

Childhood Alopecia: Patent and Treatment Method

Type: Review Article

Received: June 22, 2026

Published: July 21, 2026

Christina Rahm*

DRC VENTURES LLC, USA

***Corresponding Author:** Christina Rahm, DRC VENTURES LLC, USA.

Citation:

Christina Rahm. "Childhood Alopecia: Patent and Treatment Method". PriMera Scientific Surgical Research and Practice 8.1 (2026): 150-154.

Copyright:

© 2026 Christina Rahm. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract

Childhood alopecia, particularly alopecia areata (AA), presents significant medical and emotional challenges, as the immune system mistakenly targets growing hair follicles. The condition is often unpredictable, and many standard therapies fail to provide sustained long-term success. Conventional treatments may pose increased risks in pediatric populations, highlighting the need for safer and more supportive approaches that assist the body's natural regulatory processes. Increasingly, clinicians are exploring integrative treatment strategies that consider immune balance, nutrition, and hormonal regulation. This white paper evaluates a newly patented treatment method that outlines a structured therapeutic plan for alopecia in children. The review examines whether the proposed approach is scientifically plausible for pediatric alopecia by analyzing current evidence in immunology, dermatology, nutritional science, and neuroimmune research. The findings suggest that gradual dosing, combined nutritional support, and immune-modulating components provide a reasonable mechanistic framework that may explain observed treatment outcomes while maintaining an emphasis on safety in children.

Introduction

Childhood alopecia includes a range of hair loss conditions associated with immune dysfunction, genetic predisposition, environmental stressors, and physiological responses. Alopecia areata (AA) represents one of the most common non-scarring forms of hair loss in children and accounts for a significant proportion of clinical cases (Mostaghimi et al., 2023). This autoimmune disorder is characterized by sudden hair loss resulting from immune cells targeting actively growing hair follicles. Although spontaneous regrowth may occur, relapse is common, and severe forms such as alopecia totalis and alopecia universalis can have profound emotional and psychological impacts on affected children and their families (Sy et al., 2023).

Current treatment options include topical and injectable corticosteroids, targeted dermatological therapies, immunosuppressive medications, and more recently developed JAK inhibitors. However, these approaches present several limitations, including safety concerns in pediatric populations, temporary or incomplete outcomes, and high recurrence rates. Long-term immune suppression during development also raises concerns about potential adverse effects. As a result, clinicians and researchers continue to explore alternative strategies that support immune regulation while also addressing metabolic, nutritional, and hormonal factors that influence hair growth.

This paper reviews a recent patent describing a two-part therapeutic protocol consisting of natural bioactive compounds, essential nutrients, amino acids, and immune-supportive ingredients administered through a gradual 180-day dosing schedule. The objective of this review is to explore the mechanistic rationale and potential clinical relevance of this integrative approach in the management of pediatric alopecia.

Childhood Alopecia Areata Pathophysiology

Alopecia areata is an autoimmune condition in which immune cells disrupt the normal protection of hair follicles, leading to inflammation and hair loss (Ahn et al., 2023). The disease arises from complex interactions between genetic susceptibility and environmental triggers such as infections, cellular stress, nutritional imbalances, and psychological factors that contribute to immune dysregulation (Jadeja & Tobin, 2022). Pediatric patients often present with additional conditions, including allergic disorders, thyroid dysfunction, and vitamin D deficiency, which may further influence immune activity and disease progression.

Hair follicle growth is a highly regulated biological process that requires adequate amino acids, trace minerals, efficient cellular energy production, and balanced hormonal signaling (Natarelli et al., 2023). Treatment strategies focused solely on suppressing immune activity without supporting these underlying biological requirements may result in short-term regrowth followed by relapse. This understanding supports the exploration of integrative treatment models that combine immune modulation with metabolic and hormonal support to improve treatment durability.

Summary of the Treatment Method

The patented treatment system consists of two formulations administered through a structured dosing protocol lasting at least 180 days.

At first formulation (liquid drops):

- Zeolite extract.
- Ascorbic acid.
- Sea mineral concentrate.
- Potassium sorbate (stabilizer).
- Gradual dose increase at approximately 0.05 mL/kg.

Second formulation (capsule taken in serving):

- Vitamin D3.
- L-tyrosine.
- Caffeine anhydrous.
- L-theanine.
- Mucuna pruriens.
- Pine bark extract.
- Turmeric root extract.

The protocol emphasizes gradual titration, age-appropriate dosing, and consistent daily administration, which are important considerations in pediatric populations (Gouloze et al., 2022). Patient documentation included in the patent describes a case involving a four-year-old with alopecia totalis who experienced full scalp hair regrowth after completing the protocol (Crahm, 2025).

Mechanistic Rationalization: Why Such an Approach Can Be Effective

The proposed approach aims to support immune modulation rather than broad immunosuppression (Strzelec et al., 2023). Unlike traditional therapies that reduce immune activity globally, the formulation focuses on promoting immune balance and tolerance

(Chen, 2022). Vitamin D3 plays a critical role in immune regulation by supporting regulatory immune cell activity and maintaining immune equilibrium (Bikle, 2022). Research has shown correlations between vitamin D status and disease severity in pediatric alopecia areata (Rebelos et al., 2023).

Pine bark extract and curcumin possess anti-inflammatory properties that may reduce key inflammatory signaling molecules such as interferon-gamma and tumor necrosis factor-alpha, which are implicated in autoimmune hair loss (Bakrim et al., 2022). Zeolite mineral complexes may contribute indirectly by binding environmental toxins and reducing inflammatory burden, potentially supporting immune system balance (Senila & Cadar, 2024).

Hair Follicle Metabolism and Maintenance of Anagen

Phase Hair follicles are metabolically active tissues requiring efficient energy production and nutrient availability. L-tyrosine serves as a precursor for neurotransmitters and thyroid hormones that influence hair growth cycles and cellular metabolism (Dörner et al., 2025). Amino acid supplementation may be particularly relevant in children with thyroid-related imbalances or stress-related metabolic disruptions (Macvanin et al., 2023).

Sea mineral concentrates provide bioavailable trace elements such as zinc, selenium, and magnesium, which contribute to structural integrity, antioxidant protection, and enzymatic processes essential for hair follicle function (Pincemail & Meziane, 2022).

Regulation of Neuroendocrine and Stress Axis

Psychological stress is a known trigger for alopecia areata in children and may influence disease progression through hormonal dysregulation (Giliberti et al., 2025). L-theanine may support relaxation and cortisol balance without sedation, while Mucuna pruriens provides dopamine precursors that may influence emotional stability (Mata-Bermudez et al., 2024). Supporting neuroendocrine balance may reduce stress-related immune activation that contributes to hair follicle damage (Kesika et al., 2023). Controlled caffeine exposure has also been associated with stimulation of hair follicle activity and may help counteract inhibitory growth signals (Westgate et al., 2025).

Dose Titration and Pediatric Safety Considerations

A key safety feature of the protocol is the gradual dosing strategy. Slow titration may reduce the risk of adverse effects, allow physiological adaptation, and minimize developmental concerns in children. This approach differs from aggressive immunosuppressive therapies that may lead to relapse following discontinuation. The extended 180-day treatment window aims to support stabilization of the hair growth cycle rather than short-term cosmetic changes.

Pediatric Clinical and Ethical Considerations

The proposed strategy offers several potential advantages in pediatric care: Reduced reliance on systemic corticosteroids or biologic therapies. Lower theoretical risk of growth suppression or immune compromise. Non-invasive oral administration. Alignment with nutritional and integrative care principles. A preference for naturally derived therapeutic components.

Importantly, the protocol is not intended to replace conventional medical treatment and may be considered as an adjunctive or supportive strategy alongside established therapies.

Limitations and Future Research Needs

Although the mechanistic rationale for the patented approach appears scientifically plausible, further validation through randomized pediatric clinical trials is necessary (Orozco-Levi et al., 2025). Future research should include standardized outcome measures, immune and nutritional biomarker monitoring, and long-term relapse tracking (Pokushalov et al., 2024). Comparative studies evaluating this method against existing therapies would help clarify its potential role within clinical practice.

Conclusion

Effective management of childhood alopecia requires therapeutic strategies that balance immune regulation, safety, and whole-body support. The patented integrative treatment method provides a structured framework that addresses immune tolerance, neuroendocrine stress responses, and hair follicle metabolism simultaneously. Its emphasis on gradual dosing, combined nutrient support, and immune modulation offers a scientifically grounded rationale for further investigation in pediatric alopecia care. Continued clinical research is warranted to determine long-term efficacy, safety, and appropriate integration into comprehensive treatment protocols.

References

1. Ahn D., et al. "Psychological stress-induced pathogenesis of alopecia areata: autoimmune and apoptotic pathways". *International Journal of Molecular Sciences* 24.14 (2023): 11711.
2. Bakrim S., et al. "Natural sources and pharmacological properties of pinosylvin". *Plants* 11.12 (2022): 1541.
3. Bikle DD. "Vitamin D regulation of immune function". *Current osteoporosis reports* 20.3 (2022): 186-193.
4. Chen, X. "From immune equilibrium to immunodynamics". *Frontiers in Microbiology* 13 (2022): 1018817.
5. Crahm R. Formulation and Treatment Method for Alopecia (Patent Application No. Crahm2025-14) (2025).
6. Dörner C., et al. "Amino Acid Metabolism of the Skin: Control by Specific Enzymes and Contribution to Protective Functions". *Metabolites* 15.9 (2025): 601.
7. Giliberti A., et al. "Autism Spectrum Disorder and Epilepsy: Pathogenetic Mechanisms and Therapeutic Implications". *Journal of Clinical Medicine* 14.7 (2025): 2431.
8. Goulooze SC., et al. "Quantifying the pharmacodynamics of morphine in the treatment of postoperative pain in preverbal children". *The Journal of Clinical Pharmacology* 62.1 (2022): 99-109.
9. Jadeja SD and Tobin DJ. "Autoantigen discovery in the hair loss disorder, alopecia areata: implication of post-translational modifications". *Frontiers in Immunology* 13 (2022): 890027.
10. Kesika P., et al. "Role and mechanisms of phytochemicals in hair growth and health". *Pharmaceuticals* 16.2 (2023): 206.
11. Macvanin MT., et al. "The protective role of nutritional antioxidants against oxidative stress in thyroid disorders". *Frontiers in endocrinology* 13 (2023): 1092837.
12. Mata-Bermudez A., et al. "Mucuna pruriens, a Possible Treatment for Depressive Disorders". *Neurology international* 16.6 (2024): 1509-1527.
13. Mostaghimi A., et al. "Trends in prevalence and incidence of alopecia areata, alopecia totalis, and alopecia universalis among adults and children in a US employer-sponsored insured population". *JAMA dermatology* 159.4 (2023): 411-418.
14. Ntarelli N, Gahoonia N and Sivamani RK. "Integrative and mechanistic approach to the hair growth cycle and hair loss". *Journal of clinical medicine* 12.3 (2023): 893.
15. Orozco-Levi M., et al. "A Novel Supraglottic Suction Device in Mechanically Ventilated Patients: A Randomized Controlled Trial". *Medical Devices: Evidence and Research* (2025): 201-212.
16. Pincemail J and Meziane S. "On the potential role of the antioxidant couple vitamin E/selenium taken by the oral route in skin and hair health". *Antioxidants* 11.11 (2022): 2270.
17. Pokushalov E., et al. "Biomarker-Guided dietary supplementation: A narrative review of precision in personalized nutrition". *Nutrients* 16.23 (2024): 4033.
18. Rebelos E, Tentolouris N and Jude E. "The role of vitamin D in health and disease: a narrative review on the mechanisms linking vitamin D with disease and the effects of supplementation". *Drugs* 83.8 (2023): 665-685.
19. Senila M and Cadar O. "Composites Based on Natural Zeolites and Green Materials for the Immobilization of Toxic Elements in Contaminated Soils: A Review". *Materials* 17.23 (2024): 5977.
20. Strzelec M., et al. "Immunomodulation—a general review of the current state-of-the-art and new therapeutic strategies for targeting the immune system". *Frontiers in immunology* 14 (2023): 1127704.
21. Sy N., et al. "Overall and racial and ethnic subgroup prevalences of alopecia areata, alopecia totalis, and alopecia universalis".

JAMA dermatology 159.4 (2023): 419-423.

22. Westgate GE, Grohmann D and Sáez Moya M. "Hair Longevity—Evidence for a multifactorial holistic approach to managing hair aging changes". Journal of Clinical Medicine 14.6 (2025): 1894.