

A Review on Antioxidant-Rich Formulation of Hibiscus in Vergin Coconut Oil

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Abstract: *These days, shampoos, hair tonics, and conditioner formulations with herbal extracts are among the products that consumers are interested. A product called a hair tonic is used to style hair. The current study's goal is to prepare a herbal hair tonic with jojoba, tulsi, and coconut oil and assess its antifungal and antibacterial properties. This ingredient's final preparation is made in batches with varying concentrations. The antifungal and antibacterial properties of each formulation are examined. In addition to possessing good consistency, homogeneity, appearance, and pH, the formulation exhibits good antifungal and antibacterial action. Between 0.2 and 2% of people worldwide are thought to be affected by the universal issue of hair loss.*

The objective of the current study is to use virgin coconut oil extracts of a blend of plants to make a herbal hair oil that functions as a hair tonic. Among the botanicals used in the mixture are hibiscus in different concentrations. Parameters like moisture content, pH, specific gravity, viscosity, acid value, saponification value, etc., were evaluated, and irritation and sensitivity tests were conducted and documented. It was discovered that every parameter fell within the permissible ranges.

Keywords: Herbal formulations, antifungal activity, antibacterial activity, Hair tonic, Cosmetics, Herbs, Evaluation, Amla, Neem, Virgin coconut oil, Hibiscus

I. INTRODUCTION

The term "hair tonic" has been used for some hair Preparation because the term is used in therapeutics. Hair tonic is one kind of hair repairing tonic and re-Texturing the hair. Along with sebaceous glands, sweat glands, and nails, hair is an accessory structure of the skin and one of the body's essential components. It is formed from the ectoderm of the skin and serves as a protective appendage. Coconut oil has been used for generations as a traditional hair grooming method people in tropical nations to effectively encourage hair growth and development. The fatty acids found in coconuts, especially lauric acid, have been shown to have antimicrobial qualities and to be safer and more effective than mineral oil. Virgin coconut oil has a naturally occurring, characteristic coconut flavor and aroma, making it the purest type of coconut oil. VCO preserves the majority of its useful components, making it more advantageous nutritionally than copra oil. Due to its high lauric acid content, VCO is distinct from all other vegetable oils. 48–53 percent lauric acid makes up the 92 percent medium chain fatty acids found in VCO.

A protein filament called hair develops from dermal follicles. Lauric acid's straight linear chain and low molecular weight allow it to enter the hair shaft and stimulate hair growth while also having a strong affinity for hair proteins. The most potent fatty acid with antibacterial properties is lauric acid. VCO demonstrates antiviral, antifungal, and antibacterial properties. There is more consumer appeal for a natural product with antibacterial properties on the market. Due to its significant amount of hair grooming principles, VCO may therefore be seen as a clever and secure substitute for mineral and petroleum-based oils. Among the many advantages of VCO are its ability to hydrate and retain moisture as well as soften, smooth, and preserve hair. Fatty acids, vitamins, and minerals found in VCO help to naturally nourish and repair hair while delaying the onset of greying. According to the studies, the VCO can be utilised as a protective medium to prevent hair damage because it blocks around 20% of the UV rays from the sun.



VCO is therefore a fantastic foundation for the creation of a hair tonic due to its numerous hair growth-promoting and therapeutic qualities. Hair tonics are hair care products that work well for treating hair conditions like dryness, balding, greying, and hair loss. For the formulation to be considered a hair tonic, it must be fortified with herbal extracts in virgin coconut oil as the foundation. Worldwide, people have been using herbs and natural treatments to cure hair loss and other hair-related issues for decades. Many plants and herbal formulations are said to promote hair development and enhance the condition of existing hair, and India is a good source of medical herbs. For centuries, Indian ladies have utilized hair tonics that are enhanced with herbs as a daily hair care routine. Herbal ingredients in natural products

Virgin coconut oil(vco):

Synonym: Copraoil

Biological source : It is a fixed oil obtained by expression from thoroughly dried kernels of *Cocos nucifera* belonging to family *Palmae*.

The only ingredient needed to make premium organic virgin coconut oils is fresh, white coconut kernels, which are coldpressed and entirely natural. Because virgin coconut oils have a clean, acid-free taste and a fresh coconut scent, you can tell them apart from other grades. Packed with medium-chain fatty acids, it is regarded as a functional superfood due to its therapeutic properties that go beyond its nutritional value.



Fig.No :-01

The nutrients in a coconut are higher. This is only one of the many benefits that coconut oils offer over other types of oil. It comes from a source that has more minerals and phytonutrients by nature. It hydrates and nourishes hair. Lauric acid, which is abundant in coconut oil, facilitates better absorption into the hair strands. Frequent application keeps hair nourished, hydrated, and conditioned. It adds lustre and softens hair. Regular application of coconut oil softens and gives luster to hair. It gives hair strands a natural sheen and seals in moisture. Oil can make hair greasy, so be careful not to use too much of it. It restores damaged and dry hair. Hair is nourished from the roots when coconut oil is massaged into the scalp. It makes hair softer and smoother by reducing frizz and dryness. It improves the health of dry and damaged hair when used consistently. It stops hair from breaking

Hibiscus:

Synonym: *Hibiscus rosasinensis* Biologic

source: hibiscus, (genus *Hibiscus*)

genus of Numerous species of herbs, shrubs, and trees in the Mallow family (*Malvaceae*)





Fig.No: -02

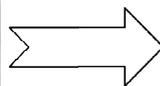
Ayurveda has long utilised *Hibiscus rosasinensis* to treat a variety of illnesses. There have been reports of wound healing, antimicrobial, and immune modulatory qualities in *Hibiscus rosa-sinensis* blooms. *Hibiscus rosa-sinensis* bloom have been shown in numerous studies to possess anti-oxidant, anti-fungal, and antibacterial qualities. Dandruff can be controlled and hair growth revitalised with hibiscus. Agarwal and Singh (2017) assessed *Hibiscus rosasinensis* aqueous flower extract's capacity to promote hair development. After 30 days, the data showed an increase in both hair length and hair follicle length. In a similar study, Pathak and Gala (2018) found that, when compared to minoxidil, *Hibiscus rosasinensis* flower and leaf extracts significantly promoted hair growth after 30 days with no negative side effects. Hibiscus also contributes to the general health and texture of hair. In light of the seclinical findings, *Hibiscus rosasinensis* leaf and flower extract might be chosen as an ingredient in the herbal hair oil recipe

Preparation of herbal extract:

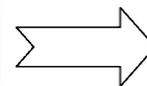
Virgin coconut oil : -Processing of wet coconuts In order to extract the oil and coconut milk, the wet coconuts are pressed. Virgin coconut oil is the result of further processing that does not involve the use of heat, shear, chemicals, or refining. Cosmetics and medicines are two industries that use virgin coconut oil. Colour less and characterized by a distinct coconut flavour, it finds use in medicine, cosmetics, and food. Virgin coconut oil is traditionally made using the **fermentation method**, in which the oil phase separates from the aqueous phase after the coconut milk released from freshly harvested coconuts ferments for 24 to 36 hours. Additionally, the resultant wet oil is briefly heated to eliminate the moisture before being filtered. Traditional virgin coconut oil processes involve centrifuging newly extracted milk to produce cream, which is then heated to 60– 80°C before the oil is extracted. Virgin coconut oil is one of the value-added products made from coconuts that have been the subject of systematic investigation at CFTRI. With an overall yield of 87.5%, virgin coconut oil is produced by "wet processing" in the CFTRI method without the use of heat, shear, or chemicals



Fresh Coconut

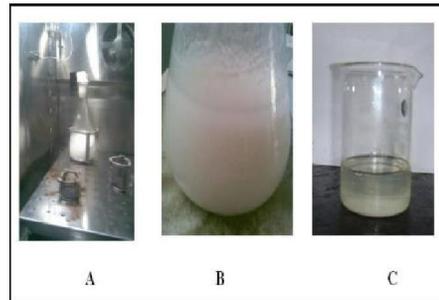


Weight The Coconut



Coconut Milk





Filter the Oil



Fermentation Process

Hibiscus Extraction:-

First, dirt and other extraneous objects are removed from the hibiscus blossoms. To keep heat-sensitive components from deteriorating, the cleaned flowers are then dried in the shade. To enhance the surface area for solvent action, the dried flowers are ground into a coarse powder. A suitable solvent is chosen based on the solubility of the target constituents. For hibiscus, 70% ethanol or water is often used to extract anthocyanins, flavonoids, and other phenolic compounds. The powdered hibiscus flowers are placed in a clean, dry glass container. The solvent is added in a proportion (usually 1:10 w/v) such that the plant material is completely immersed. The container is closed tightly to prevent solvent evaporation. The mixture is allowed to stand at room temperature for a specified period (typically 3 to 7 days). The container is shaken or stirred occasionally to facilitate better contact between the plant material and the solvent, enhancing extraction efficiency. After the maceration period, the mixture is filtered using muslin cloth or filter paper to separate the liquid extract from the solid residue. If the extract needs to be concentrated, the solvent can be removed using a rotary evaporator or by gentle heating in a water bath at low temperature to avoid degradation of active compounds. The final extract is stored in a clean, airtight, amber-colored bottle to protect it from light and degradation. It should be labeled properly and kept in a cool, dry place or refrigerated



Result

Virgin coconut oil is extracted from fresh coconut meat without the use of high heat or chemicals. It is rich in medium-chain fatty acids, especially lauric acid, which has a high affinity for hair proteins and penetrates the hair shaft deeply.



Hibiscus (*Hibiscus rosa-sinensis*) is often used in the form of flower or leaf extract. It contains flavonoids, amino acids, vitamin C, and antioxidants, which are known to nourish the scalp, promote hair growth, and reduce hair fall and dandruff.

Regular application of the VCO and hibiscus formulation has shown to stimulate hair growth by nourishing hair follicles. The hibiscus component is known to stimulate blood circulation in the scalp, which can lead to visibly thicker and denser hair over time.

Hair Strength and Texture

Lauric acid in VCO penetrates the hair shaft, reducing protein loss. This results in stronger, shinier, and smoother hair. Users often report a reduction in split ends and breakage with continuous use.

Scalp Health

The antimicrobial properties of VCO, combined with the antioxidant and anti-inflammatory effects of hibiscus, help reduce dandruff, scalp irritation, and itching. Hibiscus also helps balance oil production, making it suitable for both dry and oily scalp types.

Natural Conditioning

The formulation acts as a natural conditioner, leaving hair soft and manageable. Hibiscus provides mucilage, a slippery substance that coats the hair, enhancing detangling and softness.

Hair Color and Shine

Hibiscus may enhance natural hair color over time, especially in darker hair, providing a natural sheen. It is sometimes used to darken premature greying when used consistently.

II. CONCLUSION

The formulation of virgin coconut oil combined with hibiscus extract demonstrates significant potential as a natural and effective hair care treatment. Virgin coconut oil, with its deep-penetrating and nourishing properties, works synergistically with the rich phytochemicals and antioxidants present in hibiscus to promote overall hair health. The blend helps in strengthening hair roots, stimulating hair growth, reducing hair fall, preventing dandruff, and improving scalp health.

Additionally, it enhances hair texture, imparts natural shine, and may help in delaying premature greying. Regular application of this formulation can lead to visibly healthier, thicker, and more manageable hair, making it a promising solution in both traditional and modern hair care practices.

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