

**FORMULATION AND EVALUATION OF HERBAL HAIR OIL CONTAINING  
*HIBISCUS ROSA-SINENSIS AND BOS TAURUS***



**By,**

AMEENA N	- 180091304
DRISHYA VINOJI	- 180091315
FATHEMA RIZVANA T R	- 180091316

**Project Report Submitted to**

**Kerala University of Health Sciences**

**In partial fulfilment of the requirements for the award of the**

**Degree of**

**Bachelor of Pharmacy**

**Under the guidance of**

**PREETHY CHERIYAN**

**Asst Professor**

**Department of Pharmaceutics**



***St. Joseph's College of Pharmacy***

***Cherthala, Kerala – 688524 India***

**FACULTY OF PHARMACY**

**KERALA UNIVERSITY OF HEALTH SCIENCES, THRISSUR – 680596**

**AUGUST, 2023**

*Evaluated*

*Sheet*  
*22/08/23*

*Neelam vijayan*

## **ABSTRACT**

The goal of this study includes the Formulation and Evaluation of herbal hair oil containing *Hibiscus rosa-sinensis* and *Bos taurus*. Hair is an epidermal derivative which is one of the vital parts increasing the overall elegance of the body. Hair oil is an oil based cosmetic product intended to improve the condition of hair. Various types of oils may be included in hair products. These often purport to aid with hair growth, dryness or damage. Herbal hair oil shows better activity. Safer and popular when compared to synthetic hair oils. We made an attempt to formulate a poly herbal hair oil using Hibiscus, Tulasi, Cow milk, Eucalyptus, Kalonji seeds, Aloe vera and Coconut oil. The prepared formulations were evaluated for its physicochemical properties and antifungal activity. Physical parameters were also evaluated like Ph, viscosity, specific gravity, acid value and saponification value etc.

**KEY WORDS:** Herbal hair oil, Eucalyptus leaf, Tulasi leaf, Hibiscus, Antifungal, Kalonji seeds.

## INTRODUCTION

Hair is an important part of the body appeal and its look is a health indicator. Accordingly, recent advances in hair science and hair care technologies have been reported in literature claiming innovations and strategies for hair treatments and cosmetic products. The treatment of hair and scalp, primarily, involved the use of shampoo for an effective, but gentle cleansing, however, for years, the shampoo is considered not only as a cosmetic product having the purifying purpose, but it is also responsible for maintaining the health and the beauty of hair, imparting gloss and improving manageability.

As far back as ancient times, people used natural extract and resources for healthcare and cosmetic purposes. Accordingly, nowadays, consumers' demand for natural ingredients and additives, especially in cosmetic products, as a replacement of synthetic compounds, having possible effects on health and the environment, is tremendously increased. Therefore, with the aim to satisfy these requirements, together with the impelling need for reducing the micro plastic use, marketing trends are developing towards a cosmetic based on natural ingredients, generally associated with a healthy lifestyle, both in food and cosmetic fields i.e., healthcare.

Moreover, the difficulties due to technologies related to allowed ingredients and their legislative range of concentrations, the cosmetic expertise is focused on the research of raw materials, innovative strategies and techniques for the formulation of novel products, characterized also by a good texture and skin feel. <sup>[9]</sup>

## HUMAN HAIR

Hair, protective appendages on the body and structures of integument with sebaceous glands, sweat glands and nails are considered an important part of the body, derived from the skin ectoderm. They are also known as epidermal derivatives, since they originate from the epidermis during embryological development. The hair is mainly constituted by three parts: the bulb, the root and the stem, and it is implanted in the pilosebaceous follicle in the dermis.

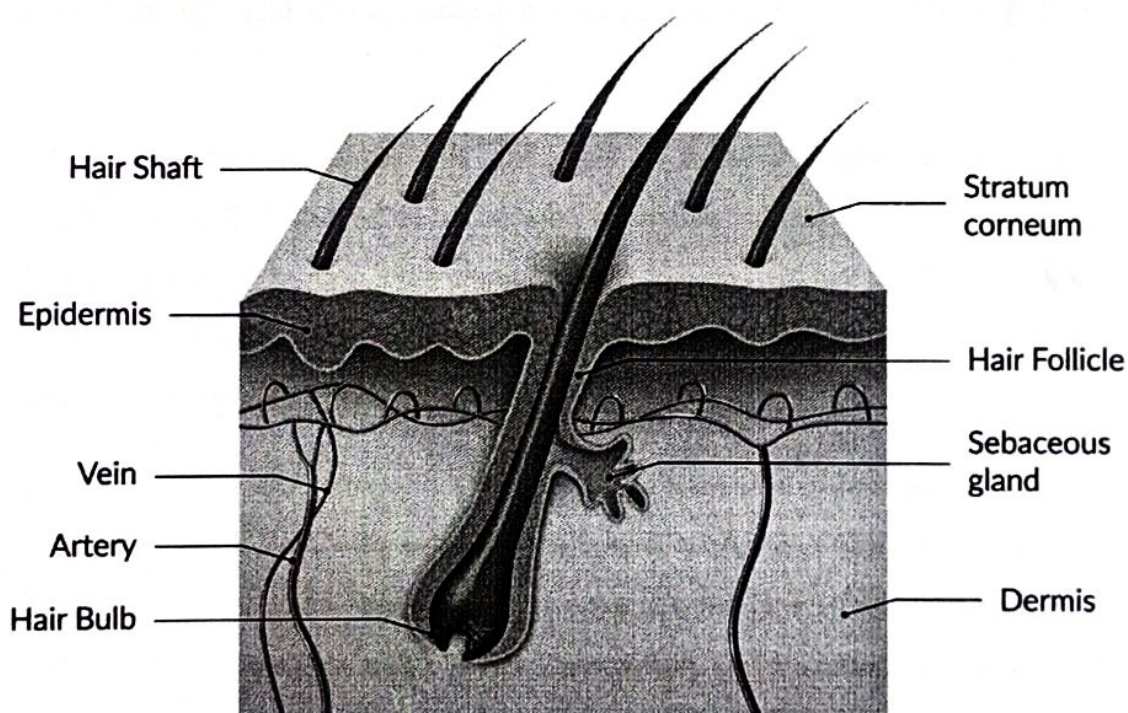
The bulb is the deepest end of the hair and is also the portion that makes it grow. It is connected to the richly innervated and vascularized dermal papillae, which allow the



contribution of nutrients necessary for hair growth. Keratin is the main component of the hair. It is a fibrous and resistant protein, whose amino-acidic chains are organized in an alpha helix and contains mainly tyrosine, glycine and cysteine. Hair is one of the external indicators of internal body conditions.

If, on one hand, hair texture and shine are usually related to hair surface properties, on the other hand, the integrity of hair is due to the hair cortex. Hair products that improve the structural integrity of hair fibres and increase tensile strength, increase hair volume, reduce frizz, improve hair manageability, stimulate new hair growth are available along with products for treating diseases related to hair and scalp. Modern cosmetic products are formulated to clean hair from detritus, and to restore and improve hair physiology.<sup>[3]</sup>

## STRUCTURE OF THE HAIR



## HAIR OIL

Hair oil is an oil- based cosmetic product intended to improve the condition of hair. Various types of oils may be included in hair oil products. These often purport to aid with hair growth, dryness, or damage. Hair oil also provides essential moisture to the scalp depicting in beautiful hair. <sup>[21]</sup>

Many cosmetic products including shampoo, heat protectant, hair drops, or hair masks contain oils. Humans produce natural hair oil called sebum from glands around each follicle. Other mammals produce similar oils such as lanolin. Similar to natural oils, artificial hair oils can decrease scalp dryness by forming hydrophobic films that decrease Trans epidermal water loss, reducing evaporation of water from the skin.

Oils on the hair can reduce the absorption of water that damages hair strands through repeated hygral stress as hair swells when wet, then shrinks as it dries. Oils also protect cuticle cells in the hair follicle and prevent the penetration of substances like surfactants. Saturated and monosaturated oils diffuse in to hair better than poly saturated ones.

Mineral and vegetable oils are used to make a variety of commercial and traditional hair oils. Coconut oil is a common ingredient. Other vegetable sources include almond, argan, babassu, burdock, castor and tea seed. Natural oils are used more commonly as cosmetic products on the scalp. Natural oils come from natural resources that are very high in nutrients such as vitamins and fatty acids. <sup>[22,23]</sup>

Coconut oils have properties that reduce protein loss in hair when used before and after wash. Coconut oil is known to have lauric acid, which is a type of fatty acid that may penetrate the hair shaft due to a low molecular weight and linear conformation. <sup>[3]</sup> Hair oils are the hair care preparations used for the prevention and treatment of baldness or other ailments, aggression of hair. They also promote the luxurious growth of hairs. Hair oil containing herbal drugs are used as hair tonic. Hair care products are categorized into two main categories, hair tonics and hair grooming aids. These are basically the extracts of medicinal plants in an oil base. A few of the herbs used are amla, Henna, Neem, Lemon, Tulsi, Brahmi. Synthetic drug, minoxidil is a potent vasodilator appears safe for long-term treatment <sup>[7]</sup>



There are two categories of hair care products; they are hair tonics and hair grooming aids. Hair oil which contains herbal drugs are called as hair tonics. These are formulated by herbal extracts in an oil base. Hair oils are the hair care formulations applied for treatment of hair disorders such as baldness, aggression of hair, discolouring of hair, hair falling, and dryness of hair etc. The nature of oil is non-sticky and addition of perfumes enhances the fragrance and overall improves its popularity. Proper application of hair oil gives lustre to hair, softening the hair, gives flowness to hair and more important gives cooling effect to brain. The most recognized hair care preparation is herbal hair oils, they moisturizes the scalp and also helpful in dry scalp and dry hairs. Herbal hair oil maintains normal functions of sebaceous gland as they supply normal essential elements for hair to naturally grow. [7]

#### **Benefits of using hair oil:**

1. They make the scalp hydrated by providing them with moisture.
2. They aid hair growth by providing the hair follicles with the correct amount of nutrients.
3. Oils benefit our hair by strengthening it and protecting it from external damage.
4. Many people oil their hair regularly for the shine and glow.
5. Hair oils take care of premature greying by keeping the vitamin deficit.
6. A dry scalp exposed to many environmental issues leads to active hairfall. Hair oils take care of it effectively.

#### **ROLE OF INGREDIENTS**

##### ***Hibiscus rosa-sinensis*(Hibiscus)**

Kingdom: Plantae

Order : Malvales

Family : Malvaceae

Genus : Hibiscus



Species : *H. rosa – sinensis*

*Hibiscus rosa-sinensis* is a bushy, evergreen shrub or small tree growing 2.5 to 5m tall and 1.5 to m wide. The plant has a branched taproot. Its stem is aerial, erect, green, cylindrical and branched. *Hibiscus rosa-sinensis* known colloquially as Chinese hibiscus, China rose, Hawaiian hibiscus, rose mallow and shoe black plant, is a species of tropical hibiscus, a flowering plant in the Hibiscus tribe of the family Malvaceae. It is widely cultivated as an ornamental plant in the tropics and subtropics, but its native range is Vanuatu. The photochemical analysis showed that *Hibiscus rosa-sinensis* contained tannins, anthraquinones, quinines, phenols, flavanoides, alkaloids, terpenoids, saponins, cardiac glycosides, protein free amino acids, mucilage, essential oils and steroids.

*Hibiscus* plant has various important medicinal uses for treating wounds, inflammation, fever and coughs, diabetes, infections caused by bacteria and fungi, hair loss and gastric ulcers in several tropical countries. *Hibiscus* flowers and leaves may have beneficial properties for hair health. It might be helpful in circulating the blood to hair follicles. The leaves and flowers of *hibiscus* contain natural pigments, antioxidants and vitamins that might be useful for hair health. [3,9]

### ***Ocimum tenuiflorum* (Tulsi)**

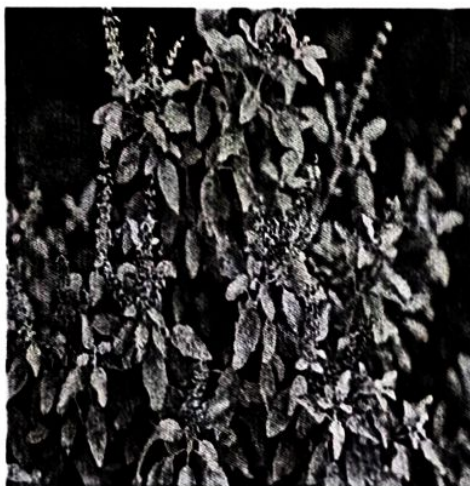
Kingdom : Plantae

Order : Lamiales

Family : Lamiaceae

Genus : *Ocimum*

Species : *O. tenuiflorum*



*Ocimum tenuiflorum*, commonly known as holy basil, tulsi or tulasi and tamole is an aromatic perennial plant in the family Lamiaceae. It is native to the Indian subcontinent and widespread as a cultivated plant throughout the Southeast Asian tropics. Preclinical studies have demonstrated that therapeutic uses include treatment of epilepsy, asthma, cough, skin and haematological disease, wounds, inflammation.



Three types of tulsi are commonly described. *Ocimum tenuiflorum* includes “Rama tulsi” and “Krishna tulsi”. *Ocimum gratissimum* is a third type known as “Vana tulsi”. Recent studies report the leaf extracts from ethanol and aqueous tulsi have antioxidant, anti- diabetic, anti- microbial, anti-fungal effect. Because the different tulsi types exhibit vast delivery in morphology and photochemical composition including high levels of Eugene, secondary metabolites. It improves blood circulation keeping our scalp cool by reducing itchiness. The volatile contents released by tulsi nourish our hair and suffocate the lice .<sup>[1,4,27]</sup>

### ***Eucalyptus globulus* ( Eucalyptus)**

Kingdom : Plantae

Order : Myrtales

Family : Myrtaceae

Genus: Eucalyptus

Species : E.globulus



*Eucalyptus globulus* commonly known as Southern blue gum or blue gum, is a species of flowering plant in the family Myrtaceae.

It is a tall, evergreen tree endemic to south eastern Australia. This eucalyptus species has mostly smooth bark, juvenile leaves that are whitish and waxy on lower surface, white flowers and woody fruit. Eucalyptus leaves are a great source of antioxidants, particularly flavonoids, which protect our body from oxidative stress and free radical damage. The main flavonoids in eucalyptus include catechins, isorhamnetin, luteolin, kaempferol, phloretin and quercetin. Regular use of eucalyptus oil can not only reduce hair loss but also promote hair growth by nourishing the scalp and strands with nutrients important for healthy hair. Exposure to the sun, pollutants and dust can often render our hair dull and in need of hydration and shine. This is where eucalyptus oil comes in. Using eucalyptus oil for hair growth is a safe, effective way to combat hair loss symptoms and promote the growth of thick, healthy, shiny hair. <sup>[1]</sup>



### ***Bos taurus* ( Cow milk)**

Cow milk has several benefits for hair. It is rich in essential proteins, minerals and vitamins. Milk contains proteins such as casein and whey that help strengthen and thicken hair. It is a rich source of calcium that promotes hair growth and prevents hair loss. Milk contains Vitamin D that helps in the growth of new hair follicles. Additionally, it provides us with other nutrients like Vitamins A, B6, biotin and potassium that make the hair soft and shiny. Therefore, milk is the immediate solution to itchy scalp as well as dry, dull, frizzy and rough hair strands. The protein content of milk helps strengthen hair and increases the growth of hair follicles. It is a great cleanser of flaky, dead skin cells on the scalp. Milk helps maintain the balance of natural oil on the scalp in addition to working as a natural hair straightener. [1,2,18]

### ***Nigella sativa* (Kalonji seed/Black cumin)**

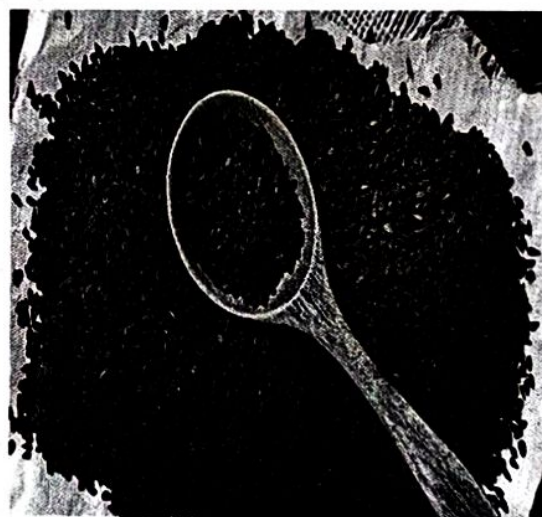
Kingdom : Plantae

Order : Ranunculales

Family : Ranunculaceae

Genus : *Nigella*

Species : *N.sativa*



*Nigella sativa* also known as black cumin, Kalonji, nigella is an annual flowering plant in the family Ranunculaceae, native to Eastern Europe and Western Asia but naturalized over a much wider area including parts of Europe, Northern Africa and east to Myanmar.

Extensive studies were done to identify the composition of the black cumin seed, the ingredients of *N. sativa* seed includes: fixed oil, proteins, alkaloid, saponin and essential oil.

Black seed oil, which is also referred to as kalonji oil or *nigella sativa* oil, is a fantastic ayurvedic ingredient and a great cure for many hair-related problems. It has antioxidants and anti-inflammatory properties that help fight skin conditions brought on by

bacteria and fungi. On the other hand, its major contents like proteins, alkaloids, and saponins help promote hair growth and slow down cellular ageing. [10,14]

### ***Aloe barbadensis miller* (Aloe Vera)**

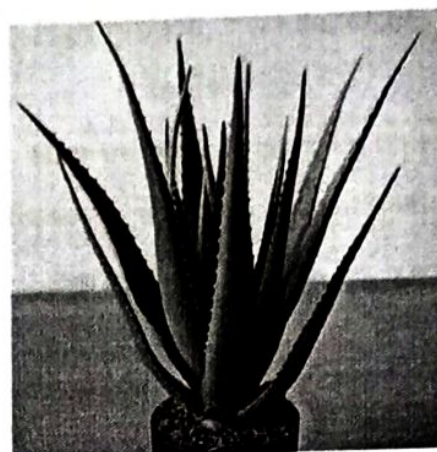
Kingdom: Plantae

Order: Asparagales

Family: Asphodelaceae

Genus: Aloe

Species : A. Vera



Aloe vera is an succulent plant species of the genus Aloe. It is widely distributed, and is considered an invasive species in many world regions. The leaves of Aloe vera contain significant amounts of the polysaccharide gel acemannan which can be used for a wide range of medical purposes. The skin contains aloin which is toxic. Products made from Aloe vera usually only use the gel.

Aloe vera rejuvenates dry scalp and hair. It had high water content which makes it a great humectant for our scalp and hair. It provides essential nutrients to your hair follicles that make our hair grow healthy and prevent our scalp and hair tissues from drying out. Traditionally, this medicinal plant has been employed to treat skin problems (burns, wounds, and anti-inflammatory processes). Moreover, Aloe vera has shown other therapeutic properties including anticancer, antioxidant, antidiabetic, and antihyperlipidemic. [5,8,14]

INGREDIENTS	BIOLOGICAL NAME	USES
Hibiscus	<i>Hibiscus rosa-sinensis</i>	Improves hair growth, cures dandruff and itchiness, prevents premature greying
Cow milk	<i>Bos taurus</i>	Hair nourishment, improves consistency
Eucalyptus	<i>Eucalypts globulus</i>	Fights dandruff, hair nourishment, provide shine



Tulasi	<i>Ocimum tenuiflorum</i>	Prevent hair loss, reduce itchininess, treats dandruff and dry scalp
Aloe vera	<i>Aloe barbadensis</i>	Hair growth, treat dandruff, moisturizer
Kalonji seed	<i>Nigella sativa</i>	Hair growth, strengthen hair follicles, improve overall health of hair
Coconut oil	<i>Cocos nucifera</i>	Moisturizes dry hairs, prevent dandruff