

A Review on Hibiscus (*Hibiscus Rosa-Sinensis*) and its Potential Role in Hair Growth

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Abstract: *Hibiscus (Hibiscus rosa-sinensis L.) is a familiar flowering plant used in traditional hair-care practices in India and other tropical regions. Its leaves and flowers contain different plant compounds, including flavonoids, phenolic compounds, pigments and mucilage, which have been studied for a range of biological properties. This has led to interest in hibiscus as a possible ingredient in hair-care products. This review explains, in simple academic language, what is currently known about hibiscus and hair growth. The most directly relevant experimental study evaluated particular hibiscus leaf and flower extracts in animal and laboratory models and reported greater activity for the leaf extract under those study conditions. However, animal and laboratory results do not prove that hibiscus causes hair regrowth in people. Evidence also depends on the exact plant part, extraction method and finished formulation. Hibiscus may be useful to investigate as a botanical cosmetic ingredient, but well-designed human studies are still needed before strong hair-growth claims can be made. The review also discusses quality control, safety and research needs.*

Keywords: Hibiscus rosa-sinensis, hair growth, hair follicle, herbal cosmetics, phytochemicals, alopecia, safety.

I. INTRODUCTION

Hair grows from small structures in the skin called hair follicles. Hair normally passes through a growth phase, a transition phase and a resting phase before the strand sheds and the cycle begins again. Some daily shedding is normal. More noticeable hair loss can occur for many reasons, including inherited patterns, hormonal changes, illness, stress, nutritional deficiencies, scalp conditions or certain medicines. For this reason, a single cosmetic ingredient should not be expected to solve every type of hair loss.

Plants have long been used in traditional hair care. Hibiscus is especially familiar in South Asian home remedies, where its leaves and flowers may be crushed, blended or incorporated into oils and hair masks. People often use it because it is accessible and has a long history of traditional use. Traditional use is a useful starting point for research, but it is not the same as scientific proof that a product can create new hair growth.

Interest in hibiscus has grown because researchers have tested extracts in experimental models. To interpret this evidence properly, it is important to separate three different outcomes: (1) conditioning the hair shaft, which may improve softness and manageability; (2) reducing breakage, which may help retain hair length; and (3) stimulating hair follicles to produce more hair. These outcomes are related to hair care but are not interchangeable.

II. OBJECTIVES

This review aims to describe hibiscus and its traditional use in hair care; summarize its reported phytochemical groups; explain the main experimental evidence related to hair growth; discuss possible uses and limitations; and outline the safety and quality checks needed for future research.



III. REVIEW APPROACH

Relevant published literature was identified using research records and review articles concerning *Hibiscus rosa-sinensis*, hair growth, herbal hair-loss remedies and plant-derived cosmetic ingredients. The review focuses on a directly relevant experimental paper and broader reviews that help explain the plant's chemical profile and the limits of herbal hair-loss evidence. This is a narrative review rather than a systematic review: it does not claim to include every published study, and no statistical pooling was conducted.

IV. BOTANICAL DESCRIPTION

Hibiscus rosa-sinensis L. belongs to the family Malvaceae. It is a perennial shrub grown widely in warm climates. It has glossy green leaves and large flowers that may be red, pink, yellow or other colours. Leaves and flowers are the plant parts most often discussed in traditional hair-care use. Correct identification matters because plants with similar common names may be different species, and plant chemistry can vary with variety, growing conditions, harvest time, storage and processing.

V. PHYTOCHEMICAL PROFILE

Reports on hibiscus describe several groups of natural compounds, including flavonoids, anthocyanins and other phenolic compounds, tannins, saponins, organic acids and mucilage. The amount and type of each compound can differ between leaves, flowers, roots and other plant parts. It can also differ depending on the solvent and extraction process used by researchers.

These compounds are often studied for antioxidant or other biological activities. Such findings may help explain why hibiscus is of interest in botanical research, but the presence of a compound does not prove that it stimulates hair growth. The compound must be present in a suitable amount, reach the relevant site and show a meaningful effect in a reliable study. For a finished hair oil, researchers should examine the actual oil rather than assume that its chemical profile matches a water-based or alcohol-based laboratory extract.

VI. HOW MIGHT HIBISCUS AFFECT HAIR?

Several explanations have been suggested for the possible value of hibiscus in hair-care products. First, plant mucilage and the formulation base may help hair feel smoother or easier to comb. Second, some plant compounds are studied for antioxidant activity, which is of scientific interest in skin and follicle biology. Third, hibiscus extracts have been tested directly in hair-growth models. These are possible research pathways, not confirmed mechanisms in people.

The strongest directly relevant evidence often cited is the study by Adhirajan and colleagues, published in 2003. The researchers tested petroleum-ether extracts prepared from hibiscus leaves and flowers. In their animal experiment, a 1% extract preparation was applied to shaved skin of albino rats for 30 days. They also tested extracts using isolated hair follicles in a laboratory setting. The authors reported that the leaf extract showed greater hair-growth activity than the flower extract in those experimental conditions. The result is interesting, but it cannot be directly translated into a recommendation for people or into a claim that any home-made hibiscus preparation will work.

VII. WHAT THE EVIDENCE DOES—AND DOES NOT—SHOW

Animal studies and laboratory experiments are useful early steps because they help researchers decide what to investigate next. They cannot establish the size of a benefit in humans, the best formulation for human scalps, or the long-term safety of regular use. The 2003 study tested specific extracts rather than every type of hibiscus oil, shampoo, gel or hair mask. Differences in solvent and preparation can change which compounds are extracted and how much of them is present.



VIII. SUMMARY OF AVAILABLE EVIDENCE

Evidence area	What can reasonably be said	Main limitation
Traditional use	Hibiscus leaves and flowers are used in traditional hair-care practices.	Traditional use alone cannot confirm effectiveness.
Animal / laboratory research	One directly relevant study reported hair-growth potential for specific hibiscus extracts; leaf extract was more active than flower extract in that experiment.	The findings are not proof of human hair regrowth.
Human clinical evidence	Reliable evidence for hibiscus alone as a hair-growth treatment remains insufficient.	Well-designed trials of standardized products are needed.
Cosmetic conditioning	A properly formulated product may improve feel or manageability depending on its ingredients and base.	Conditioning is different from new follicular growth.

IX. HIBISCUS IN HAIR-CARE FORMULATIONS

Hibiscus may be used in different types of cosmetic products, such as oil infusions, gels, shampoos or conditioners. Each type has different formulation needs. An oil infusion does not necessarily contain the same constituents as a laboratory extract prepared with a solvent. Fresh leaves or flowers can also introduce water and unwanted microorganisms if they are not handled properly. A research formulation should therefore state the botanical name, plant part, source, extraction method and concentration of each ingredient.

For a product intended for research, preparation steps should be consistent from batch to batch. Plant material should be correctly identified, cleaned and processed using a documented method. The finished product should be packed in a clean, compatible container and stored under defined conditions. If additional herbs or carrier oils are included, the finished multi-ingredient product must be evaluated as a whole; the effects of the individual ingredients cannot simply be added together.

X. QUALITY-CONTROL TESTS

Suitable evaluation may include appearance, colour, odour, viscosity, pH where applicable, moisture or water content, microbial quality, stability and packaging compatibility. Botanical raw materials should be checked for identity and possible adulteration. A stability study can monitor changes in colour, smell, separation, sediment and viscosity over time. Test methods and acceptance limits should be selected before the study and justified for the particular formulation.

XI. SAFETY AND RESPONSIBLE USE

Natural ingredients can still cause irritation or allergy. A hibiscus preparation should not be applied to broken, inflamed or infected skin. If a product causes persistent itching, redness, burning or swelling, it should be discontinued. Unusual odour, visible mould or unexplained changes in an oil product may indicate a quality problem and should not be ignored. A cosmetic preparation should never be swallowed.

Hair loss that is sudden, patchy, persistent or associated with scalp pain, marked scaling or other symptoms should be assessed by a qualified health professional. Different causes of hair loss need different approaches. A herbal cosmetic should not replace a medical assessment when one is needed, and claims such as “guaranteed regrowth” or “permanent cure” are not supported by the hibiscus evidence summarized here.



XII. LIMITATIONS OF CURRENT RESEARCH

There are several gaps in the current literature. First, there are relatively few directly relevant studies of hibiscus and hair growth, and the commonly cited experimental study is not a human clinical trial. Second, studies may use different plant parts, extraction solvents, concentrations and methods, making results difficult to compare. Third, many cosmetic preparations contain several ingredients, so it may be unclear which ingredient—if any—accounts for a change. Fourth, standardized measurements and long-term safety information are needed.

A further limitation is the difference between hair-shaft appearance and follicle activity. A product may make hair appear smoother or reduce breakage without increasing the number of growing follicles. Future research should measure these outcomes separately and should report negative findings as well as positive ones.

XIII. FUTURE RESEARCH

Future studies should begin by authenticating the plant material and recording the source, plant part, harvest and storage conditions. Researchers should characterize the extract and the finished formulation so that the product can be reproduced. Basic quality and skin-compatibility testing should come before studies of performance. If early findings justify human research, the study should use an appropriate comparison group, enough participants, pre-defined outcome measures and adequate follow-up. Outcomes could include standardized photographs, hair counts in a defined area, hair shedding, breakage, scalp comfort and adverse events. Ethical review and informed consent are essential for research involving people.

XIV. DISCUSSION

The available literature supports investigating hibiscus as a botanical ingredient, but it does not justify describing hibiscus as a proven human hair-growth treatment. The 2003 study is relevant because it tested hibiscus extracts in both animal and laboratory models. However, it used specific petroleum-ether extracts, and its results should not be generalized to every hibiscus preparation. Traditional use gives researchers a reason to ask the question; careful experiments are needed to answer it.

In practical cosmetic terms, a hibiscus-containing product may be developed for hair conditioning, but claims about new growth require stronger evidence. It is important to describe results precisely. “Improved softness,” “less breakage,” “reduced shedding” and “increased hair density” are not the same outcome. A credible research paper should not use them as if they mean the same thing.

The quality of raw materials and the finished product is also important. A botanical formulation can vary depending on the plant source and processing method. Without standardization, one batch may not be comparable to another. Transparent reporting of ingredients, methods, quality tests and safety observations will make future studies more useful.

XV. CONCLUSION

Hibiscus (*Hibiscus rosa-sinensis*) has a long history of traditional use in hair care and contains several groups of plant compounds that are of interest to researchers. One animal and laboratory study reported hair-growth potential for particular hibiscus extracts, with leaf extract showing greater activity than flower extract under the conditions tested. However, this evidence does not establish that hibiscus reliably promotes hair regrowth in humans. More standardized research and well-designed human studies are needed. Until stronger evidence is available, hibiscus is best described as a promising botanical ingredient for further investigation, rather than a proven treatment for hair loss.

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