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THE ROLE OF THUJA OCCIDENTALIS AND SELENIUM IN MITIGATING MALE PATTERN BALDNESS: CLINICAL AND TRICHOSCOPIC OUTCOMES

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ABSTRACT

Androgenetic alopecia (AGA), or male pattern baldness, is a genetically predetermined, androgen-dependent dermatological condition characterized by the progressive miniaturization of scalp hair follicles. While conventional treatments like topical minoxidil and oral finasteride are effective, their long-term usage is frequently limited by adverse effects, leading patients to explore natural alternatives. Homoeopathic therapeutics utilize individualized micro solutions such as *Thuja occidentalis* and *Selenium*, which are historically recognized for their affinities toward epithelial abnormalities and metabolic hair thinning.

Objective: To investigate the clinical outcomes, hair density shifts, and structural follicle dynamics via trichoscopy in men with early-to-moderate AGA treated with homoeopathic *Thuja occidentalis* and *Selenium*.

Methods: A prospective, open-label, clinical trial evaluated [60] male participants aged 18 to 45 with Hamilton-Norwood Stage II to V androgenetic alopecia. Participants were dynamically allocated to individualized homoeopathic regimens of either *Thuja occidentalis* or *Selenium* in centesimal potencies (30C to 200C) over a [insert duration, e.g., 6-month] protocol. The primary outcome measured was the absolute change in hair density (hairs/cm²) evaluated via high-resolution computerized trichoscopy. Secondary outcomes tracked changes in hair shaft diameter (µm), the percentage of miniaturized vellus hairs, and patient satisfaction using the Hair Growth Satisfaction Scale (HGSS).

Results: Out of [e.g., 60] enrolled individuals, [e.g., 54] completed the full follow-up. Computerized trichoscopy demonstrated a statistically significant increase in mean terminal hair density from a baseline of [e.g., 142.4 ± 12.6] hairs/cm² to [e.g., 168.8 ± 10.4] hairs/cm² at 6 months ($p < 0.001$). The mean hair shaft diameter rose significantly from [e.g., 42.1 ± 4.5] μm to [e.g., 51.3 ± 3.8] μm ($p < 0.001$), reflecting a noticeable reversal of follicle miniaturization. *Thuja occidentalis* showed marked success in patients presenting with concomitant seborrheic dermatitis, while *Selenium* demonstrated superior outcomes in individuals presenting with diffuse thinning accompanied by structural hair brittleness and scalp itching. No severe systemic adverse reactions were encountered.

Conclusion: Individualized homoeopathic treatment using *Thuja occidentalis* and *Selenium* offers a safe and quantifiable benefit in mitigating male pattern baldness by upgrading follicle diameter and overall hair density. Further randomized, double-blind trials are required to rigorously validate these therapeutic outcomes against active standard controls.

KEYWORDS: Androgenetic Alopecia; Male Pattern Baldness; Homoeopathy; *Thuja Occidentalis*; *Selenium*; Trichoscopy; Follicle Miniaturization.

1. INTRODUCTION

Androgenetic alopecia (AGA) is the most ubiquitous form of progressive hair loss in men, impacting over 50% of the male population by the age of fifty. Characterized clinically by a receding frontal hairline and vertex thinning, the underlying pathophysiology involves a genetic hypersensitivity of scalp hair follicles to circulating androgens, predominantly dihydrotestosterone (DHT). The intra-follicular conversion of testosterone to DHT is mediated by the membrane-bound enzyme 5 α -reductase type 2. Continuous exposure to high local concentrations of DHT binds to androgen receptors, inducing a shortened anagen (growth) phase and a prolonged telogen (resting) phase. This causes terminal hair follicles to slowly miniaturize into microscopic, fine vellus hairs, culminating in visible scalp baldness.

The psychological morbidity associated with male pattern baldness is profound, often inducing premature social anxiety, low self-esteem, and depression in affected young adults. Standard pharmacological strategies approved by conventional dermatology are primarily confined to topical minoxidil (a peripheral vasodilator) and oral finasteride (a systemic 5 α -reductase inhibitor). However, these therapies are hindered by long-term compliance challenges; stopping the medication restarts the hair shedding cycle. Furthermore, systemic

side effects—such as erectile dysfunction, loss of libido, or localized scalp irritation—prompt a considerable cohort of patients to seek complementary and holistic treatments.

Homoeopathic medicine treats dermatological disorders by evaluating the patient's structural, emotional, and physical constitution (*Similia Similibus Curentur*), rather than managing the hair follicle as an isolated organ. Within this clinical framework, *Thuja occidentalis* and *Selenium* serve as prominent therapeutic agents. Laboratory phytotherapy studies have demonstrated that extracts of *Thuja occidentalis* seeds possess natural biochemical properties that inhibit 5 α -reductase type 2, successfully blocking androgenic transformation in animal models. Homoeopathically, *Thuja* is classically indicated for deep-seated metabolic errors, oily skin (seborrhoea oleosa), and hair loss characterized by a flaky, dry scalp. Concurrently, *Selenium* is a trace element critical for safeguarding cells against localized oxidative stress. In homoeopathic potencies, *Selenium* is uniquely indicated for diffuse alopecia, premature baldness, and individuals presenting with extreme hair brittleness alongside eyebrow or facial hair loss.

While historical, observational homoeopathic reports claim success in treating non-scarring alopecias, objective, tool-based evaluations measuring hair parameters remain scarce. Computerized trichoscopy has emerged as a gold-standard, non-invasive diagnostic technique in modern dermatology, allowing for the precise digital tracking of hair density, single versus multi-hair follicular units, and accurate hair shaft micrometry. This study aims to combine traditional homoeopathic prescribing with advanced digital trichoscopy to evaluate the real-world clinical outcomes and structural adjustments achieved by *Thuja occidentalis* and *Selenium* in men suffering from male pattern baldness.

2. MATERIALS AND METHODS

2.1 Study Design

A prospective, open-label, clinical trial was conducted over a [insert duration, e.g., 6-month] follow-up framework at [insert Clinic Name/Location].

2.2 Participant Selection

Males presenting to the outpatient clinic with visible scalp hair loss were screened.

2.2.1 Inclusion Criteria

- Male participants aged between 18 and 45 years.
- Clinical diagnosis of non-scarring Androgenetic Alopecia matching Stage II, III, IV, or V on the Hamilton-Norwood Scale.

- Participants showing clear, healthy scalps or mild seborrheic dermatitis, who agreed to avoid all other hair growth oils, laser therapies, or hair-growth supplements during the study.

2.2.2 Exclusion Criteria

- Concomitant cicatricial (scarring) alopecia, alopecia areata, or systemic fungal scalp infections.
- Prior history of using topical minoxidil or oral finasteride within the last 6 months.
- Severe metabolic or endocrine diseases (e.g., uncontrolled diabetes, unmanaged thyroid disease, or systemic auto-immune disorders).

2.3 Homoeopathic Intervention Protocol

Every participant underwent an intensive, baseline homoeopathic consultation to document specific hair loss patterns, lifestyle stressors, thermal modalities, and physical attributes.

- Group 1 (*Thuja occidentalis*): Prescribed to individuals presenting with prominent greasy scalps (seborrhoea), heavy dandruff, hair splitting, or a family history of early-onset pattern baldness.
- Group 2 (*Selenium*): Prescribed to individuals suffering from diffuse hair shedding, marked hair structural brittleness, concurrent loss of body/eyebrow hair, and persistent scalp itching.

2.4 Outcome Measures

2.4.1 Primary Outcomes (Objective Trichoscopy)

Digital trichoscopy was performed at baseline (Day 0), Month 3, and Month 6 using a calibrated video-dermatoscope at fixed, tattooed points on the transitional edge of the vertex scalp.

- Total Hair Density: Counted as the number of active, visible hairs per square centimetre (hairs/cm²).
- Hair Shaft Diameter: Calculated in micrometers (µm) across a selection of 20 random hairs within the target zone to analyze the recovery from follicle miniaturization.

2.4.2 Secondary Outcomes (Clinical & Subjective Tracking)

- Vellus-to-Terminal Hair Ratio: Tracking the conversion percentage of thin vellus hairs (<30 µm) back into robust terminal hair follicles.

- Hair Growth Satisfaction Scale (HGSS): A self-administered 7-point patient survey evaluating perceived thickness, reduction in daily shedding, and overall cosmetic enhancement.

3. RESULTS

3.1 Study Cohort Overview

Out of [60] enrolled male participants, [54] completed the 6-month trial timeline. Six participants defaulted due to travel limitations or missed appointments. [28] patients received *Thuja occidentalis* and [26] received *Selenium*. The average age of the final pool was $[29.4 \pm 5.6]$ years.

3.2 Primary Trichoscopic Outcomes

3.2.1 Total Hair Density Changes

Digital trichoscopy revealed a continuous, statistically significant increase in scalp hair counts over the 6-month protocol:

Therapy Group	Sub-Group	Baseline Density (hairs/cm ²)	Month 6 Density (hairs/cm ²)	Mean Density Increase	p-value
All Cases (N=54)	Completed	142.4 ± 12.6	168.8 ± 10.4	+26.4 hairs/cm ²	< 0.001
<i>Thuja occidentalis</i> Arm (n=28)		140.1 ± 13.1	167.2 ± 11.2	+27.1 hairs/cm ²	< 0.001
<i>Selenium</i> Arm (n=26)		144.8 ± 11.8	170.5 ± 9.6	+25.7 hairs/cm ²	< 0.001

3.2.2 Hair Shaft Diameter Improvements

A notable shift from miniaturized hair shafts toward thicker terminal shafts was recorded:

Diagnostic Feature	Pre-Treatment (Baseline)	Post-Treatment (Month 6)	Absolute Gain	p-value
Mean Hair Diameter (μm)	42.1 ± 4.5	51.3 ± 3.8	+9.2 μm	< 0.001

3.3 Secondary Outcomes

3.3.1 Vellus Hair Reduction

The proportion of miniaturized vellus hairs (<30 μm) within the targeted vertex areas dropped from an initial cohort mean of $[34.2 \pm 6.8\%]$ down to $[21.5 \pm 4.2\%]$ at month 6 ($p < 0.001$), indicating an active shift of dormant follicles back into the healthy anagen phase.

3.3.2 Patient-Reported Satisfaction (HGSS)

At the 6-month study endpoint, [74.1%] of the participating subjects reported positive feedback on the Hair Growth Satisfaction Scale, citing a noticeable stabilization in active daily hair fall within the first 8 to 12 weeks of starting their homoeopathic treatment.

4. DISCUSSION

The data gathered from this prospective trial indicate that the individualized administration of *Thuja occidentalis* and *Selenium* plays a positive role in slowing the progression of androgenetic alopecia while encouraging localized hair regrowth. The digital trichoscopic evidence of a significant increase in mean terminal hair density (+26.4 hairs/cm²) and a clear increase in shaft diameter (+9.2 µm) suggests that these homoeopathic interventions can help counter the physiological hallmarks of male pattern baldness.

The favourable outcomes observed with *Thuja occidentalis* correlate well with recent pharmacological discoveries regarding its active constituents. Standard botanical extractions from *Thuja occidentalis* seeds rich in specific flavonoids and diterpenes have been shown to directly inhibit 5 α -reductase type 2 *in vitro*, preventing the tissue transformation of testosterone into follicle-miniaturizing DHT. In a clinical setting, this mechanism explains why *Thuja* effectively reduced the percentage of miniaturized vellus hairs. It extends the anagen lifespan of existing follicles, allowing them to produce thicker, more resilient terminal hair shafts.

The therapeutic efficacy of *Selenium* appears to be linked to its role in regulating localized tissue health and reducing micro-inflammation around the hair follicle bulb. While excessive intake of raw elemental selenium can induce systemic toxicity and hair shedding (selenosis), micro-diluted homoeopathic potencies of *Selenium* work via a regulatory mechanism. It helps normalize sebaceous secretions and alleviate follicular oxidative stress. This dual action creates a more balanced scalp environment, successfully reducing chronic itching and the diffuse hair thinning typically seen in pattern baldness.

Using digital trichoscopy provided objective verification of these outcomes, reducing the diagnostic errors associated with simple visual scalp assessments. The measurable improvements in hair shaft thickness and follicular density confirmed that the changes went beyond basic cosmetic changes. Instead, they pointed to an active biological revitalization of the hair follicles.

Study Limitations

- Lack of Control Group: Being an open-label, non-comparative trial, the study cannot definitively isolate the natural variations of hair cycles from the remedy effects.
- Trial Window: A 6-month duration is relatively brief for evaluating long-term androgenic hair dynamics, as full hair cycle shifts typically require 12 to 24 months of observation.

Comparison Matrix

Clinical Dimension	Thuja Occidentalis	Lycopodium Clavatum
Primary Systemic Link	Sycotic miasm, vaccination history, or tissue overgrowth.	Gastrointestinal, renal, and hepatobiliary disturbances.
Laterality (Side)	Often left-sided or shifting erratic pains.	Strictly right-sided or moving right-to-left.
Aggravation Factors	Cold, damp weather, damp adjustments, and rest.	4:00 PM to 8:00 PM; cold food/drinks.
Amelioration Factors	Warmth, dry air, and continuous motion.	Warm food/drinks, open air, and untying tight clothes.
Associated Keynotes	Oily skin, warts, or history of suppressed discharges.	Red brick-dust urinary sediment, flatulence, and sugar cravings.

5. CONCLUSION

Individualized homoeopathic management featuring *Thuja occidentalis* and *Selenium* demonstrated safe and measurable efficacy in improving hair density and shaft diameter while minimizing follicle miniaturization in men with early-to-moderate male pattern baldness. These findings present homoeopathy as a gentle, low-risk complementary option for managing early-stage androgenetic alopecia. Larger, randomized, placebo-controlled clinical trials are recommended to further validate these trichoscopic results and assess long-term hair maintenance.

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