

A COMPREHENSIVE REVIEW ON HERBAL HAIR COSMETICS

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Article Received on 23/08/2024

Article Revised on 12/09/2024

Article Accepted on 02/10/2024

ABSTRACT

Herbal hair cosmetic are the beauty products, which having a physiological activity, such as smoothening, appearance, enhancing and conditioning properties, because of Herbal excipients. The bioactive components from botanicals contain vitamins, alkaloids, proteins, and terpenoid which serve as cosmetics for caring of body and its body part. The Herbal cosmetic contains herbal shampoo, herbal hair conditioner, herbal oil, etc. That's are used to improve hair appearance. Used in skin care and used in hair herbal cosmetic products avoid the adverse effects such as itching, hair fall or irritation the scalp.

KEYWORDS: Excipients and there used, herbal drug, and hair care.

INTRODUCTION

Herbal cosmeceuticals for hair care utilized natural ingredients from plants, herbs and species to promote healthy hair and scalp. Herbal cosmeceuticals for hair care represent a growing trend in the beauty industry combining traditional herbalism with modern cosmetics. These products harness the power of botanicals to promote a healthy hair and scalp, addressing various concern such as hair loss, dandruff, and damage.

Herbal cosmeceuticals offer a natural, gentle, and sustainable alternative to synthetic hair care products. By leveraging the therapeutic properties of herbs, these products.

- Nourish and protect the hair and scalp
- Promote hair growth and strength
- Enhance texture and appearance
- Address specific hair concerns
- Provide a chemical-free, Eco-friendly option

➤ HAIR

Hair is a protein filament that grows from follicles found in the dermis. Hair is one of the defining characteristics of mammals. The human body, apart from areas of glabrous skin, is covered in follicles which produce thick terminal and fine vellus hair.

Hair is a keratinous filament growing out of the epidermis. It is primarily made of dead, keratinized cells. Strands 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's surface. The rest of the hair, which is anchored in the follicle, lies below the surface

of the skin and is referred to as the **hair root**. The hair root ends deep in the dermis at the **hair bulb**, and includes a layer of mitotically active basal cells called the **hair matrix**. The hair bulb surrounds the **hair papilla**, which is made of connective tissue and contains blood capillaries and nerve endings from the dermis.

➤ ANATOMY OF HAIR

Each hair has a hair shaft and a hair root. The shaft is the visible part of the hair that sticks out of the skin. The hair root is in the skin and extends down to the deeper layers of the skin. It is surrounded by the hair follicle (a sheath of skin and connective tissue), which is also connected to a sebaceous gland.

Each hair follicle is attached to a tiny muscle (arrector pili) that can make the hair stand up. Many nerves end at the hair follicle too. These nerves sense hair movement and are sensitive to even the slightest draft.

At the base of the hair, the hair root widens to a round hair bulb. The hair papilla, which supplies the hair root with blood, is found inside the bottom of the hair bulb. New hair cells are constantly being made in the hair bulb, close to the papilla. Around the papilla is the hair matrix which are a collection os epithelial cell and interspersed melanocytes.

The human hair follicle is an intriguing structure, and much remains to be learned about hair anatomy and its growth. The hair follicle can be divided into 3 regions: the lower segment (bulb and suprabulb), the middle segment (isthmus), and the upper segment (infundibulum). The lower segment extends from the

base of the follicle to the insertion of the erector pili muscle (also known as the arrector pili muscle). The middle segment is a short section that extends from the insertion of the erector pili muscle to the entrance of the sebaceous gland duct. The upper segment extends from the entrance of the sebaceous gland duct to the follicular orifice.

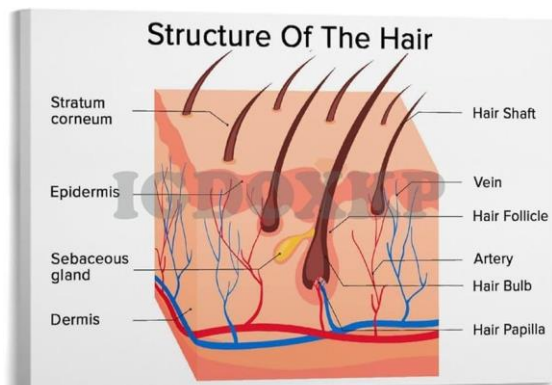


Fig 1.1 Anatomy of hair.

➤ STRUCTURE OF HAIR

Hair shaft of mammals consist of 3 principal

- 1) Cuticle
- 2) Cortex
- 3) Medulla

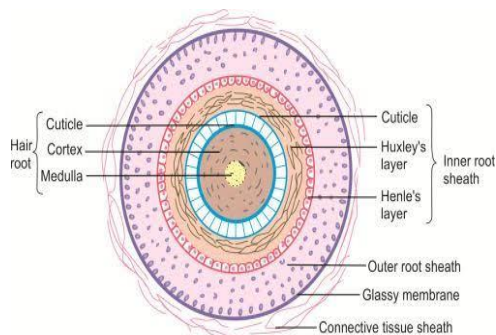


Fig 1.2: Internal structure of hair.

1) CUTICLE

The hair cuticle is the outermost part of the hair shaft. It is formed from dead cells, overlapping in layers, which form scales that strengthen and protect the hair shaft. The cuticle is the outermost layer, it is not responsible for the color of the hair. Melanin is the pigment that gives hair its color and is found in the cortex.

2) CORTEX

The cortex of the hair shaft is located between the hair cuticle and medulla and is the thickest hair layer. It contains most of the hair's pigment, giving the hair its color. The major pigment in the cortex is melanin, which is also found in skin. The distribution of this pigment varies from animal to animal and person to person. In humans, the melanin is primarily denser nearer the cuticle whereas in animals, melanin is primarily denser nearer the medulla.

3) MEDULLA

The medulla is the innermost layer of the hair shaft. This nearly invisible layer is the most soft and fragile, and serves as the pith or marrow of the hair. Some mammals don't have a medulla in their hair. The presence or absence of this layer and the characteristics of the medulla can aid taxonomists in identifying what taxa a hair comes from. Characteristics include whether the medulla contains air pockets as well as the histology of the medulla.

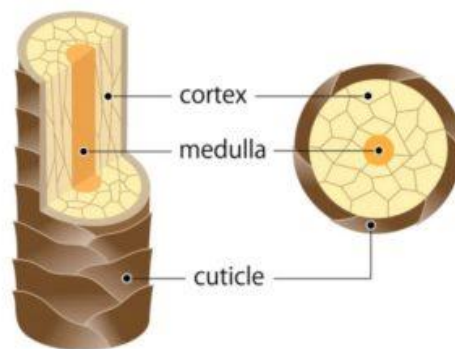


Fig 1.3: Hair Shaft.

➤ CAUSES

- Harmonal changes
- Stress
- Circulatory deficiency
- Lack of nutritive elements
- Childbirth
- Skin irritation
- Sun damage

➤ PROBLEMS RELATED TO HAIR

- Dryness and brittleness
- Hair loss or thinning
- Dandruff
- Colour damage
- Heat damage
- Split ends or breakage
- Oily hair
- Frizzy hair
- Limp hair
- Slow hair growth

➤ HERBAL HAIR CARE COSMETICS INCLUDE

- 1) HERBAL HAIR OIL
- 2) HERBAL HAIR SHAMPOO
- 3) HERBAL HAIR CONDITIONER

1) HERBAL HAIR OIL

Herbal hair oil can be a wonderful natural solution for promoting healthy hair and addressing various hair concerns. Hair oil are hair components implemented to the hair for the treatment of hair disorder which include greying of hair, hairfall dry hair and also allows in providing nourishment to hair. Natural oil gives some of

vital nutrient which can be important to keep the normal function.

- List of ingredient and importance in the formulation herbal hair oil.

Sr.No	Ingredient	Importance/Role
1	Alovera pulp	Boosting scalp health
2	Hibiscus	Control premature graying
3	Tulsi	Antibacterial
4	Shikakai	Anti-dandruff
5	Coconut oil	Moisturise dry hair
6	Almond oil	Treat hair loss
7	Fenugreek	Hair growth

Composition Of Herbal Hair Oil

1. Alovera Pulp

It contain vitamins A,C,& E.All three of these vitamins help to cell turnover,promoting healthy cell growth and shiny hair.

- Synonym:- Aloe barbadensis Mill , Aloe Indica Royle.
- Family:- Aloceae.(Aloe family).
- Biological sources:- It is obtained from the dried juice of the leaves of ; Aloe barbadensis miller known as curacao aloes, aloe perryi baker known as socotrine aloes.
- Chemical constituents:- Anthracene glycosides 11-40 %, Resins(Resinotanno+ cinnamic acid or coumaric acid), Isobarbaloin , Aloinosides A & B.
- Uses:- 1) Alovera pulp is used to reduce inflammation, and promote tissue repair.
- 2) It used to treat skin problem.
- 3)It used to soothe scalp irritations.
- 4)It used in hair masks, shampoos and conditioners to nourish,moisturize and promote healthy hair growth.
- 5)It used to reduces dandruff and itchiness.
- 6)It enhances shine and luster and gives healthy glow to hair.



Fig 1.4: Alovera Pulp.

2. Hibiscus

Hibiscus is a natural powerhouse of amino acids, which provide your hair with nutrients that increase hair growth. Amino acid are great at producing keratin, a building block of hair that binds the hair and prevents breakage.

- Synonyms:-Gongura, Tropical Hibiscus, Rose Mallow.
- Family:-Malvaceae.
- Biological source:-Hibiscus derived from flowers,leaves, and steam of hibiscus rosa-sinensis.Hibiscus is a genus of flowering plant in the malvaceae family that includes several species of herbs, shrubs and trees.
- Chemical constituent:-Chemical constituent present in hibiscus rosa-sinensis, tannins glycosides, flavonoids, terpenoids.
- Uses:- 1)Hibiscus promote hair growth, strengthens hair follicle and reduces hair loss.3
- 2) Hibiscus promote scalp health reducing inflammation and Infection.
- 3)It enhance hair colour, adding shine and luster.
- 4)It reduce breakage and split ends.
- 5)Improves hair elasticity.
- 6)It books hair value and restores hair PH balance.



Fig 1.5: Hibiscus.

- Extraction process of hibiscus flower
- Grind 8-10 hibiscus leaves and 4-5 flower into a paste, then mixed with 100ml of coconut, almond, or olive oil. Gently warm the mixture to infuse the oil with hibiscus goodness, then strain and massage into the scalp. leave it on for atleast 30 min or even overnight, and wash it out with a gentle shampoo.

3. Tulsi

Tulsi helps maintain moisture in your scalp and enhances blood circulation, reduces itchiness and dryness, strengthens the hair follicles and makes the root healthy.

- Synonyms:-Sweet Basil, Holly Basil, Vrinda Basil, Manjri Krishna Tulsi.
- Family:-Lamiaceae.
- Biological source:-Tulsi is a herbaceous plant native to the Indian subcontinent, Southeast Asia, and tropical Africa. Tulsi is cultivated for religious and traditional medicine purposes and also for essential oil.
- Chemical constituent:-Tulsi plant contain many active compound and the major compound are linalol, eugenol, citral and camphor.
- Uses:-1) Tulsi stimulate hair follicle, promoting growth and straightening Hair roots.

- 2) Tulsi promotes scalp health, reducing inflammation and infection.
- 3) It can be used as a natural hair dye.
- 4) Tulsi enhancing hair colour and shine
- 5) It helps to prevent hair loss caused by stress and pollution.
- 6) It can be used as a hair mass to nourish and moisturize hair.



Fig 1.6: Tulsi.

4. Shikakai

Shikakai cleanses your scalp gently and increase sebum secretion which helps reverse the dryness of your scalp.

- Synonym :- *Acacia concinna*, soap- pod.
- Family:- Fabaceae.
- Biological source:- It consists the fruits of the plant *Acacia concinna* Linn.
- Chemical constituents:- It contains Lactone, Glucose, Lupeol, Spinasterol, acacic acid, citric acid alkaloids calyptomine and nicotine.
- Uses:- 1) It controls hair fall
- 2) Prevents dryness and split ends.
- 3) Cleans scalp without affecting natural Ph.
- 4) It promotes faster hair growth.



Fig 1.7: Shikakai.

5. Coconut oil

Coconut oil can increase the health and condition of your hair. It helps to prevent protein loss in your hair. It is beneficial to apply it to hair both before and after washing it.

- Synonym:- coconut butter, copra oil, palm kernel oil.
- Family:- Arecaceae (palm family).
- Biological source:- Coconut oil is the oil expressed from the dried solid part of endosperm of coconut, *cocos nucifera*.
- Chemical constituents:- coconut oil is composed of the fatty acids, monounsaturated fats, caprylic acid (8%), palmitic acid (8%), stearic acid (2%), oleic acid (6%) and linoleic acid (2%).
- Uses:- 1) Coconut oil can help to reduce scalp irritations and inflammation, and fight dandruff.
- 2) It can nourish hair, repairing damage and dryness.
- 3) It is used as a natural conditioner to restore the scalp's natural oils help with hydration.
- 4) Coconut oil helps moisturize and repair damaged hair.



Fig1.8 Coconut oil.

- Extraction process of coconut oil:- For hot process, the strained coconut milk was placed in a stainless kettle and was boiled until it becomes thick and oily. The oil from the boiled milk was collected using a strainer or decanter before it was transferred in a packaging container.

6. Almond oil

Almond oil is a wonderful hair care ingredient! It's rich in nutrients and offers numerous benefits for hair health. Almond oil makes healthy smooth hair that has a soft texture and increases moisture and helps soothe irritation or dandruff on your scalp.

- Synonyms:- *Prunus Amygdalus Dulcis*
- Family:- Rosaceae
- Biological source:- Almond oil comes from the seeds of the almond tree, *Prunus Amygdalus*.
- Chemical constituent:- Almond oil contains a blend of glycerides. Oleic acid is the main fatty acid (65%), palmitic (4.97%-7.51%), stearic.
- Uses:- 1) Almond oil increases moisture.
- 2) It helps soothe irritation or dandruff on your scalp.
- 3) Almond oil strengthens and repairs hair.
- 4) Almond oil, when used regularly, penetrates to a cellular level to soften the hair.



Fig1.9: Almond oil.

• Extraction of almond oil

To make your own almond oil, place 2 cups of fresh, dry almonds into a blender and turn it to low speed. As the almonds start to break down, add teaspoon of olive oil and turn the blender up to medium or high speed, stopping occasionally to clean off the sides of the cup.

7. Fenugreek

Fenugreek is a herb with numerous benefits for hair, skin, and overall health. Fenugreek enhance blood circulation and helps reduce dandruff. Fenugreek seeds are rich in protein, and nicotinic acid contain, treats dryness of hair, controls balding, and hair thinning.

- Synonyms:- alholva, bird's foot.
- Family:-Legumes.
- Biological source:- Dried seeds of *Trigonella foenum*.
- Chemical constituent:- Fenugreek seeds consist of 45 to 60% carbohydrates, in which mucilaginous fibre (galactomannans), 20 to 30% proteins high in tryptophan and lysine, 5 to 10% fixed oils (lipids), pyridine alkaloids.
- Uses:-1) It Promotes Hair Growth.
2) helps repair damaged hair.
3) Fenugreek may help balance the scalp's pH.
4) It has antimicrobial and antifungal properties.



Fig1.10: Fenugreek.

8. Jasmine oil

Soothes dry skin and helps seal the hair cuticle, which may help breakage and encourage new hair growth.

- Synonyms :-Chameli ka tel, Jasmine officinale.
- Family :- Oleaceae.
- Biological source :- Jasmine oil is a volatile odoriferous oil derived from *Jasminum* sp.

- Chemical constituent:-The main active substances in jasmine are volatile oil, polysaccharides, and flavonoids.
- Uses:-1) Jasmine oil can also be used as a hair oil to help keep the hair and scalp moisturized.
2) Promote healthy hair growth and prevent hair loss.
3) Hydrates and Protects Your Hair and Scalp.
4) Prevents hair fall and hair breakage.



Fig1.11Jasmine oil

• Extraction process of jasmine

choose the jasmine you wish to use, there are numerous types of jasmine available, including white, green and black jasmine flowers, collect the fresh jasmine flowers, use a handkerchief or a large grocery bag to gather the flowers as they begin to open. Remove the petals from the flowers using a knife or a pair of scissors. Be careful not to damage the flower stem. Add the petals to a glass jar or container and cover them with cold water. Let them soak for at least 30 minutes or up to 12 hours. Harvest the essential oil by adding the liquid mixture to a diffuser or using a dropper to transfer it to your desired container.

• Methods of Herbal Hair Oil Preparation:-

- 1) The parts of plants like Shikakai (powder), and Fenugreek (seeds) were collected from the local market.
- 2) Alovera pulp(leaves), Tulsi (leaves), and Hibiscus(flower), are dried in sun light and converted into coarse powders.
- 3) The extracts were prepared by decoction method and the prepared extracts were stored in well closed containers.
- 4) Precisely all the dried and fresh herbs Tulsi, Hibiscus, Shikaki, Alovera pulp and Fenugreek were weighed and triturated in the mortar and pestle and mix with almond oil.
- 5) The above content was boiled for 15 min and filtered through a muslin cloth.
- 6) To the filtrate, coconut oil was added to the make up volume.
- 7) Finally, a small amount of flavouring agent (jasmine oil) was added to the oil.
- 8) Vit E as was used as a preservative.
- 9) It was placed in a closed container.

• Evaluation of Herbal Hair Oil

The formulated herbal hair oil has physical and biological evaluation.

□ Organoleptic properties

o coloration

Detected by means of bare eyes.

o Sensitivity

implemented to the skin and exposed to the sunlight for 5 minutes to check for any inflammation over pores and skin.

o Grittiness

Rubbed to the skin and determined.

o Sedimentation

Hold the entire instruction aside for overnight and check for sedimentation.

□ pH determination

o 18 Take a pH paper and dip into the formulated hair oil and check for the coloration trade.

□ Acid cost

o 10 ml of oil turned into added with 25ml of ethanol and 25ml of ether. Phenolphthalein changed into Delivered as indicator and titrated with zero.1M Potassium hydroxide solution.

N = wide variety of ml of 0.1M KOH

qw= Wt. of oil.

□ Specific gravity

o Specific gravity f the prepared oil became decided the usage of unique gravity bottle.

□ Balance study

o It is preferred with the aid of retaining the organized natural hair oil in a closed container at cooled and dry place.

➤ HERBAL HAIR SHAMPOOS

Herbal hair shampoos are gentle, natural, and chemical – free alternatives to commercial shampoos. Shampoos are perhaps the most popular cosmetic item use on a regular basis to clean the scalp and hair. A shampoo is a detergent solution that has been suitably enriched for other purposes, such as nourishing hair, lubricating, or administernig medication. Herbal Shampoo is a natural hair care product that is used to encourage hair growth, thickness, and blackness while also getting rid of oil, grime, and dandruff. Herbal shampoos are the cosmetic preparations 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 removal of oils, dandruff, dirt, environmental pollution. 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.

• Types of Shampoos

- 1) Powder shampoo
- 2) Liquid shampoo
- 3) Conditioning shampoo

- 4) Anti- dandruff shampoo
- 5) Traditional shampoo
- 6) Herbal shampoo
- 7) Solid shampoo

• Ideal propertise of shampoo

- ✓ It out to produce a very good amount of froth to fullfill to mental requirement of consumer.
- ✓ It should to give the hair a nice scent.
- ✓ It should be made the hair non dry, soft, and lustrous with good manageability and minimal fly down.
- ✓ Improves hairs strenght and elasticity.
- ✓ Hydrates and conditions hair, leaving it soft and manageable.

• List of ingredients and medicinal uses of herbal hair shampoo

Sr.No/Ingredients	Parts	Medicinal uses
1.Neem powder	Leaves	Antibacterial agent
2.Hibiscus flower	Flower	Conditioning agent
3.Allovera powder	Leaves	Moisturizing agent
4.Shikakai powder	Pobs	Detergent
5.Amla powder	Fruit	Antidandruff agent
6.Soop nut	Nut	Foaming agent

• Preparation of extract

- 1)50gm pieces of fresh leaves of Amla powder were boiled in 75ml of water and filtered.
- 2)50gm powder of dried fruits of Acacia concinna (Shikakai) was boiled in 75ml of water and filtered.
- 3)25 ml of juice of Aloe barbadensis (Aloe) was removed from leaves.
- 4)25gm fresh pieces of leaves of Azadirachta indica (Neem) were boiled in 25ml of water and filtered.
- 5)50 gm powder of dried fruits of Spindus mokorossi (Reetha) was boiled in 75 ml of water and filtered.

• Formulation of Herbal Hair Shampoo

- 1)Firstly a base was prepared by using 5gm sodium carboxy methyl cellulose in 40ml water
- 2)To 250ml beaker 50 ml of Reetha extract and 50ml of Shikakai extract was mixed and stirred well.
- 3)Then 50 ml of Amla Powder extract was added.
- 4)10 ml of Neem extract and 25ml of Aloevera extract was added.
- 5)5ml of propyl paraben was added as a preservative.
- 6)Above extract was stirred for 15 min.
- 7)10 ml of orange peel extract was added as a perfuming agent and stirred for 5 min.
- 8)The shampoo was prepared and placed into a 250ml plastic container.

• Evaluation Of Herbal Hair Shampoo

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.

○ *Visual assessment*

The prepared formulation was assessed for color, clarity, odor, and froth content.

○ *pH determination*

The pH of the prepared herbal shampoo in distilled water (10% v/v) was evaluated by means of pH analyzer at room temperature.

○ *Surface tension measurement*

The prepared shampoo in distilled water (10% w/v) was evaluated for surface tension using stalagmometer in room temperature.

○ *Testing of wetting*

Wetting time was calculated by noting the time required by the canvas paper to sink completely.^[3] 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.

○ *Foam stability test*

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.



Fig1.12: Herbal hair shampoo.

➤ **HERBAL HAIR CONDITIONER**

Herbal hair conditioners are a great way to nourish and moisturize your hair naturally. Herbal hair conditioner that helps to prevent the hair from breakage and makes the hair strong and lustrous. Herbal conditioners were estimated for physiochemical parcels similar as pH, solids content rheological measures, soil despensibility.

Hair conditioner is one of the cosmetics which is widely used in daily life. Hair is an imperative part of the human body which protects scalp. Hair conditioner is hair care product, which is applied to the hair and hair tips after shampoo in order to condition the hair and then it is rinsed out. Hair conditioner is wed improve the manageability and to enhance lustrous look of hair. Its main purpose is to reduce friction between the hair strands to allow easier brushing and combing. The main objective is to develop the most effective hair care product to meet people's compliance. The plants product used in herbal hair conditioner like Custard Apple, egg white, Aloe Vera, Hibiscus Flower, Lemon, Curry Leaves, rose oil having various properties like Stimulate hair growth, prevents breakage, prevent dandruff, reduces hair fall, improve manageability, helps in smoothing. Herbal hair conditioner was evaluated by

different parameters like pH, dirt dispersion test, cleansing, and stability, moisturizing time determination, and viscosity, physical appearance.

A hair conditioner is a hair care product that is applied after shampooing to condition the hair. Conditioning helps protect your hair and restore it. Conditioner is a preparation used to improve the condition of hair. The product is beneficial to all types of hair. Herbal hair conditioner helps to prevent the hair from breaking and makes the hair strong and lustrous. Made with the key ingredients of aloe Vera and hibiscus, this herbal conditioner for healthy hair is a solution for keeping the hair dirt-free and smooth. Conditioner is a moisturising agent designed to give hair shine, smooth out strands and leave them feeling soft. It gives them the moisture boost they need after a thorough cleanse. Put simply, conditioner restores the mois-ture balance.

It's used after shampoo because shampoo cleanses the hair, ridding it of dirt, oils and pollution. If we were to apply conditioner before shampoo, it would defeat the purpose and the shampoo would simply wash away the moisture-rich goodness. Conditioner is like a hair superhero that arrives on the scene just in time. Used

after a good shampoo, hair conditioner replenishes lost moisture and calms hair fibres.

• HOW TO USE HERBAL HAIR CONDITIONER



• Objectives Of Herbal Hair Conditioner

1. To Designed to add shine to your hair.
2. To Keep it soft and flowing.
3. To Increase hair growth.
4. To Makes hair more manageable and easier to comb.
5. To Leaves hair soft and moisturized.
6. To Restore damaged hair.
7. To straightening curly hair.
8. To revitalizes and replenishes hair strands.
9. To Prevents styling from UV rays and heat.

• Advantages of herbal conditioner

- 1) Gives hair shine and softness.
- 2) Reduce split ends.
- 3) Improve manageability.
- 4) Prevent hair breakage.
- 5) Protects hair from chemical and mechanical damage.

• Disadvantages of herbal conditioner

- 1) Harmful to hair and generally toxic.
- 2) Causes eye irritation.
- 3) Other conditioners mainly contain Sodium Lauryl Sulfate and Ammonium Lauryl Sulfate.
- 4) They dry out the hair shaft and cause split ends and frizz.

• List of ingredients and their role of herbal hair conditioner

Sr.No	Ingredient	Role
1.	Fenugreek seeds	Nourishes the hair
2	Curry leaves	Promote hair growth
3.	Hibiscus flower	Natural conditioner
4.	Aloevera	Conditioning agent
5.	Rose water	Perfume
6.	Glycerin	Moisturizer
7.	Almond oil	Smoothering agent

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