

## CHAPTER 65

### Study on the Efficacy of Rosemary in Treating Hair Fall and Promoting Hair Growth

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#### ABSTRACT

Rosemary (*Rosmarinus officinalis* L.) is an aromatic medicinal herb widely used for its therapeutic and cosmetic benefits. This study reviews rosemary's efficacy in promoting hair growth and reducing hair fall. Rich in bioactive compounds such as carnosic acid and rosmarinic acid, rosemary demonstrates antioxidant, anti-inflammatory, and antimicrobial properties that support scalp health and stimulate hair follicle activity. Comparative studies indicate its effectiveness is comparable to minoxidil, a widely used FDA-approved hair growth treatment. Rosemary is generally safe for topical use; however, excessive intake may cause side effects like nausea and spasms. Further clinical trials are warranted to establish standardized formulations and dosages.

**Keywords:** Rosemary herb; Hair growth; Rosmarinic acid; Hair loss; Minoxidil; Anti-inflammation.

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#### 1.0 Introduction

Hair loss is a common condition caused by genetic, hormonal, nutritional, and environmental factors. Natural remedies have gained popularity as safer alternatives to synthetic drugs. Rosemary, a member of the Lamiaceae family, is a promising candidate due to its bioactive compounds that promote scalp circulation and protect follicles from oxidative stress. Additionally, rosemary extract is well-known for its antibacterial and anti-inflammatory qualities, which support the health of the scalp and lessen hair loss caused by dandruff. Its essential oils include substances like cineole, carnosic acid, and *Rosmarinus* acid that promote follicle activity and postpone premature hair loss.

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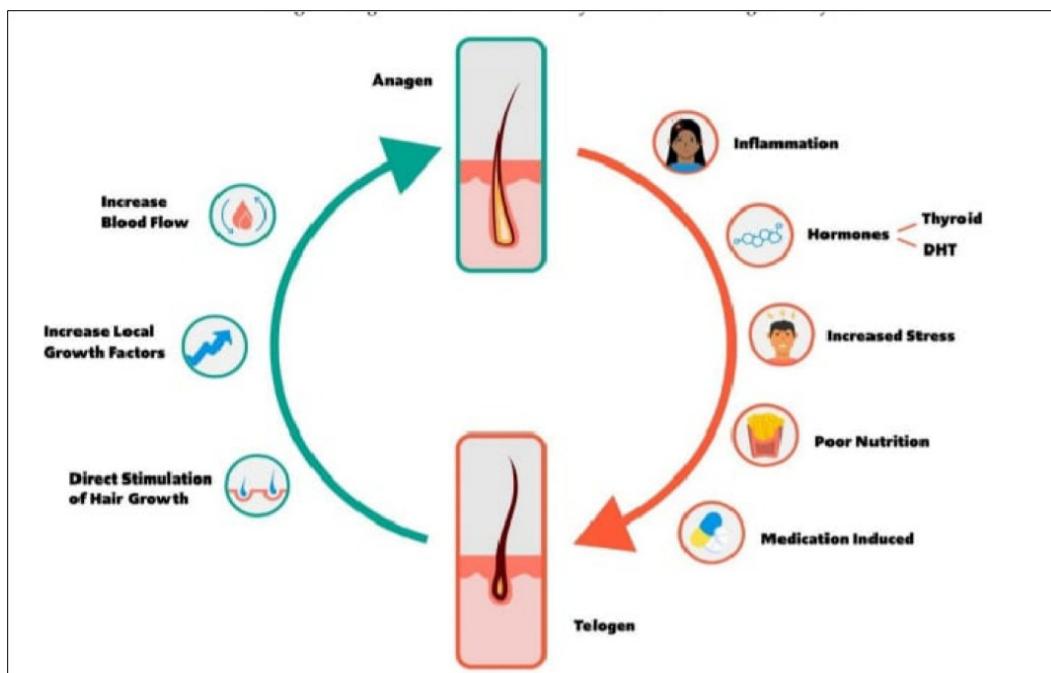
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When applied topically, rosemary has been found in numerous trials to improve hair strength and density.

**Figure 1: Overview of Hair Cycle**



## 2.0 Literature Review

According to studies, rosemary can improve blood circulation, stimulate nerve endings, and balance hormone imbalances linked to hair loss. When it comes to treating androgenetic alopecia, comparative studies reveal that rosemary essential oil is just as successful as minoxidil while having less adverse effects.

Furthermore, its inherent antioxidants shield hair follicles from oxidative stress, extending the hair cycle's anagen (growth) phase. The thickness, texture, and general health of the scalp have all been shown to improve with regular topical use.

By assisting in the neutralization of free radicals, its antioxidant compounds shield hair follicles from harm and early aging. A comprehensive approach to hair regeneration, regular application of rosemary oil has also been connected to enhanced hair thickness, gloss, and general scalp health.

## Literature Survey on Rosemary and Hair Growth

Topic	Details	References
Hair Growth Cycle & Hair Loss	Discusses integrative and mechanistic aspects of the hair growth cycle, shedding light on causes and pathways involved in hair loss.	Natarelli N. <i>et al.</i> (2023). <i>Integrative and Mechanistic Approach to the Hair Growth Cycle and Hair Loss</i> . Journal of Clinical Medicine.
Antioxidant & Antimicrobial Properties of Rosemary	Highlights rosemary's bioactive compounds with strong antioxidant and antimicrobial effects, contributing to therapeutic applications.	Nieto G. <i>et al.</i> (2018). <i>Antioxidant and Antimicrobial Properties of Rosemary</i> . Medicines.
Rosemary Extract in Hair Serum	Evaluates the clinical efficacy and safety of rosemary extract-based hair serum, showing positive effects on hair growth.	Majeed M. <i>et al.</i> (2020). <i>Efficacy and Safety of Hair Serum with Rosemary Extract</i> . Clinical, Cosmetic and Investigational Dermatology.
Rosemary as a Natural Antioxidant Source	Explores rosemary as a rich source of natural antioxidants with potential health & dermatological applications.	Bouammali H. <i>et al.</i> (2023). <i>Rosemary as a Source of Natural Antioxidants</i> . Plants.
Alternative Treatments for Alopecia	Reviews complementary and alternative therapies for alopecia, including herbal approaches like rosemary.	Hosking A.M. <i>et al.</i> (2019). <i>Complementary and Alternative Treatments for Alopecia</i> . Skin Appendage Disorders.

### 3.0 Mechanisms of Action

1. Antioxidant Effects: Carnosic acid and carnosol neutralize free radicals, protecting scalp cells.

Intervention	Mechanism of Action	Topical Dose or Dose Range	Evidence (Humans, Animals)
Finasteride	Inhibits 5-alpha-reductase	1 mg daily	Humans (Men) – FDA Approved
Pumpkin Seed Oil	Blocks 5-alpha-reductase	400 mg oral	Humans
Nutafol (Herbal Supplement)	Reduces Inflammation, alleviates stress, and inhibits DHT.	N/A	Humans
Minoxidil (Topical)	Enhances blood circulation to hair follicles.	Women – 3% or 5% daily; Men – 5% Twice daily	Humans – FDA Approved
Morbus Alba	Stimulates the anagen (Growth) phase.	N/A	Humans
Viviscal (Marine Protein Supplement)	Extends anagen phase	450 mg oral	Humans
Low – Level Light Therapy	Stimulates the transition from telogen to anagen phase	N/A	Humans
Quercetin	Supports mitochondrial function, aids in anagen phase	N/A	Mice

2. Anti-Inflammatory Effects: Rosemary reduces inflammation around hair follicles, improving follicular health.
3. Hormonal Regulation: It may inhibit dihydrotestosterone (DHT), a key hormone linked to hair thinning.
4. Antimicrobial Activity: Rosemary prevents scalp infections, reducing follicle damage.

#### **4.0 Safety and Efficacy**

Rosemary is safe for most users when applied topically. Clinical studies demonstrate significant improvement in hair density, reduction in hair shedding, and minimal adverse effects compared to synthetic drugs.

#### **5.0 Benefits**

- Promotes scalp circulation and nutrient delivery.
- Strengthens hair shafts and prevents breakage.
- Balances sebum production, reducing follicle blockages.

Offers neuroprotective and cognitive benefits.

#### **6.0 Side Effects**

Excessive use or oral intake may cause nausea, vomiting, pulmonary edema, or miscarriage in pregnant women. Proper dilution is necessary for topical formulations.

#### **7.0 Conclusion**

Rosemary oil is a promising natural alternative for managing hair fall and promoting hair growth. With antioxidant, anti-inflammatory, and hormone-regulating properties, it offers a holistic approach to scalp health. Continued research should focus on clinical validation, optimal concentrations, and formulation development.

#### **References**

1. Natarelli N. *et al.* (2023). *Integrative and Mechanistic Approach to the Hair Growth Cycle and Hair Loss*. Journal of Clinical Medicine.
2. Nieto G. *et al.* (2018). *Antioxidant and Antimicrobial Properties of Rosemary Medicines*.

3. Majeed M. *et al.* (2020). *Efficacy and Safety of Hair Serum with Rosemary Extract*. Clinical, Cosmetic and Investigational Dermatology.
4. Bouammali H. *et al.* (2023). *Rosemary as a Source of Natural Antioxidants*. Plants.
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