



Review of Herbal Hair Serum: Rosemary-Hibiscus-Neem

Bhakti Ajit Jethe, Shreyas Shriraj Jagdale, Ashish Nishikant Jondhale, Sahil Ram Kale, Sanjay Kumar Trivedi, Prasad Jaiswal

Ideal Institute of Pharmacy, Posheri, Wada

DOI: <https://doi.org/10.55248/gengpi.5.0124.0222>

ABSTRACT:

Now day's cosmetics are becoming more high demand in daily life and it was used frequently by many of people per year. In mammalian system, the hair Follicle is known to the most Significant organ that determines appearance, gender distinctions, to give temperature protection. Cosmetic thus play vital role in human life. Herbal cosmetics are widely used because Of the belief that they have fewer side effect and better Safety. Hair is a primary part of the body which acts as a protective append age and also its beauty appearance. The youngish generation have begun to suffer extreme hair loss problem due to numerous life related changes, anxiety, depression, eating junk food, changes in atmosphere and also health related problems. The main

Objective is to develop a herbal hair serum for general purpose using various herbs and to identify the best for mutation of cosmetic serum have been developed. They were evaluated for viscosity, pH, homogeneity test, spredibility test, physical appearance. Current research has revealed that herbal formulation is effective in enhancing hair.

Keywords: Hair, Traetment, Serum, Herbal, Effective, Hibiscus, Rosemary, Neem.

INTRODUCTION:

Hair loss of Hair damaging is a universal distressing condition involves genetic problem, nutritional deficiencies, medical issues and environmental Factors. It is not only happens in women but also it is men issue. Androgenic alopecia or Male -pattern baldness is the most common causes of hair loss in men. While medical Conditions like hypothyroidism, PCOD, oral contraceptives & nutritional deficiencies in women. Hair Follows a specific repeated growth cycle of three distinct phases i.e., anagen lasting 3 to 5 years, Catagen Lasting for 2 to 3 weeks and telogen lasting for 8 to 4 months. Followed a by shedding of hair. During telogen or Resting phase, hair is released & Shed and next cycle is initiated at time shedding of 100 pairs in a day is normal. If it remains consistently high, it may result in female alopecia. Many companies are buying to formulate the various products to work on these problems. Several herbal therapies are in market for hair loss but only few have a strong clinical backing. Herbal product has less amount of side effects because of that they are more productive and attention gainer in market. Serum is one of the cosmetic products with very high concentration of active ingredients in their formula for providing intensive nutrition to the deeper skin Layer and non- greasy finish product which suitable for skin. It provides shine to hairs and heal the problem.



❖ Before and after the use of herbal hair serum ❖

LITERATURE REVIEW

1] Ruchi Tiwari and Gaurav Tiwari (2021):

Herbal cosmetics are still commonly used by average citizens because of fewer side effects and have a great therapeutic effects on hair and skin.

2] Melese Damew (2022):

Nimbin, Nimbodin, Nimbinin of neem shows Anti-viral, Anti-inflammatory, Anti-fungal, Anti-bacterial and Anti-diabetic effect.

3] Zawn Villines and Mandy Frenzh (NOV, 2023):

a) Use of rosemary essential oil for hair growth and precautions to be taken while using essential hair oil or serum.

b) It's not compulsory that every essential oil or hair serum can suitable for every individual.

4] SOHAN CHITLANGE and SONALI SHINDE (NOV, 2022):

a) Petroleum ether extract of HIBISCUS ROSA SINESIS prevents graying of hair and thickens hair.

b) It mainly acts by transferring the talogen phase to the anagen phase.

5] ADHIRANJAN et al (2003):

There are numerous causes of hair fall in women and men.

Several studies have suggested that, it is mostly related to hereditary element, scalp issues, disease condition and hormonal imbalances.

6] ALISON EHRlich (MAY, 2008):

Neem is a great herbal therapy for alopecia and shows great effect on itchy scalp and dandruff.

Features of hair serum:

1] It is a basically hair care product which is in liquid form, but its consistency is thicker than water.

2] It is not just for hair styling, they are also treating multi-purpose hair concerns like dry hair, dull hair and treat many hair problems include alopecia, hair fall happens because of atmosphere, medical issues, nutritional deficiencies, eating junk food, etc.

3] There are different kind of hair serums are available in the market to reduce hair problem.

4] This is silicon-based styling product that is designed to coat the surface of hair to added shine, hydration, smoothness, pollution protection, treating many problems regarding to hair, etc.

5] Intended to be used on wet hairs.

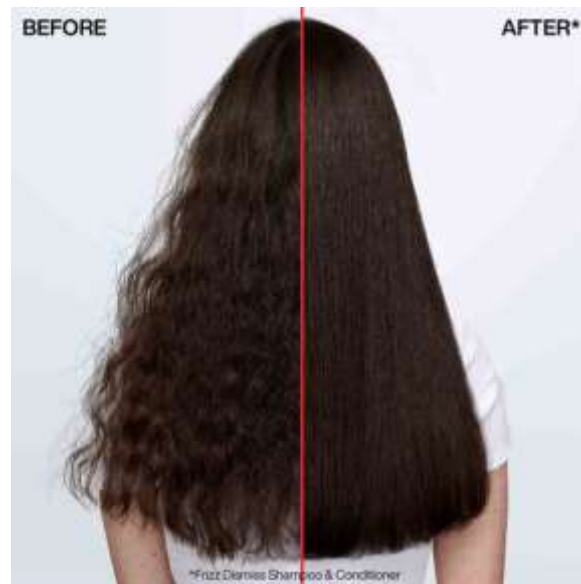
6] Take a few drops of hair serum on hand apply on damp hair.



BENEFITS OF HAIR SERUM :

1] CONTROLS FRIZZ:

A serum can rescue uncontrollable hair frizz which will boost hydration and essential oil nourishing strands.



2] DETANGLES THE HAIR:

Having rough and dry hair makes it impossible for combing easily so the major benefit it to provide hydration to the strands.

3] STRENGTHENS THE ROOTS:

Hair serum is a lightweight liquid that makes the hair stronger by providing it with essential nutrients.



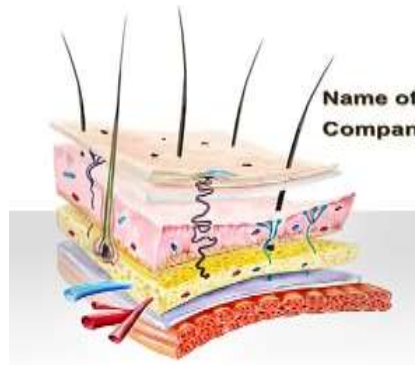
4] REVERSE OXIDATIVE STRESS:

Hair serum is mainly effective as shielding your hair from the sun's harmful rays. These rays mainly penetrate hair scalp and disturbs melanin production.



5] FOR HAIR GROWTH:

It mainly loaded with essential ingredients which helps to boost blood circulation and improving scalp health. It also prevents from hair breakage, enhances hair strengths, and promotes the hair follicles to grow thicker and shinier hair.



6] PROVIDE ADEQUATE NOURISHMENT:

It penetrates the hair skin scalp and nourishes the follicles from root to tip.

DRAWBACKS OF HAIR SERUM:

- 1] Its regular use and over application can make the hair unhealthy and ultimate dry.
- 2] Presence of silicon in hair serum can be harmful for long hair.
- 3] Over scalp application should be avoided as it leaves too much stickiness to the hair which will make hair too oily.
- 4] Scalp application should be avoided as it might make it oily or can lead to inflammation.

• Suitable types of hairs for using hair serum:

- 1] FRIZZY HAIRS.
- 2] DRY HAIRS.
- 3] OILY HAIRS.
- 4] WAVY HAIRS.
- 5] STRAIGHT HAIRS.
- 6] CURLY HAIRS.
- 7] DULL HAIRS.



INGREDIENTS USED IN HAIR SERUM:

1] ROSEMARY:

Rosemary is one of the oldest shrub with powerful pungent aroma and dark green elongated leaves with white or purple flowers. The rosemary was used as food seasoning and natural medicine for over a million years. It is a symbol of remembrance, since ancient Greece and Rome. The name ROSMARINUS derives from the Latin term that translates to "*DEW OF THE SEA*".

- **CLASSIFICATION:**
- **SCIENTIFIC NAME: ROSMARINUS OFFICINALIS**
- **COMMON NAME: ROSEMARY**
- **FAMILY: LABIATAE**
- **KINGDOM: PLANTAE**
- **ORDER: LAMIALES**
- **GENUS: ROSMARINUS**



a) DESCRIPTION OF PLANT:

Rosemary usually grows to about 1 meter in height, but some can reach up to 2 meter in height.

STEM: Evergreen, shrubby herb that grows to a height of 1 to 2m, with a unique aromatic odor.

LEAVES: The branches bear opposite, leathery thick leaves which are lustrous, linear, dark green.

FLOWERS: The flowers are small and pale blue to purplish in color. Most of the essential oils are extracted from the flowers.

b) CULTIVATION OF PLANT:

It is a basically comes from mint family which distributed in the hills along with the Mediterranean, Portugal and northwest Spain. It is also groan in Russia, Rome, Serbia, and limited extent to India.

It grows well at day temperature of 20-to-25-degree Celsius. The plant is very adaptable and grown almost as region of South Africa. It is mostly grown under dry land condition. Irrigation at planting is essential and supplementary is advised. Well drained sandy to clay soil having pH rang of 5.5 to 8.0 is required. A clay percentage of 30% max. Can be tolerated.



• **PACKAGING:**

It can be packed in bulk or small quantities. Small quantities need extra handling and packaging material. Its essential oil is mostly volatile so it should handle with care. Fresh rosemary should be packaged in crates for bulk handling that can be direct marketed into the shops. Dried rosemary is usually sold in either glass or plastic containers or in the carton boxes. Dark air-tight glass is usually preferred for better preservation.

STORAGE CONDITION:

Rosemary essential oil should be stored in a cool, dry area until it used. Once it opens the cap is should refrigerate or store in cool condition to gives better shelf life. It should be stored in dark place. Close the container tight after using.

c) **UTILISATION:**

1] COSMETIC: Rosemary mainly used in hair care products. It acts on the hair follicles by stimulating hair growth and also acts against dandruff. It is used in preparation for acne and dermatitis. It is added in liniments as a fragrant.

2] PHARMACEUTICAL AND THERAPEUTIC: It has pronounced action on brain as it clears the mind and aids the memory. It gives antiseptic action for intestinal infection and diarrhea. It is external stimulant and relaxant for nervousness, muscle spasms, headaches, and migraines. On the respiratory system rosemary oil is effective for asthma, bronchitis and whooping cough. The diuretic properties of rosemary oil are useful with water retention during menstruation, and with obesity.

3] FOOD AND FLAVOURING: Rosemary is used in food products and non -alcoholic beverages. Fresh and dried rosemary leaves are used as seasonings for soups, stews, sausages, meat, fish. It enhances the taste and aroma of food.

4] INDUSTRIAL: It is used as an ingredient in soaps, creams, candles, deodorants, hair tonics, and shampoos. The antibacterial and antioxidant activity of rosemary is used to extend the keeping quality of fats and meat It is also used in many household cleaners and air fresheners. It is a major constituent of some organic pesticides.



2) HIBISCUS:

Hibiscus is a genus of flowering plants in the mallow family. The Genus is quite large, comparing several hundred species that are native to warm temperature, subtropical and tropical regions throughout the world.

- **CLASSIFICATION:**

- **SCIENTIFIC NAME: ROSA SINENSIS**

- **SYNONYM: Jasvand, China rose, rose mallow.**

- **FAMILY: Malvaceae**

- **KINGDOM: Plant kingdom**

- **ORDER: Malvales**

- **GENUS: Hibiscus.**



Hibiscus tree

a) DESCRIPTION OF PLANT:

Hibiscus rosa synesis is a bushy, evergreen shrub or small tree growing 2.5 cm (8 to 16 ft.) tall and 1.5 – 3.0 m (5 to 10 ft.) wide. The plant has a branched taproot.

[1] **LEAVES:** The leaf margin is often lobed or toothed. It may be smooth or covered in tracheas. The fresh leaves contain 2 -3 % proteins and traces of iron, calcium and phosphorus.

[2] **FLOWERS:** They are mostly axillary and symmetrical. They typically have 5 petals with 10 cm (4 inch) in diameter. They are usually in red, pink, yellow, orange, purple and blue in color. Some plants have double

Flowers.

[3] **FRUITS:** The fruit of this flower is dry and pentagonal with seeds in each branch. After the fruit is ready, it bursts on its own and its seeds come out.

[4] **STEM:** They have usually aerial, erected, cylindrical, woody and branched stem.

b) CULTIVATION OF PLANT :

CHINA ROSE or “QUEENS OF TROPICS” isn't often a popular name for the gorgeous flowering plant HIBISCUS ROSA-SINENSIS, as it is mainly found in south – east China and some islands in pacific and Indian ocean. Hibiscus is one of Hawaii’s admired national plants and often seen worn in hair for cultural occasions. These flower plants can be grown in pots, containers, open fields even in greenhouse and polyhouse. For proper growth and good quality of flowers it needs good moisture presence. Hibiscus plant prefers sandy loam but not heavy soils. It can be grown throughout the year provided there is a sufficient irrigation and sun light.

PACKAGING:

Dry hibiscus flowers are packed in paper bags and then it converted into the corrugated box. Wet flowers should be packed and handle carefully because they are too sensitive.

▪ STORAGE CONDITION:

Dried hibiscus flowers should store in air-tight container to maintain their vibrant color, tart, flavor and health benefits for an extended period. In fresh flowers we should apply thick layer of silica gel on the top of it and stored in it container and cover the lid and leave it alone for 2 to 6 days.



c) UTILISATION OF PLANT:

[1] **RICH IN ANTIOXIDANT:** These antioxidants can help protect against chronic disease, reduce inflammation and promote overall wellness.

[2] **AIDS DIGESTION :** They have been used as a natural remedy for digestion issues. They possess mild diuretic and laxative properties that can regulate bowel movement, relieve constipation.

[3] **BOOSTS IMMUNE SYSTEM :** The high vitamin c content helps strengthen the immune system. They usually fights with infection, common illness and improve overall immune function.

[4] **HYDRATION :** Hibiscus can actually use as a refreshing beverage that are not only delicious but also helps to keeps you hydrated for a longer period.

[5] **FOR HAIRGROWTH ACTIVITY :** Hibiscus is usually rich in essential nutrients and vitamins that strengthen hair follicles, stimulate hair growth and prevent hair fall. It also act as a natural hair dye.

[6] **WEIGHT MANAGMAENT :** Dried hibiscus are actually low in calories and reducing the risk of overeating. Hibiscus tea is great option to reduce unnecessary fat from our body in good way



3) NEEM :

Neem is a fast-growing evergreen popular tree and has been used in ayurvedic medicine for more than 4000 years due to its medicinal properties. It is widely used as a medicine and also as a herbal cosmetic.

CLASSIFICATION:

- **SCIENTIFIC NAME:** AZADIRACHTA INDICA

- **SYNONYM:** Margosa, kadulimb , neem.

- **FAMILY:** Meliaceae

- **Kingdom:** Plantae

- Order: Sapindales

- Genus: Azadirachta



DESCRIPTION OF PLANT:

Neem is a medium sized tree, reaching up to 15 to 30 meter in height with a large rounded crown up to 10 to 20 meter in diameter. It is mostly evergreen but sometimes shed the leaves during the winter season.

1] LEAVES: Leaves are mostly petiolate, clustered at the end of the branches. Dark glossy green in color at maturity having 20-40 cm in length and bearing 10 – 20 leaflets.

2] LEAFLETS: Leaflets are mostly 5 – 10 cm long and 1.2 to 4 cm broad, sickled in shape and slightly denticulate.

3] FLOWERS: The flowers are numerous, fragrant, white and born in large clusters having size upto 30 cm.

4] FRUITS: Fruits are mostly 1 – 2 cm long, smooth in texture, and green with white milky juice which is bitter in taste. They have a thin epicarp and mucilaginous fleshy mesocarp and it contains seeds about 1 – 2 cm in size.

b) CULTIVATION OF PLANT: neem tree is grown from the southern tip of Kerala to the Himalayan hills in the tropical to sub-tropical region and at sea level about 700-meter elevation. It has been widely cultivated in India and African countries. In India it is widely distributed over a states like Uttar Pradesh, Bihar, west Bengal, Delhi , Maharashtra , Gujarat , Tamilnadan. Neem is generally can grow in any type of soil but mainly it grows in drained deep and sandy soils. It needs 21 – 30 degree Celsius temperature to grow. It can tolerate high to very high temperature but doesn't allow the temperature below 5-degree Celsius. It can grow in regions with an annual rainfall below 400m, but in such area it largely depends on ground **water level**.

PACKAGING :

Neem is a usually natural preservative, so it does not need special packaging. Dried neem leaves used in vacuumed packed dried shark for long term of preservation.

STORAGE CONDITION :

The viability of neem seed has declines rapidly with storage period increased. No germination after 2 – 6 months of storage. Survival of seeds with high moisture content in the range of 12 weeks. Seeds with low moisture content stored at 4 degree Celsius.



e) UTILISATION OF NEEM :

1] TO PROTECT SKIN: It used to treat lice, dandruff, and skin disease or skin ulcers. External application of neem is generally used as mosquito repellent.

2] FOR CLEANSING: Neem have great cleansing properties and are used to get rid of intestinal worm. The neem juice is effective to destroy intestinal worm and other parasitic organisms.

3] FOR HEALING DENTAL DISEASES: The bark of neem tree is well known for its ability to combat plaque. It reduce the amount of bacteria present in mouth. In ancient time is generally used as toothbrush. It also helps to heal wounds in the oral cavity due to its antiseptic and astringent properties.

4] USES OF NEEM FRUIT: The neem fruit is pressed to extract oil which can apply to the hair scalp to remove dandruff and lice. It is also used in many fragrance products.

5] NEEM FOR IMMUNITY: The most potential use of neem may be due to its immune stimulating property. These cells might help to kill viruses , other microbes by releasing toxic chemicals into them .

6] NEEM FOR LIVER : Neem is generally used to administered into the body which act as purifying of blood . These have antioxidants properties might help to neutralize free radicals and may inhibit damage.



8) FORMULATION OF HAIR SERUM :

1. Research and Ingredient Selection:

Identify beneficial herbs and oils for hair health through research. Choose ingredients based on their properties, such as promoting hair growth, reducing dandruff, or improving shine.

2. Measurement and Mixing:

Accurately measure each ingredient based on the formulation. Mix the ingredients in appropriate ratios, considering their compatibility and desired outcomes.

3. Heating (if necessary):

Some herbal extracts or oils may require gentle heating to enhance their infusion. Heat cautiously to preserve the efficacy of the ingredients.

4. Cooling and Straining:

Allow the mixture to cool and strain out any solid particles. This step helps achieve a smooth and consistent serum texture.

5. Preservation:

Introduce a natural preservative to prolong the shelf life of the serum.

6. Packaging:

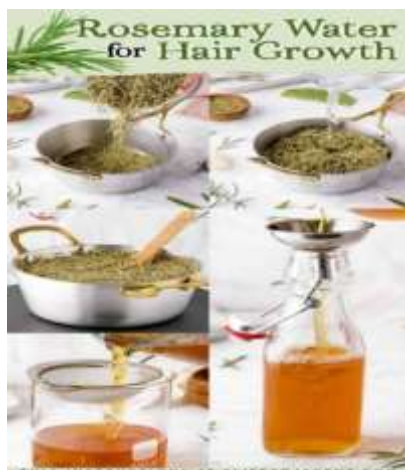
Choose suitable, airtight containers to preserve the serum's freshness. Dark glass bottles are often preferred to protect the formulation from light.

7. Labeling:

Clearly label the product with its ingredients, usage instructions, and any precautions. Comply with regulatory requirements if selling the product.

8. Testing:

Conduct patch tests to ensure the serum is safe for use. This step helps identify any adverse reactions before widespread application.



9) CONCLUSION:

Natural cosmetics are safe to use as well as effective in comparison with other beauty product flooded in market Suitable for all hair types. Results have shown that herbal hair serum provides various essential nutrients needed to preserve the proper function of the sebaceous glands and support the growth of natural hair . Medicinal plants have been used for the treatment of hair diseases since antiquity because of fewer side effects and hypersensitivity reaction. The traditional system of medicine in India acclaims a number of herbal drugs for hair growth promotion. The best part is that herbal extracts will provide micro protein supplements to hair and provide enough nourishment, resulting in safe hair. Herbal cosmetics have become increasingly common in the personal care industry, and there is a high demand for them in everyday life due to their lack of parabens and sulfate. The herbal hair serum was successfully formulated and evaluated on trial and error basis. According to the research study and outcomes , It contains natural components that assist hair maintenance and development. The anti-oxidant properties of hibiscus powder and ingredient like amino acid helps to promote hair growth and halting the premature greying of hair . Neem is rich in nutrients that can help to nourish the scalp and prevent from dandruff problems and itchy scalp. Rosemary helps to stimulate hair growth and from scalp irritation. It reduces the hair fall and promote new hair growth. When compared to synthetic chemicals , they are not dangerous and safe to use.

10) REFERENCES :

- 1) Kumar, L. and Parmar, B.S. 1999. Stabilization of Azadirachtin A in neem formulations: Effect of some solid carriers, neem oil, and stabilizers. J. Agric. Food Chem. 47: 1735-1739. <https://academic.oup.com/ee/article/32/6/1283/446936>
- 2) Shah RR, Mohite SA, Patel NR. Preparation and evaluation of poly herbal hair oil- an effective cosmetic. Asian J Pharm Res 2018; 8(1): 36-8. <https://asianjpr.com/HTMLPaper.aspx?Journal=Asian%20Journal%20of%20Pharmaceutical%20Research;PID=2018-8-1-7>
- 3). Cross Ref Gautam S, Dwivedi S, Dubey K, Joshi H. Formulation and evaluation of herbal hair oil. Int J Chem Sci 2012; 10(1):349-53. <https://www.semanticscholar.org/paper/Formulation-and-Evaluation-of-Herbal-hair-Oil-GautamDwivedi/d23c30939d3e3928892740186fe56499e1179887>
- 4) Beroual K, Maameri Z, Halmi S, Benleksira B, Agabou A, Hamdi PY. Effects of *Linum usitatissimum* L. ingestion and oil topical application on hair growth in rabbit. Int J Med Arom Plants 2013; 3(4): 459-63. https://www.researchgate.net/publication/283730350_Effects_of_Linum_usitatissimum_L_ingestion_and_oil_topical_application_on_hair_growth_in_rabbit
- 5) Reddy TUK, Sindhu G, Rajesh S, Aruna B, Rani KSS. Preparation and evaluation of herbal hair oil. Indo Am. j. pharm. Sci 2017; 4(06): 1540-1544. https://www.researchgate.net/publication/368721131_PREPARATION_AND_EVALUATION_OF_HERBAL_HAIR_OIL
- 6) Reddy UK, Rajesh S, Sindhu G, Aruna B. Herbs used in formulating poly herbal hair oil – a review. Indo American Journal of Pharmaceutical Research. 2017;4(6):1527–1539. https://www.researchgate.net/publication/330497415_HERBS_USED_IN_FORMULATING_POLY_HERBAL_HAIR_OIL-A_REVIEW
- 7) Kumari OS, Rao NB, Reddy VK. Phyto-chemical analysis and anti-microbial activity of *Hibiscus rosa-sinensis* . World Journal of Pharmacy and Pharmaceutical Sciences. 2015;4(5):766–771. https://www.researchgate.net/publication/326972460_Chemical_constituents_pharmacological_effects_and_therapeutic_importance_of_Hibiscus_rosa-sinensis- A_review
- 8) Gomare KS, Mishra DN. FTIR spectroscopic analysis of phytochemical extracts from *Hibiscus rosa-sinensis* L. used for hair disorder. International Journal of Recent Trends in Science and Technology. 2018;70–75. https://www.researchgate.net/publication/326096886_FTIR_spectroscopic_analysis_of_phytochemical_extract_from_Hibiscus_rosa-sinensis_L_used_for_hair_disorder

- 9) Vastrad JV, Byadgi SA. Phytochemical screening and antibacterial activity of Hibiscus rosa - sinensis leaf extracts. International Journal of Current Microbiology and Applied Sciences. 2018;7(3):3329–3337. https://www.researchgate.net/publication/323975388_Phytochemical_Screening_and_Antibacterial_Activity_of_Hibiscus_rosa_-_sinensis_Leaf_Extracts
- 10) Zubairi SI, Jaies NS. Hibiscus rosa sinensis leaves: Analysis of proximate, antioxidant activities and inorganic compound. Malaysian Journal of Analytical Sciences. 2014;18(2):260-270. https://www.researchgate.net/publication/264554061_Hibiscus_rosa_sinensis_Leaves_Analysis_of_Proximate_Antioxidant_Activities_and_Inorganic_Compound
- 11) Mak YW, Chuah LO, Ahmad R, Bhat R. Antioxidant and antibacterial activities of Hibiscus (Hibiscus rosa-sinensis L.) and Cassia (Senna bicapsularis L.) flower extracts. Journal of King Saud University -Science. 2013;25(4):275–282. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7782056/>
- 12) Bhakta S, Das SK. A review on Hibiscus rosa sinensis : a rural traditional medicine for contraception. International Journal of Engineering and Information Systems. 2017;1(9):77–79. https://www.academia.edu/67833422/The_Traditional_Uses_Phytochemistry_and_Pharmacology_of_Genus_Hibiscus_A_Review
- 13) Agrawal KK, Singh K. Hair growth activity of aqueous extract of Hibiscus rosa-sinensis l. flowers. Indian Journal of Drugs. 2017;5(4):142–149. <https://www.ijpsnonline.com/index.php/ijpsn/article/view/2338>
- 14) Pekamwar SS, Kalyankar TM, Jadhav AC. Hibiscus rosa-sinensis : a review on ornamental plant. World Journal of Pharmacy and Pharmaceutical Sciences. 2013;2(6):4719–4727. <https://www.saap.org.in/journals/index.php/ijpc/article/view/128>
- 15) Noman A, Aqeel M, Javed MT, Zafar S, Ali Q, Islam W, et al. Histological changes in Hibiscus rosa-sinensis endorse acclimation and phytoremediation of industrially polluted sites. The Journal of Animal & Plant Sciences. 2017;27(5):1637–1648. https://www.researchgate.net/publication/320180661_HISTOLOGICAL_CHANGES_IN_HIBISCUS_ROSASINENSIS_ENDORSE_ACCLIMATION_AND PHYTOREMEDIATION OF INDUSTRIALLY POLLUTED SITES
- 16) El Sayed ZI, Ateya A-MM, Fekry M. Macro- and micro morphological study of the leaf, stem, flower and root of Hibiscus rosa-sinensis l. Journal of Applied Sciences Research. 2012;8(1):34–56. https://www.researchgate.net/publication/288382887_Macro_and_micromorphological_study_of_the_leaf_stem_flower_and_root_of_Hibiscus_rosa-sinensis_L
- 17) Be13 [3:35 pm, 06/12/2023] DSP Aashish: 10. Udo IJ, Ben MG, Etuk CU, Tiomthy AI. Phytochemical, proximate and antibacterial properties of Hibiscus rosa-sinensis L. Leaf. Journal of Medicinal Plants Studies . 2016;4(5):193–195. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3609315/>
- 18) Hammad I. Genetic Variation among Hibiscus rosa-sinensis (Malvaceae) of Different Flower Colors Using Issr and Isozymes. Australian Journal of Basic and Applied Sciences. 2009;3(1):113–125. https://www.researchgate.net/publication/287560421_Genetic_variation_among_Hibiscus_Rosasinensis_Malvaceae_of_different_flower_colors_using_Issr_and_isozymes
- 19) Kadve S, Yadav M, Tiwari A. Genetic Analysis on Hibiscus Species by using Rapd Markers. International Journal of Biomedical and Advance Research. 2012;3(6):473–485. https://www.researchgate.net/publication/269828773_GENETIC_ANALYSIS_ON_HIBISCUS_SPECIES_BY_USING_RAPD_MARKERS
- 20) San Pascual AO, Magdalita PM, Medina NG, Apacionado BV. Characterization, pollen behavior and propagation of five selected Hibiscus hybrids (Hibiscus rosa-sinensis Linn.). Australian Journal of Crop Science. 2017;11(12):1508–1519. https://www.researchgate.net/publication/322264306_Characterization_pollen_behavior_and_propagation_of_five_selected_Hibiscus_hybrids_Hibiscus_rosa-sinensis_Linn
- 21) Senathirajah T, Rasalingam S, Ganeshalingam S. Extraction of the Cyanidin-3-Sophoroside from Hibiscus rosa-Sinensis : An Efficient Natural Indicator over a Wide Range of Acid-Base Titrations. Journal of Natural Product and Plant Resources. 2017;7(3):1 https://www.researchgate.net/publication/317062843_Extraction_of_the_cyanidin-3-sophoroside_from_hibiscus_rosasinensis_An_efficient_natural_indicator_over_a_wide_range_of_acid-base_titrations
- 22) Hemarana K, Jeyashree KV, Babu M, Kannan M. Preliminary bioactive compounds screening and antibacterial activity of methanolic extract of Hibiscus rosa sinensis against selected skin pathogens. . Research Journal of Pharmaceutical, Biological and Chemical Sciences. 2014;5(2):1210–1218. https://www.researchgate.net/publication/285337375_Preliminary_bioactive_compounds_screening_and_antibacterial_activity_of_methanolic_extract_of_hibiscus_rosasinensis_against_selected_skin_pathogens
- 23) Cash TF, Price VH, Savin RC. Psychological effects of androgenetic alopecia on women: comparisons with balding men and with female control subjects. J Am Acad Dermatol. 1993;29(4):568–575. <https://www.sciencedirect.com/science/article/abs/pii/019096229370223G>
- 24) Whiting DA. Male pattern hair loss: current understanding. Int J Dermatol. 1998;37(8):561–566. doi: 10.1046/j.1365-4362.1998.00542. <https://pubmed.ncbi.nlm.nih.gov/9731996/>
- 25) Schweiger ES, Boychenko O, Bernstein RM. Update on the pathogenesis, genetics and medical treatment of patterned hair loss. J Drugs Dermatol. 2010;9(11):1412–1419. [PubMed] [Google Scholar]16. Khalid AA. Medical Treatment of Alopecia In: Ahmad M, editor. IntechOpen. 2018:55 <https://pubmed.ncbi.nlm.nih.gov/21061765/>

- 26) Mella JM, Perret MC, Manzotti M, Catalano HN, Guyatt G. Efficacy and safety of finasteride therapy for androgenetic alopecia: a systematic review. *Arch Dermatol.* 2010;146(10):1141–1150. doi: 10.1001/archdermatol.2010.256 <https://pubmed.ncbi.nlm.nih.gov/20956649/>
- 27) Rogers NE, Avram MR. Medical treatments for male and female pattern hair loss. *J Am Acad Dermatol.* 2008;59(4):547–566 <https://pubmed.ncbi.nlm.nih.gov/18793935/>
- 28) Complementary A. Or Integrative Health: What's in a Name? NCCIH. National Center for Complementary and Integrative Health NCCIH; 2016. <https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name>
- 29) Hosking A-M, Juhasz M, Mesinkovska NA. Complementary and alternative treatments for alopecia: a comprehensive review. *Skin Appendage Disorders.* 2019;5(2):72–89. <https://pubmed.ncbi.nlm.nih.gov/30815439/>
- 30) Abu-Al-Basal M.A. Healing potential of *Rosmarinus officinalis* L. on full-thickness excision cutaneous wounds in alloxan-induced-diabetic BALB/c mice. *J. Ethnopharmacol.* 2010;131:443–450. doi: 10.1016/j.jep.2010.07.007. <https://pubmed.ncbi.nlm.nih.gov/20633625/>
- 31) al-Sereiti MR, Abu-Amer KM, and Sen P, Pharmacology of rosemary (*Rosmarinus officinalis* Linn.) and its therapeutic potentials. *Indian J Exp Biol,* 1999. <https://pubmed.ncbi.nlm.nih.gov/10641130/>
- 32) Palombo E.A. Traditional Medicinal Plant Extracts and Natural Products with Activity against Oral Bacteria: Potential Application in the Prevention and Treatment of Oral Diseases. *Evid. Based Complementary Altern. Med.* 2011;2011:680354. doi: 10.1093/ecam/nep067. – <https://pubmed.ncbi.nlm.nih.gov/19596745/>
- 33) Pazyar N., Yaghoobi R., Rafiee E., Mehrabian A., Feily A. Skin wound healing and phytomedicine: A review. *Ski. Pharmacol. Physiol.* 2014;27:303–310. doi: 10.1159/000357477 <https://pubmed.ncbi.nlm.nih.gov/24993834/>
- 34) Pérez-Sánchez A., Barrajón-Catalán E., Caturla N., Castillo J., Benavente-García O., Alcaraz M., Micol V. Protective effects of citrus and rosemary extracts on UV-induced damage in skin cell model and human volunteers. *J. Photochem. Photobiol. B Biol.* 2014;136:12–18. <https://pubmed.ncbi.nlm.nih.gov/24815058/>
- 35) De Freitas Junior L.M., de Almeida E.B., Jr. Medicinal plants for the treatment of obesity: Ethnopharmacological approach and chemical and biological studies. *Am. J. Transl. Res.* 2017;9:2050–2064. <https://pubmed.ncbi.nlm.nih.gov/28559960/>
- 36) Hegazy AM, et al. Hypolipidemic and hepatoprotective activities of rosemary and thyme in gentamicin-treated rats. *Hum Exp Toxicol,* 2018. 37(4): p. 420–430. <https://pubmed.ncbi.nlm.nih.gov/28534439/>
- 37) Lipton SA, et al. Therapeutic advantage of pro-electrophilic drugs to activate the Nrf2/ARE pathway in Alzheimer's disease models. *Cell Death Dis,* 2016. 7(12): p. e2499. - PMC – PubMed <https://pubmed.ncbi.nlm.nih.gov/27906174/>
- 38) Borrás-Linares I, et al. A bioguided identification of the active compounds that contribute to the antiproliferative/cytotoxic effects of rosemary extract on colon cancer cells. *Food Chem Toxicol,* 2015. 80: p. 215–222. – PubMed <https://pubmed.ncbi.nlm.nih.gov/25801906/>
- 39) Berrington D and Lall N, Anticancer Activity of Certain Herbs and Spices on the Cervical Epithelial Carcinoma (HeLa) Cell Line. *Evid Based Complement Alternat Med,* 2012. 2012: p. 564927. <https://pubmed.ncbi.nlm.nih.gov/22649474/>
- 40) Rosa, B. 1995–2007. Rosemary French pure essential oil. 18 August 2006. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3769777/>
- 41) Munnu, S. 2004. Effects of plant spacing, fertilizer, modified urea material and irrigation regime on herbage, oil yield and oil quality on rosemary in semi-arid tropical cli-mates. *Journal of Horticultural Science and Biotechnology,* 79 (3): 411–415. https://www.researchgate.net/publication/279514530_Effect_of_plant_spacing_fertilizer_modified_Urea_material_and_irrigation_regime_on_herbage_oil_yield_and_oil_quality_of_rosemary_in_semi-arid_tropical_conditions
- 42) Ouattara, B., Simard, R.E., Holley, R.A., Piette, G.J.P. & Begin, A. 1997. Antibacterial act-ivity of selected fatty acids and essential oils against six meat spoilage organisms. *International Journal of Food Microbiology,* 37(2): 155–162. <https://pubmed.ncbi.nlm.nih.gov/9310850/>
- 43) Refaat, M., Momen, F.M. & Amer, S.A.A. 2002. Acaricidal activity of Sweet Basil and French Lavender essential oils against two species of mites of the family Tetranychidae (Acari: Tetranychidae). *Acta Phytopathologica et Entomologica Hungarica,* 37(1–3): 287–298. https://www.researchgate.net/publication/240763173_Acaricidal_Activity_of_Sweet_Basil_and_French_Lavender_Essential_Oils_Against_Two_Species_of_Mites_of_the_Family_Tetranychidae_Acari_Tetranychidae
- 44) Richters Herb Specialist. 1997–2007 Otto Richter and Sons Limited. Online <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6253782/>
- 45) Sara's Superherbs Britannic article. Accessed 16 August 2006. <https://www.britannica.com/plant/lemon-verbena>
- 46) Ashwini S. Pundkar, et al. A Review: Herbal Therapy Used in Hair Loss. *Pharmaceutical Resonance* 2020 Vol.3 Issue 1 https://www.researchgate.net/publication/376025382_A_Review_of_Herbal_Medications_for_the_Treatment_of_Alopecia

- 47) M. Narshana and P. Ravikumar. An Overview of Dandruff and Novel Formulations as a Treatment Strategy. *International Journal of Pharmaceutical Sciences and Research* 2018, Vol. 9(2):417-431. 5. Ashwini S. Pundkar, et al. A Review: Herbal Therapy Used in Hair Loss. *Pharmaceutical Resonance* 202 Vol.3 Issue 1. <https://rjpponline.org/AbstractView.aspx?PID=2023-15-2-2>
- 48) Mohammad A. Alzohairy. Therapeutics Role of Azadirachata indica (Neem) and Their Active Constituents in Diseases Prevention and Treatment. *Evidence Based Complementary and Alternative Medicine*, Volume 2016, Article ID 7382506. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4791507/>
- 49) Christiane Schulz, Stephan Bielfeldt, Dr. Jiirgen Reimann. Fenugreek + micronutrient: Efficacy of a Food Supplement against Hair Loss from: *Kosmetische Medizin*. https://www.researchgate.net/publication/251923543_Fenugreekmicronutrients_Efficacy_of_a_food_supplement_against_hair_loss
- 50) Laxmi S Joshi and Harshal A Pawar. Herbal Cosmetics and Cosmeceuticals: An Overview. *Natural Products Chemistry & Research*. 3: 170. doi: 10.4172/2329-6836.10000170. Rini https://www.researchgate.net/publication/276889738_Herbal_Cosmetics_and_Cosmeceuticals_An_Overview
- 51) 14gum Z, Younus I, Ali SM. Anti-inflammatory, analgesic and anti-pyretic activities of Hibiscus Rosa sinensis linn and phytochemicals. *World Journal of Pharmacy and Pharmaceutical Sciences*. 2015;4(12):116–123. <https://pubmed.ncbi.nlm.nih.gov/30150191/>
- 52) 13. Ruchi Tiwari, et al. A Development and Evaluation of Herbal Hair Serum: A traditional way to Improve Hair Quality. *The Open Dermatology Journal*, 2021, Volume 15. 14. Pratiksha B.Deshmukh, Rutuja R. Khatode, Shital Gaikwad. https://www.researchgate.net/publication/357737989_Development_and_Evaluation_of_Herbal_Hair_Serum_A_traditional_way_to_Improve_Hair_Quality
- 53) Formulation and Evaluation of Herbal Hair Serum. *International Journal of Advanced Research in Science, Communication and Technology (UARSCT)*. Volume 2, Issue 5, June 2022. doi: 10.48175/JARSCT-484315 <https://rjpponline.org/AbstractView.aspx?PID=2023-15-2-2>
- 54) Yogesh S Kolekar, et al. Medicinal Plants Used in Cosmetics for Skin and Hair Care. *International Journal of Pharmaceutical Chemistry* 2021; 8(2):36-40. and Analysis. <https://rjpponline.org/AbstractView.aspx?PID=2023-15-2-11>
- 55) Amit Gupta, et al. Indian Medicinal Plants Used in Hair Care Cosmetics: A Short Review. *Pharmacognosy Journal*. Vol 2, Issue 10, June, 2010 Page 361-364. https://www.researchgate.net/publication/235989845_Indian_Medicinal_Plants_Used_in_Hair_Care_Cosmetics_A_Short_Review
- 56) Laila Che Rose, et al. Potential Hair Growth of Crude Extract from Hibiscus rosa-sinensis Linn. *Archives of Pharmacy Practice*. Volume 11, Issue 4, October - December 2020. https://www.researchgate.net/publication/361793544_FORMULATION_AND_STANDARDIZATION_OF_MULTIPURPOSE_HERBAL_HAIR_CREAM
- 57) Dr. N. Tamilselvan, et al. Development and Evaluation of Medicated Scalp Serum. *International Journal of Creative Research Thoughts (IUCRT)*. Volume 10, Issue 4 April 2022. https://www.researchgate.net/publication/369049880_A_STUDY_ON_THE_FORMULATION_AND_EVALUATION_OF_HERBAL_HAIR_OILS
- 58) Gautam S, Dwivedi S, Dubey K, Joshi H. Formulation and evaluation of herbal hair oil. *Int J Chem Sci.*, 2012; 10(1): 349-53. https://www.researchgate.net/publication/369049880_A_STUDY_ON_THE_FORMULATION_AND_EVALUATION_OF_HERBAL_HAIR_OILS
- 59) Shivani J. Patil, Snehal S. Patil, Rohan R. Vakhariya, Dr. A. R. Chopade, Dr. C. S. Magdum, Formulation and Evaluation of Medicated Herbal Hair Oil- An Effectual and Economical Cosmetic, *Pensee International Journal*, 2021;51(5):398-405. <https://asianjpr.com/HTMLPaper.aspx?Journal=Asian%20Journal%20of%20Pharmaceutical%20Research;PID=2018-8-1-7>
- 60) Harrison S, Birgfeld W. Diffuse hair loss: its triggers and management. *Cleve Clin J Med*. 2009;76(6):361–367. doi:10.3949/ ccjm.76a.08080 <https://pubmed.ncbi.nlm.nih.gov/19487557/>
- 61) Thiedke CC. Alopecia in women. *Am Fam Physician*. 2003;67 (5):1007–1014. <https://pubmed.ncbi.nlm.nih.gov/12643360/>