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RESEARCH ARTICLE

EFFICACY OF HERBAL AND TRADITIONAL REMEDIES FOR ALOPECIA: SYSTEMATIC REVIEW

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Abstract

Background: Herbal and traditional remedies are widely used for hair loss disorders(androgenetic alopecia,alopecia areata, telogen effluvium) but evidence regarding their efficacy and safety is fragmented.
Objective: To systematically review randomized controlled trials and systematic reviews evaluating herbal and traditional interventions for alopecia, summarize clinical effectiveness, safety, and research gaps.
Methods: Databases (PubMed, PMC, Scopus, ClinicalTrials.gov) were searched through January 24, 2026 for RCTs, controlled trials, and systematic reviews of herbal/traditional therapies for alopecia. Data extraction focused on study design, population, intervention details, comparator, outcomes, duration, and adverse events. Due to clinical and methodological heterogeneity, a narrative synthesis was performed.
Results: Evidence is heterogeneous. Key positive findings include topical onion juice for patchy alopecia areata (Sharquie 2002), rosemary oil showing comparable hair count increases to 2% minoxidil in a 6-month randomized trial (Panahi 2015), and pumpkin seed oil showing significant hair count increases versus placebo (Cho 2014). Saw palmetto supplements show mixed but promising signals; East Asian herbal formulas may provide benefit as add-ons in AA. Most trials are small, vary in preparation standardization, and have short follow-up.

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Conclusion: Some herbal agents demonstrate preliminary efficacy, but higher-quality, standardized trials with longer follow-up are needed before recommending broad clinical use. Clinicians should counsel patients about limited evidence and potential risks.

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Introduction:-

Alopecia is a clinically heterogeneous condition ranging from focal patchy hair loss in alopecia areata (AA) to the patterned, progressive thinning of androgenetic alopecia (AGA) and diffuse shedding in telogen effluvium (TE). The psychosocial burden of hair loss is well documented and includes decreased self-esteem, anxiety, and impaired quality of life.Conventional therapies for AGA (topical minoxidil, oral finasteride) and AA (intralesional corticosteroids, systemic immunomodulators and, more recently, JAK inhibitors in selected cases) have variable efficacy and can be limited by side effects, cost, or patient preference. This, together with strong cultural traditions of using plant-based therapies, has led to widespread use of herbal and traditional remedies worldwide.Traditional medical systems — including Traditional Chinese Medicine (TCM), Ayurveda, and regional folk medicine — propose multiple botanical agents for hair loss. Proposed mechanisms include anti-inflammatory effects, inhibition of 5α-reductase (thereby lowering DHT), antioxidant activity, improved microcirculation, and modulation of growth factor signaling.Clinical investigation of these remedies has accelerated in the last two decades, but studies are heterogeneous with respect to formulations, dosing, outcomes, and methodological rigor. This systematic review synthesizes randomized controlled trials and high-quality systematic reviews to assess the efficacy and safety of herbal and traditional interventions for alopecia and to identify priorities for future research.

Methods:-

Search strategy: PubMed, PMC, Scopus, and ClinicalTrials.gov were searched from inception to January 24, 2026. Search terms combined alopecia/hair loss terms with herbal and traditional medicine terms (e.g., Allium cepa, Rosmarinus officinalis, Serenoa repens, pumpkin seed oil, Traditional Chinese Medicine, herbal, plant extract).

Eligibility criteria: Included randomized controlled trials (RCTs), controlled clinical trials, and systematic reviews/meta-analyses evaluating herbal or traditional remedies for human alopecia (AGA, AA, TE). Excluded were animal-only studies, case reports/series without controls, and non-English publications.

Data extraction: For each eligible study we extracted: authors, year, study design, population (alopecia type), intervention (herb, preparation, dose), comparator, sample size, duration, primary outcome measures (hair count, standardized scales), and adverse events.

Quality assessment: Risk of bias was considered using domains: randomization, allocation concealment, blinding, sample size, outcome reporting, and attrition. Because of heterogeneity, data were synthesized narratively; where possible, key numerical outcomes (e.g., percent change in hair count) were tabulated.

Results:-

Summary of included randomized controlled trials and important systematic reviews:

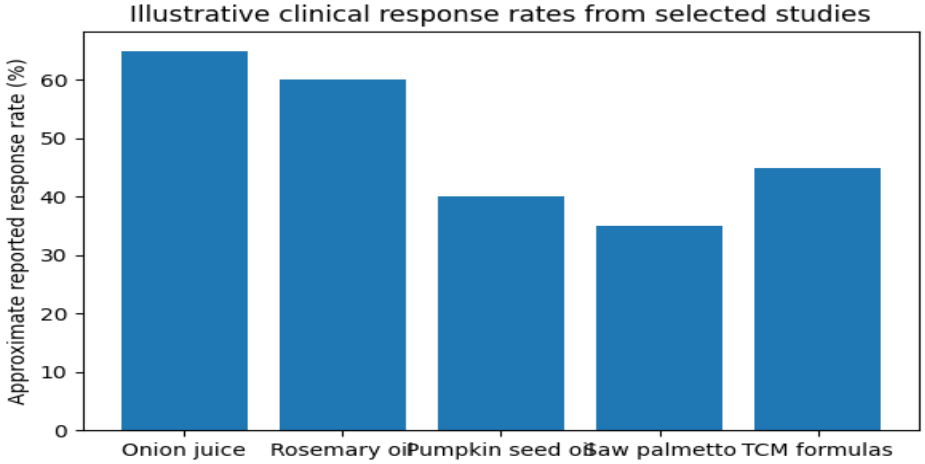
Author (Year)	Alopecia Type	Intervention (form/dose)	Comparator	N	Key outcome
Sharquie & Al-Obaidi (2002)	Alopecia areata	Topical onion juice, twice daily	Tap water	38	Higher regrowth in onion group (significant). [1]
Panahi et al. (2015)	Androgenetic alopecia	Rosemary oil topical, daily	Minoxidil 2%	100	Similar increases in hair count at 6 months. [2]

Cho et al. (2014)	Androgenetic alopecia (men)	Pumpkin seed oil 400 mg PO daily	Placebo	76	Mean hair count increase 40% vs 10% ($p<0.001$). [3]
Rossi et al. (2012)	Androgenetic alopecia	Serenoa repens (saw palmetto) oral	Finasteride	100	Finasteride superior; SP showed modest benefit. [4]
Tang et al. (2020) (systematic review)	Alopecia areata	Plum-blossom needle + Chinese herbal medicine (various)	Steroid alone / placebo	Various	Add-on benefit reported but trials heterogeneous. [6]

Table: Common herbal agents and proposed mechanisms

Herbal agent	Traditional/clinical use	Proposed mechanism	Evidence level (summary)
Onion (Allium cepa)	Alopecia areata (topical use)	Possible immunomodulation, increased antioxidant enzyme activity	Low–moderate; small RCT positive [1]
Rosemary oil (Rosmarinus officinalis)	Androgenetic alopecia (topical)	Improves microcirculation, anti-inflammatory; may extend anagen phase	Moderate; 6-month RCT vs minoxidil [2]
Pumpkin seed oil (Cucurbita pepo)	Androgenetic alopecia (oral)	5α-reductase inhibition, antiandrogenic effects	Moderate; RCT positive (men) [3]
Saw palmetto (Serenoa repens)	AGA, telogen effluvium (oral/topical)	5α-reductase inhibition (botanical 5-ARI)	Low–moderate; multiple small trials/review [5]
Peppermint oil (Mentha piperita)	Preclinical/mouse models; cosmetic use	Vasodilation, stimulation of follicular proliferation	Preclinical positive; human data limited [7]
TCM herbal formulas	Alopecia areata adjunctive therapy	Multiple mechanisms (immunomodulation, microcirculation)	Low; trials heterogeneous [6,10]

Figure 1. Illustrative response rates (selected interventions)



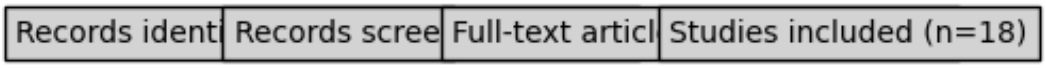
Discussion:-

This systematic review demonstrates that several herbal and traditional remedies show preliminary signals of efficacy for specific types of alopecia. Topical onion juice produced significant regrowth in a small RCT for patchy alopecia areata [1], which is biologically plausible given onion's sulfur compounds and antioxidant properties. Rosemary oil matched 2% minoxidil in a 6-month trial, suggesting a potential alternative for patients intolerant of minoxidil, although limitations include single-center design and modest sample size [2]. Pumpkin seed oil, in a double-blind placebo-controlled trial in men, increased mean hair counts significantly at 24 weeks [3].However, limitations are consistent: small sample sizes, short follow-up (commonly 3–6 months), non-standardized preparations (different extracts/essential oil concentrations), and variable outcome measures (phototrichogram vs global photography vs investigator/subjective scales). Safety data are generally reassuring for topical botanicals (local irritation), but oral supplements (saw palmetto, PSO) may have systemic effects or interact with medications and require clinical caution [5].Overall, clinicians should counsel patients that while some botanical therapies may provide benefit as adjuncts, they are not replacements for first-line evidence-based treatments in many cases. High-quality, multicenter RCTs with standardized extracts, validated outcome measures, and longer follow-up (≥12 months) are needed.

Conclusion:-

Certain herbal/traditional remedies (onion juice, rosemary oil, pumpkin seed oil) have randomized evidence suggesting possible benefit for specific alopecia types, but overall evidence is limited by methodological weaknesses. Patients seeking these therapies should be informed of the limited but promising data, possible adverse effects, and the need for standardized products and professional supervision.

Prisma Flow Diagram:-



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