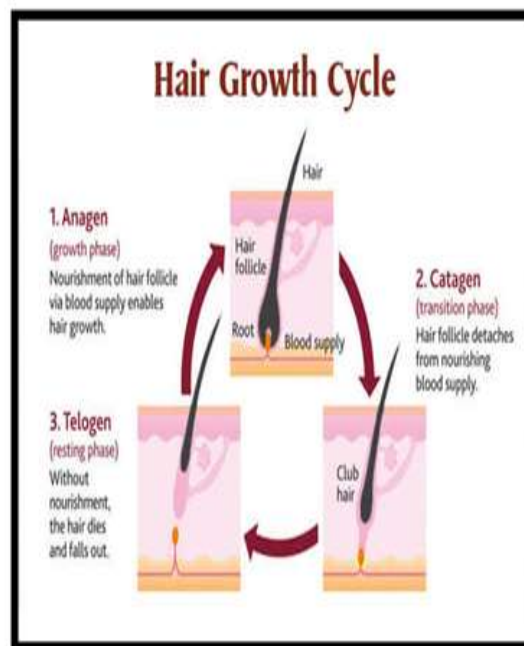


(Figure no.01)

STRUCTURE OF HAIR ROOT

Lies below skin which enclosed within a follicle. At base of hair follicle as the dermal papilla. The dermal papilla very important of growth of hair. Stands of hair originate in an epidermal penetration of the dermis called the hair follicle. The hair shaft is the part of the hair not anchored to the follicle , and much of this is exposed at the skin surface

GROWTH OF HAIR CYCLE^[6]



(Figure no.02)

- 1) **Anagen Phase** :-It is the growth phase these phase lasts about 3 years After the anagen

phase concludes, the catagen phase begins and typically lasts for ten days or so. Hair follicles atrophy and hair development slows down during this chapter. During the last stages of its growth, the hair separates from the base of the hair follicle but stays in its original position. At any given time, only around 5 percent of the hairs on your head are in the catagen phase. After the anagen phase concludes, the catagen phase begins and typically lasts for ten days or so. Hair follicles atrophy and hair development slows down during this chapter. During the last stages of its growth, the hair separates from the base of the hair follicle but stays in its original position.

- 2) **Catagen Phase** :- Catagen is the resting phase During these phase hair growth is slow It's the longest phase, lasting between three to five years for hair on the head, while some individuals may have a single hair that keeps growing for up to seven years.
- 3) **Telogen Phase**:- Telogen is the falling phase these phase stop the hair growth and being the new growth phase the telogen stage of hair growth is extended into the exogen phase. Hair falls out of the scalp throughout the exogen phase, with brushing and washing frequently assisting. During the exogen period, it is common to lose 50 to 100 hairs every day.
- 4) **Exogenous Phase** :- During these phase hair is shed from the scalp helped along washing and brushing The exogen phase of hair growth follows the telogen stage. During the exogen phase, hair falls out of the scalp; regular brushing and washing can help. Losing 50–100 hairs each day is normal during the exogen phase..

IDEAL PROPERTIES OF HERBAL SHAMPOO

- 1) It should produce a good amount of foam to satisfy psychochemical requirement of user.
- 2) To make the hair smooth and shiny.
- 3) It should not cause any side effects.
- 4) Effectively remove dirt.
- 5) To make the hair smooth and shiny
- 6) It should effectively and completely remove dust or soil excessive sebum.
- 7) A herbal shampoo is one of the made from the extract oils, minerals and Ayurvedic herbs.
- 8) Natural and free from all harmful synthetic chemicals.
- 9) It should have good spreading properties .

10) It should have sufficient lather after application .

11) Give the fragrance to the hair.

1) Benefits of Using Herbal Shampoo

- 1) Simple to produce and inexpensive.
- 2) They are widely accessible and come in a lot of different varieties.
- 3) They had no unfavorable side effects and did not cause an allergic reaction.
- 4) Simple to mix into hair and skin.

2) The Drawbacks of Using Herbal Shampoo

- 1) Odor and flavor might be difficult to mask at times.
- 2) Herbal medications require long-term therapy since they work more slowly than allopathic medications.
- 3) The manufacturing process is difficult and time-consuming.

COMPOSITION OF SHAMPOO^[7]

- 1) Principle of surfactant
- 2) Secondary surfactant
- 3) Antidandruff agent
- 4) Thickening agent
- 5) Colours
- 6) Perfumes
- 7) Preservative

Principle of surfactants : Provide detergency and foam.

Secondary surfactants : improve detergency and foam, hair condition.

Antidandruff : Neem, Tulsi, Rettha, Aloe vera, Henna

Preservatives : Methyl paraben , Propyl paraben

Perfumes : Herbal, fruity or floral fragrance

Herbs used as Herbal shampoo^[1,10]

1) Neem :-

Biological source :- Neem consists of the fresh or dried leaves and seed oil of *Azadirachta indica*.

Family :- Meliaceae

Chemical Constituents :- Nimbin, Nimbolide, Nimbinene
Neem kernel lipids are similar to the normal glycerides from other oilseeds and contains oleic acid (50-60%), palmitic acid (13-15%), stearic acid (14-19%), linoleic acid (8-16%) and arachidic acid (1-3%).

Uses

- 1) Prevent the dryness of hair.
- 2) Prevent flaking of hair.
- 3) Antimicrobial activity.
- 4) Stop hair fall.



Figure No.3: Neem

2) Tulsi :

Biological source:

Tulsi consists of the fresh and dried leaves of *Ocimum* species like *Ocimum sanctum* L. and *Ocimum basilicum* L.

Family :- Labiateae

Chemical Constituents :- Eugenol, Methyl Eugenol, Caryophyllene The Tulsi plant contains numerous active compounds and the major compounds are linalol, eugenol, methylchavicol, methylcinnamat, linolen, ocimene, pinene, cineol, anethol, estragol, thymol, citral, and camphor.



Figure No.4: Tulsi

USES

- 1) Anti lice property. Reduce dandruff
- 2) Antimicrobial property. Less breakage.

3) HENNA

SYNONYM :- Egyptian privet, *Lawsonia-alba*

BIOLOGICAL SOURCE: It consists of fresh or dried leaves of the plant *Lawsonia – inermis*

Family: Lythraceae.

CHEMICAL CONSTITUENT:- It contains lawsone (0.5-1%). leaves resulted in the isolation of seven compounds; three have been isolated for the first time from the genus, namely p-coumaric acid, 2-methoxy-3-methyl-1,4-naphthoquinone and apiin, along with the previously isolated compounds: lawsone, apigenin, luteolin, and cosmosiin

Lawsone, the main colouring constituent is said to be a degradation product of primary glycoside hennoside A,B,&C.

USES

- 1) Promote Growth of hair
- 2) Increasing hair growth
- 3) Reduce Cuticle damage
- 4) Reduce dandruff



Figure No.5: Henna

4) REETHA

SYNONYM: Ritha, Reetha, Arishta, Dodan, Dodani, Doda, Soapnut

Biological source.: it consist of dried fruit of *Sapindus Trifoliatius* ,*Sapindus Mukorussi*

Family: Sapindaceae

Chemical Constituents :-Saponins, sugar,mucilage The major constituents present in Reetha are saponins, sugars and mucilage. The seed kernels of Reetha are a rich source of proteins and show a balanced amino acid composition as per the World Health Organization. In addition to proteins, sugars and fibres are also present

USES

- 1) Cleanses the hair efficiently
- 2) Removing lice from hair
- 3) It helps tio clean the scalp and dirt



Figure No.6:Reetha

5) BRAHAMI

Biological source :- Brahmi is the fresh or dried herb of *Centella asiatica* (L.) (syn. *Hydrocotyl asiatica* Linn.)

Family:- Umbelliferae.

Chemical constituents :- Bacoside –A, Bacoside-B many chemical compounds have been isolated from Brahmi, the active fractions of this medicinal plant contain bacoside-A and bacoside-B. A number of other phytochemicals such as alkaloids, glycosides, flavonoids, saponins etc.

USES

- 1) They promote hair growth
- 2) Thickness of hair
- 3) It helps with hair fall



Figure No.7: Brahmi

6) ALOVERA

Biological Source:

The biological source of aloe is dried latex of leaves of it. It is also known as curacao aloe, cape aloe and socotrine aloe.

Chemical Constituents: Emodin, Aloe Emodin Chemical Constituents of Aloe vera. The two-main class active constituent of the Aloe vera plant extract are chromone and anthraquinone and its

glycoside derivatives, alongside others such as phenylpyrone derivatives, flavonoids, phenylpropanoids, coumarins, phytosterols, naphthalene analogs, lipids, and vitamins.

Family:- Liliaceae

USES

- 1) Smooth natural curls
- 2) To promote hair growth
- 3) Strengthens



Figure No.8:Alovera

7) Amala

Phyllanthus emblica L. (popular known as amla or Indian gooseberry) is an ephemeral tree belonging to the Euphorbiaceae family

Chemical Constituents

The fruit of Amla is rich in vitamin C (ascorbic acid) and contains several bioactive phytochemicals, of which majority are of polyphenols (ellagic acid, chebulinic acid, gallic acid, chebulagic acid, apeigenin, quercetin, corilagin, leutolin, etc

Uses:-

Vitamin C, a water-soluble vitamin with antioxidant properties, is abundant in amla juice encourages heart health.

Might promote hair growth.

Enhances renal function.



Figure No.8:Amala

INGREDIENTS AND RECRUITMENTS

Tabale No.1

Sr.No	Drug Name	Parts	Quantity
1)	Neem Powder	Leaves	0.9%
2)	Tulsi	Leaves and Flower	12%
3)	Henna	Fruit	0.7%
4)	Reetha	Fruit	22%
5)	Brahami	Leaves	0.5%
6)	Aloevera	Leaf	0.7%

Each powder plant material neem, Tulsi, Henna, Reetha, Brahmi, Aloevera Weighed about 100 gm when a combine. After 4hrs of boiling a powder material was removed using distilled water. Every Plant Materials extracts was isolated and evaporated.

FORMULATION OF HERBAL SHMPOO [9]

The herbal shampoo was created using the recipe found in table no.1.

Herbal extract was adding to the 10% gelatine Solution, and mixture was continually shaken for 20 min Additionally 1ml of lemon juice was added while continuously stirring. To enhance the scent in the preparation, enough essential oil was added, and gelatine was used to get the volume of 100ml.

II. RESULTS**Formulation for herbal shampoo**

The aqueous extracts of all the components were combined in equal proportion with soapnut to create the shampoo (Table 1). The plant extract mentioned above includes phytoconstituents such as saponins, a naturally occurring surfactant with foaming and detergent qualities.

A good viscosity is a requirement for the perfect shampoo, and many natural ingredients meet this requirement. The 10% gelatin solution forms transparent solutions and acts like a pseudoplastic. One milliliter of lemon juice, added to the shampoo, acts as a chelating agent, natural antioxidant, and anti-dandruff agent while keeping the formulation's acidic

EVALUATION OF HERBAL SHAMPOO [10,11]

- 1) Foam and foam stability
- 2) Detergency and colouring action
- 3) Wetting action
- 4) Eye irritation

- 5) Oral Toxicity
- 6) pH
- 7) Physical appearance
- 8) Measurement of surface tension

1) Foam and foam stability :-

Ross Miles foam column is used for measuring foam height and stability. In this method 200ml of a shampoo solution falls through an orifice into a glass column containing 50ml of the same shampoo solution. Height of the column is measured at specified times. The height of the column is considered to be proportional to the volume

2) Detergency and colouring Action:

Cleaning action can be tested on wool yarn in grease. Place 5g of wool yarn in grease of 200ml of water containing 1g of shampoo in a flask. Temperature of water should be 35C. Shake the flask for 4min at the rate of 50times a minute. Remove the solution and take out the sample. Dry the sample and weigh it. Calculate the amount of oil removed under exp. Conditions

3) Wetting Action

The Draves-clarkson test is a standard method to determine the effectiveness of wetting cotton skein. though there is no relation between dyeing of cotton yarn or fabric and shampooing, this test can be used to stud the wetting action.

4) Eye irritation:

Shampoo which are less irritant to eye are preferred. this test is performed on the eyes of mice. the shampoo producing lesion can be removed easily with water is said to be less irritant

5) Oral toxicity:

Oral toxicity can be given in terms of its LD 50 i.e. number of grams of material per kg of body weight required to kill half of the test animals used. Rats are used for this test.

6) pH:

Soap based shampoos are most effective in pH 9.0-10.0, synthetic detergent based shampoos are effective in pH. Range of 6.0- 9.0 pH can be determined by using pH meter.

7) Physical appearance :

These formulation prepared and evaluate of the fluidity ,clarity.

8) Measurement of surface tension –

A 10% shampoo dilution in room temperature distilled water was used for the completely with purified water and chronic acid. Because lubricant such as grease have a significant impact on surface tension.

III. CONCLUSION

The present review focuses on the uses and importance of herbal shampoo. It includes the awareness and need for the cosmetics with herbal ingredients, as it is strongly believed that the herbal products are safe and free from side effects. The usage of herbal cosmetics has been increased to many folds in personal care system and there is a great demand for the herbal cosmetics. The use of bioactive ingredients in cosmetics influence biological functions of skin and provide nutrients necessary for the healthy skin or hair. There is tremendous scope to launch numerous herbal cosmetics using appropriate bioactive ingredients with suitable fatty oil, essential oils, proteins and additives. It was found to be harmless, More effective and economical.

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