Hibiscus rosa-sinensis as a Herbal Ingredient for Hair and Scalp Care A Review

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Abstract

Often referred to as Chinese hibiscus or China rose, Hibiscus rosa-sinensis Linn. is a beautiful medicinal plant in the Malvaceae family. Herbal remedies have historically made use of various plant parts, especially the flowers and leaves.which support the growth, strength, and nourishment of hair.Numerous phytochemical groups, including as flavonoids, tannins, saponins, terpenoids, alkaloids, anthocyanins, and other phenolic compounds, have been found in scientific studies. Because of these chemicals' antioxidant, antibacterial, and anti-inflammatory qualities, H. rosa-sinensis may be used as a botanical ingredient in hair and scalp care products.

Hibiscus flowers are rich in amino acids, which are an essential part of keratin. The leaves also reduce dandruff flakes, prevent dandruff-causing fungus from growing, and prevent dandruff from recurring. Because of its abundance of amino acids, flavonoids, and mucil, hibiscus (Hibiscus rosa-sinensis) is well known for encouraging hair growth, fortifying roots, and halting hair loss. People now favor organic, natural, and herbal formulations that have little or no side effects because synthetic or chemical items have negative impacts when utilized. Herbal remedies are typically renowned for having "no side effects." People suffer from a variety of issues, including hair loss, split ends, dandruff, excessive sebum production, thinning hair, early graying of the hair, etc. People are therefore searching for methods to improve hair growth, prevention, and maintenance. Hibiscus rosa-sinensis hair serum keeps the scalp moisturized and healthy by locking in moisture.

Keywords

Hibiscus rosa-sinensis, hair care,Scalp care, hair growth, phytochemicals, antioxidant, antimicrobial, herbal formulation.

Introduction

Known as the "queen of tropics" or "China rose," the magnificent flowering plant Hibiscus rosa sinensis is mostly found in southeast China and a few islands in the Pacific and Indian oceans. During cultural events, hibiscus, one of Hawaii's most popular national flora, is often worn in the hair. It is a woody perennial shrub that is evergreen and has short petioles. Ovate lanecolite leaves have a border that is irregularly serrated at the end.

The base of the leaves is globrous and whole. Flowers have involucral bracts 57 and are axillary solitory. The petals are crimson, three to four times longer than the calyx, and the staminal tube extends past the petals. The calyx has a diameter of 7.0 to 7.5 cm. Not a single fruit. blooming all year long. Different color tints, such as orange, crimson, brilliant red, or magenta, can be found in single or double forms. This plant's scarlet blossoms are given especially to the lord. Ganapati, or Shri Ganesha. Thiamin, riboflavin, apigenidin, citric acid, oxalic acid, pelargonidin, quercetin, niacin, and ascorbic acid are among the many chemical constituents found in the blossoms of this plant, which is highly significant in traditional medicine. It is grown in gardens all over the world using the vegetative method (cutting) in shaded areas during the rainy season. It may be grown in any kind of soil. .

People now favor organic, natural, and herbal formulations that have little or no side effects because synthetic or chemical items have negative impacts when utilized. Herbal remedies are typically renowned for having "no side effects." People suffer from a variety of issues, including hair loss, split ends, dandruff, excessive sebum production, thinning hair, early graying of the hair, etc. As a result, people are searching for methods to improve hair growth, prevention, and maintenance. Hibiscus rosa-sinensis hair serum keeps the scalp moisturized and healthy by locking in moisture. Amino acids, a crucial component of keratin, are abundant in hibiscus blossoms. Amino acids, a crucial component of keratin, are abundant in hibiscus blossoms. Additionally, the leaves lessen dandruff flakes, stop the growth of the fungus that causes dandruff, and stop dandruff from returning. Hibiscus (Hibiscus rosa-sinensis) is well known for promoting hair development, strengthening roots, and preventing hair loss due to its richness of amino acids, flavonoids, and mucil,

A person's physical appearance and general well-being are greatly influenced by the health and vitality of their hair, which also affects their confidence and sense of self. Nonetheless, the frequency of hair loss and other hair-related problems continues to be a major global concern. Many people look for natural solutions that use the power of essential oils and botanicals, even though many commercial products offer solutions to these issues.. The usage of hibiscus flowers and leaves in hair care routines throughout history is noteworthy. Hibiscus extracts, which are well-known for their nourishing qualities and high vitamin, mineral, and antioxidant content, are thought to fortify hair follicles, stop breakage, and promote growth. Different species of Hibiscus have different medicinal and therapeutic properties as found by various studies. In this review, we focus on the therapeutic potential and application of Hibiscus rosa-sinensis, especially as a herbal ingredient in hair and scalp care.

- **Plant Profile: Hibiscus (Hibiscus rosa-sinensis)**

Common Names

• Hibiscus

• China Rose

• Shoe Flower

• Gudhal (Hindi)

Botanical Name: Hibiscus rosa-sinensis.

Family: Malvaceae

Plant type: Evergreen shrub or small tree



Fig No 1: Hibiscus Flower

Table No.1: Taxonomical Classification

Kingdom	Plantae
Subkingdom	Tracheobionta
Super division	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Order	Malvales
Genus	Hibiscus
Species	H. rosa-sinensis

Chemical Constituents:

The shrubby species Hibiscus rosa sinensis typically grows to a height of four meters. It has oval branches with 10 cm broad by 15 cm long stalks and is evergreen.

The majority of flowers have long, smooth-edged stalks that are about 20 cm wide. They have oval, whorled petals that resemble eggs and are connected to the central stamina column at the base.The following nutrient composition (per 100gm) was found in the edible portion of the flower (61.6%): moisture 89.8%, nitrogen 0.064%, fat 0.36%, crude fiber 1.56%, calcium 4.04 mg, phosphorus 26.68 mg, iron 1.69 mg, thiamin 0.031 mg, riboflavin 0.048 mg, ascorbic acid 4.16 mg, and niacin 0.16 mg.

Quercetin-3-di-□ − □-D-glucoside, quercetin-3-di-O-□-D-glucoside, quercetin-3-O-□-D-sophortrioside, kaempferol, and kaempferol-3-O-□-xylosylglucoside have all been found in patels of Hibiscus rosa-sinensis.Cyaniding-3-sophoroside was the primary anthocyanine found in the red flower of H. rosa-sinensis.Anthocyanin bands were found to be more numerous in red-petaled H. rosa-sinensis varieties than in yellow-yellow orange varieties. The quantitative distribution of anthocyanins, leucoanthocyanins, flavonol, and carotenoids varies among the various colored groups.The flower contains flavonoid aglycones, with 7 mg of quercetin and 36 mg of cyanidin per gram of fresh tissue.The flower is reported to contain flavones such as quercetin-3-diglucoside, quercetin-3,7-diglucoside, cyanidin-3,5-diglucoside, and cyanidin-3-sophoroside-3,5-glucoside in deep yellow and white flowers, while kaempferol-3-xylosylglucoside is found in ivory white flowers. The leaves and stem contain ß-sitosterol, stigma sterol, taraxeryl acetate, and three cyclopropane compounds along with their derivatives.Fatty acids, fatty alcohols, and hydrocarbons have been identified in Hibiscus rosa-sinensis leaves. Linoleic acid, □-sitosterol, and quercetin can be used as specific bioactive markers to quantify Hbiscusrosa sinensis flowers. Vitamin E is a substance that promotes hair growth by boosting capillary circulation in the scalp, which helps to increase the volume of hair. Vitamin E is a medically essential micronutrient and has been employed in different industries including medicine, pharmaceutics, cosmetics and foods. Hibiscus rosa-

sinensis included cyclopropanoids, methyl sterculate, methyl-2-hydroxy sterculate, 2- hydroxysterculate, malvalate and beta-sitosterol. Cyanidin 3-sophoroside was the flower's primary anthocyanin

Uses:

1. Hibiscus for Hair Growth: Herbal hair oils are often a combination of herbal extract such as hibiscus, blended with a carrier oil base, such as: almond oil, coconut oil, mineral oil, jojoba oil, olive oil, walnut oil, wheat germ oil. Hibiscus is rich in vitamin C, flavonoids, amino acids, mucilage fiber, moisture content, and antioxidants. Hibiscus's goodness nourishes your hair, encourages the growth of luxuriant hair, and gives your mane a naturally satin-soft feel.

2 Hibiscus Protects Scalp From External Damage: The robust qualities of hibiscus plants shield your scalp from outside stresses.

Its action on your scalp functions as a sunscreen to protect your hair from UVB radiation. Cleansing characteristics ofhibiscus also assist regulate the pH of your scalp, prevent oiliness, build-up of dandruff, and activate your hair follicles

3. Hibiscus for Hair Root Strength: Flavonoids and amino acids are abundant in hibiscus flowers and leaves. circulating circulating circulating circulating circulating circulating circulating circulating circulating circulating circulating circulating circulating circulating circulating circulation. Your hair follicles' cells produce keratin in response to amino acids, promoting healthy hair development.

Role:

- Stop the loss of hair.
- gives hair a healthy, lively look.
- Don't turn gray too quickly.
- Increase volume and thicken hair.
- Control Dandruff
- Defend against dryness, frizz, and breakage.

Morphology of Hibiscus Rosa- Sinensis

The tap root of the plant is branching. It has simple, petiolate leaves with alternating phyllotaxy.The flowers are large, trumpet-shaped, large, trumpet-shaped, trumpet-shaped, trumpet-shaped.H. rosa-sinensis blooms come in three primary shapes: single, double, and crested.

1.Habit: Hibiscus is a branched-stemmed evergreen shrub with alternate leaves.

2.Root: Root system usually tap root with lateral branches.

3.Stem: Stem is erect, branched and woody, usually green becoming brown with age.

4.Leaves: • Leaves simple and alternate.

• Shape: ovate-lanceolate

• Margin: serrate.

• Venation: reticulate.

• Petiole: present.

5.Flower:

• The flowers are large, showy and solitary.

• Position : Axillary.

• Symmetry: Actinomorph.

• Sexuality: bisexual.

• Flower complete and hypogynous.

6.Calyx:

• It has 5 sepals.

• Sepals fused at the base.

• Normally there is an epicalyx of bracteoles.

7.Corolla:

• Has 5 petals.

• Petals free.

• They are usually brightly colored, often red, pink, yellow or white.

• Estivation: Petals contorted (twisted)

8.Androecium: • Stamens many.

• Filaments unite to form a staminal tube around the style.

• Anthers with a single pollen sac, kidney-shaped.

9.Gynoecium: 5 carpels, fused (syncarpous).

• Ovary superior, 5-locular.

• Placentation axile.

• Style runs through the staminal tube.

5 times lobed stigma

Hair growth potential:

Hibiscus rosa-sinensis is used traditionally in hair-care preparations and its potential for hair growth promotion has been studied in preclinical studies. Hair growth is a cyclical process and comprises predominantly the anagen (active growth), catagen (transition), telogen (resting) and exogen (shedding) phases.

1. Anagen Phase: The Active Growth Phase

This is the active growing phase of the hair follicle.

The matrix cells are rapidly dividing and they form the hair shaft.

The longer the anagen phase, the longer the hair can grow.

Hibiscus rosa-sinensis has been studied for its hair growth stimulating properties.

In an experiment, petroleum ether extracts of the leaves and flowers of H. rosa-sinensis were applied topically to albino rats. Hair length and differences in the follicular cycle (anagen, telogen) were studied.

The leaf extract in that study was more active in hair growth than the flower extract

2. Regression Phase – Catagen Phase

Catagen is a short transition/regression phase.

During this period the active growth of the follicle slows down and the follicle regresses in structure.

To continue producing hair, the follicle must remain in the active growth cycle rather than prematurely entering regression.

Hibiscus is therefore being examined as a hair-growth herbal ingredient, but evidence specifically proving its effect on catagen prevention in humans is lacking.

3. Telogen Phase - Resting Stage

The telogen phase is the resting/relatively inactive stage of the hair follicle.

After telogen, follicles may reenter anagen and start a new growth cycle.

Adhirajan et al. (2003) evaluated specifically anagen and telogen phase after topical application of H. rosa-sinensis extracts in rats and provided experimental evidence for its potential influence on the hair-growth cycle.

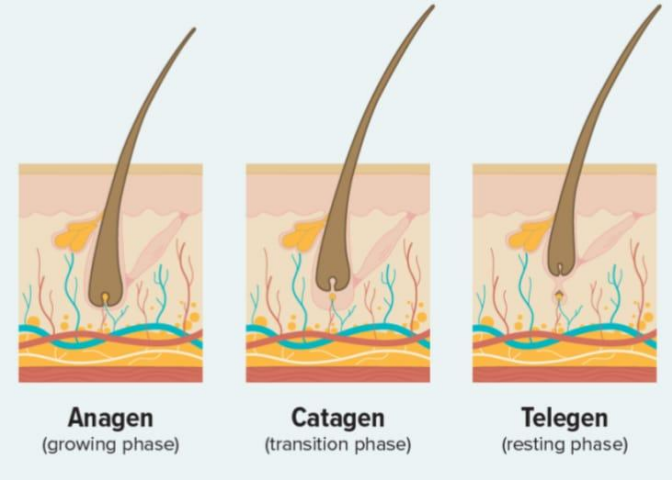


Fig No.2 Stage of Hair Growth

. Is widely used in Ayurveda as a potent hair growth promoter. Its leaves and flowers are rich in flavonoids, anthocyanins, mucilage, amino acids, and Vitamin C.

1. **Mechanism of Action:** The activity of promoting hair growth is mainly due to prolongation of the anagen phase and enlargement of the follicular size. The mucilage content acts as natural conditioner conditioner and amino acids help in keratin synthesis which strengthens hair roots and prevents breakage. It also increases blood flow to the scalp and stimulates inactive follicles.
2. **Experimental Evidence:** In-vivo studies have demonstrated that 1% petroleum ether extract of leaves in liquid paraffin applied topically over the shaved skin of rats for 30 days showed excellent hair growth activity. The leaf extract was found to be more potent than the flower extract and was comparable to the standard 2% Minoxidil without any side effects. Hibiscus flower extract (HRSF) showed better growth than Minoxidil in stress-induced alopecia models and the polyherbal combination was found to be significantly more effective
3. **Applications:** It is used in herbal hair oils, serums, shampoos & conditioners for controlling hair fall, preventing premature graying, dandruff due to its pH balancing property.

Antioxidant activity

Hibiscus (Hibiscus rosa-sinensis): Hibiscus is a flowering plant noted for its health and cosmetic advantages. It is high in antioxidants and supports heart health by keeping blood pressure levels within normal ranges. Hibiscus tea may improve weight control and digestion. Hibiscus is frequently used in hair care to encourage hair growth, lessen dandruff, and provide a natural sheen. Additionally, it reduces acne and gives skin a natural glow, both of which contribute to better skin health.The antioxidant activity of Hibiscus rosa-sinensis is attributed to a number of phytoconstituents, including flavonoids, anthocyanins, phenolic compounds, tannins, and vitaminC

Mechanism of antioxidant action:

• Hydro radicals, free radicals.reduces oxidative stress by giving unstable free radicals electrons or hydrogen.

•Lipid peroxidation can be inhibited by phenolic and flavonoid substances.

•Cells may be shielded from oxidative damage by antioxidant activity.

Relevance to hair care:

The environment of the hair follicles may be adversely affected by oxidative stress in the scalp, which can also lead to cellular damage. Hibiscus is therefore a possible herbal ingredient in hair-care preparations, such as hair oils, masks, and scalp serums, due to its antioxidant capabilities. Antioxidant activity in lab tests, however, does not establish that hibiscus cures human hair loss on its own.

Antioxidant and protection of hair follicles Hibiscus rosa-sinensis flowers are a source of phenolic compounds, flavonoids and anthocyanins with free-radical-scavenging and antioxidant activity . These components may help to counteract the excess of reactive oxygen species (ROS) and oxidative stress in the scalp. Moreover, the antioxidant properties of H. rosa-sinensis may also contribute to the maintenance of a favorable environment for normal follicular activity, as oxidative stress in excess may disrupt the homeostasis of the hair follicle and negatively affect hair growth. Therefore, hibiscus can be a potential natural antioxidant ingredient in hair and scalp care.

Anti- inflammatory activity

Anti-inflammatory activity: Hibiscus rosa-sinensis contains various bioactive compounds such as flavonoids, anthocyanins, phenolic compounds and tannins, which may be responsible for its anti-inflammatory potential. Experiments have shown that extracts from H. rosa-sinensis have anti-inflammatory effects in animal models of inflammation. These properties may be relevant for hair-care applications since maintenance of a healthy and non-irritated scalp environment is important for normal hair-follicle function. H. rosa-sinensis therefore may have potential as a botanical ingredient for scalp and hair-care formulations. However, specific clinical evidence of the anti-inflammatory effect of H. rosa-sinensis on the human scalp is still limited. The flowers and leaves of Hibiscus rosa-sinensis L. contain flavonoids, phenolic compounds, anthocyanins, tannins and other bioactive constituents and have potential anti-inflammatory activity. These compounds may be useful in modulating inflammatory processes and alleviating inflammation related oxidative stress.

Hibiscus' anti-inflammatory properties may be relevant to scalp care, as excess inflammatory and oxidative processes can lead to scalp irritation and an unhealthy environment for normal hair-follicle function. Therefore,

H. rosa-sinensis can be used in herbal hair care products such as hair oils, shampoos, scalp lotions, masks and serums to improve scalp health.

Antimicrobial activity

Hibiscus rosa-sinensis has several biologically active phytochemicals like flavonoids, phenolic compounds, tannins, saponins, anthocyanins and other secondary metabolites that can contribute to its antimicrobial activity. Extracts of H. rosa-sinensis flowers have been reported to exhibit antimicrobial activity against microorganisms such as Bacillus subtilis, Escherichia coli and Salmonella spp . The methanolic and ethanolic flower extracts showed measurable zones of inhibition against the tested bacteria suggesting their potential antibacterial effect. Flavonoids, tannins, steroids, phenolic compounds and saponins were also confirmed in H. rosa-sinensis leaf extracts in a recent 2026 study. The extracts tested showed inhibitory activity against bacteria. Scalp irritation, scaling and other scalp problems can be caused by imbalance or infection of the scalpSo antimicrobial botanical ingredients are useful in formulations for scalp hygiene. Hibiscus (Hibiscus rosa-sinensis) has shown in-vitro antibacterial activity against various micro-organisms, indicating its potential use as a botanical ingredient in hair and scalp care preparations.

Applications in Herbal Hair Care Formulation

The leaves and flowers of Hibiscus rosa-sinensis have been traditionally used to promote hair growth and to condition hair, thus suggesting its potential use in various herbal hair-care formulations. Experimental studies have also been conducted to assess the potential of H. rosa-sinensis extracts in modulating hair growth and the hair-follicle cycle. The plant can be used in herbal hair oils, shampoos, hair tonics, gels and formulations for scalp-care. Recently, formulation studies using H. rosa-sinensis extracts in herbal shampoos and hair tonics have been reported in which the formulations were evaluated for their physicochemical properties and hair and scalp-care performance.

1.Herbal Hair Oil

Hair oil is a component of hair care products used to cure hair disorders such as dry hair, balding, graying hair, and hair loss. It also helps to nourish hair.Herbal cosmetics are in high demand due to people's growing interest in them; also, natural cosmetics are more effective and have low side effec Herbal ts. One essential component of natural cosmetics is natural hair oil. Herbal hair oil is more popular and utilized in many hair conditions. Not only do they effectively promote hair growth, but they also provide essential moisture to the scalp, resulting in gorgeous hair. Hibiscus rosa-sinensis flower/leaf extract can be used as a botanical ingredient in herbal hair oils for scalp and hair care

2.Herbal Shampoo

Hibiscus rosa-sinensis can be used as herbal shampoo formulation as botanical ingredient for hair and scalp care. Hibiscus based shampoos were formulated and evaluated for pH, viscosity, foaming ability, foam stability, wetting time, dirt dispersion and cleansing action. These studies support its potential use as conditioning and scalp-care ingredient in herbal shampoo formulations.Hibiscus Helps condition and strengthen hair

3.Herbal Hair Serum

Serum is a concentrate of important active constituents made up of small molecules that target specific businesses in skin and hair care. Serums are also known as topical products with a thin consistency that contains a high concentration of active ingredients.

Suitable types of hairs for using hair serum:-

1. Straight

2. Wavy

3. Curly

4. Coily

4. Herbal Hair Conditioner

Hair conditioners are crucial for boosting the manageability and look of hair, minimizing static, and adding shine. These products address a range of hair demands according to personal tastes and situations. Due to its natural ingredients, which have many advantages for hair health, herbal hair conditioners have become more and more popular recently. Hibiscus leaves mucilage is studied for hair softening and conditioning properties. The study developed conditioners with different concentrations of H. rosa-sinensis leaf mucilage and evaluated organoleptic properties, homogeneity, pH and cream type.

Safety and Toxicity Profile

Safety of Hibiscus rosa-sinensis is an important aspect for its therapeutic and hair-care applications. Available preclinical studies suggest its safety to be dependent on plant part, type of extract, dose and duration of exposure.A study with a methanolic leaf extract showed no mortality or signs of toxicity in mice receiving a single oral dose of 2000 mg/kg and an estimated LDso >2000 mg/kg. Repeated administration of 800 mg/kg for 14 days resulted in changes in liver and kidney related biochemical and histopathological parameters while the 400 mg/kg dose did not show marked adverse effects.. A recent review reported that methanolic flower extract did not show any apparent toxic effects up to 800 mg/kg, whereas mortality was observed at 1600 mg/kg in mice. The results

suggest that H. rosa-sinensis possesses a promising safety profile at the appropriate doses, but further toxicological and clinical studies are needed to establish its safety, particularly for long-term use.and topical hair care products.

Future Perspectives

Further research on Hibiscus rosa-sinensis should be directed toward standardization of extracts, optimization of extraction methods, identification of active bioactives and development of stable hair-care formulations. More clinical studies are needed to confirm the efficacy and safety of its use on hair and scalp. Because some bioactive compounds such as anthocyanins are light, temperature, pH and oxygen sensitive, it is also important to study the appropriate processing and storage conditions. Optimized formulations such as hair serums, shampoos, oils and conditioners and long-term safety and clinical evaluation may help to establish H. rosa-sinensis as a reliable herbal ingredient for modern hair and scalp care. Advanced delivery systems such as nanoformulations, liposomes and other controlled delivery systems may also be explored to improve delivery of plant bioactives to the scalp. Well-designed human clinical studies are especially needed to confirm effects on hair growth, hair density, hair fall and scalp health. Standardized evaluation methods, quality control and stability testing can help develop Hibiscus herbal hair-care products that are safe, effective and commercially viable.

Conclusion

Hibiscus rosa-sinensis is a promising herbal ingredient for hair and scalp care due to its diverse phytochemical constituents and reported biological activities. Studies suggest it may have hair-growth-supporting, antioxidant, anti-inflammatory and antimicrobial properties, which may contribute to healthy hair and scalp. Its use in formulations such as herbal hair oils, shampoos, conditioners and hair serums supports its prospects for developing plant-based hair-care products. However, much of the available evidence is derived from preclinical and formulation studiesSo hibiscus based hair oil serum is an interesting herbal approach for hair nourishment, scalp care, hair conditioning and maintenance of healthy looking hair.

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