International Journal of Research in Dermatology
Aich B et al. Int J Res Dermatol. 2024 Nov;10(6):366-372
http://www.ijord.com

DOI: https://dx.doi.org/10.18203/issn.2455-4529.IntJResDermatol20243337

Original Research Article

Consumer survey to evaluate the effects of Mintop serum in the management of hair fall

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Received: 02 September 2024
Accepted: 09 October 2024

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ABSTRACT

Background: Hair fall, or alopecia, is a common concern influenced by various factors, necessitating diverse treatment.
Methods: This single-group, non-comparative study enrolled 165 participants aged 18-55 years with hair fall complaints. Participants applied Mintop serum twice daily for 90 days. Assessments included hair pull tests, 1-minute comb tests, consumer questionnaires, and dermatologist evaluations at baseline, 1 month, and 3 months.
Results: Of the 161 participants who completed the study, significant reductions in hair fall were observed after 1 month ($p<0.001$) and 3 months ($p<0.001$) of product use. Participants reported high satisfaction with the serum's effectiveness in reducing hair fall (100% agreement) and stimulating new hair growth (99.4% after 1 month, 100% after 3 months). Objective measures such as the hair pull test and 1-minute comb test demonstrated substantial decreases in hair shedding across the study period. No adverse events were reported.
Conclusions: Mintop Pro+ hair regrowth serum showed promising efficacy in reducing hair fall and improving hair density, strength, and overall hair health. The serum was well-tolerated without adverse effects, suggesting its potential as a safe and effective non-surgical option for managing hair loss.

Keywords: Alopecia, Hair, Hair loss, Mintop serum

INTRODUCTION

Hair fall, also known as alopecia, is a common concern affecting individuals of all ages.[1] It is characterized by the excessive shedding of hair from the scalp, leading to thinning hair and potential baldness. Many factors contribute to alopecia, including emotional issues, chronic disorders, dietary inadequacies, trace elements, vitamin deficiencies, stress, drug use, immune system dysfunction, endocrine disorders, and genetic and epigenetic changes.[2,3] Understanding the underlying cause of hair fall is crucial in determining appropriate treatment and management strategies.[1]

Various treatments are available to address hair fall, ranging from topical solutions and oral medications to advanced procedures like hair transplants. Current Food and Drug Administration (FDA)-approved therapies for alopecia include topical minoxidil, oral finasteride, and low-level light therapy. However, practitioners commonly use a variety of other primary and complementary treatment options, such as hormonal therapies, nutraceuticals, platelet-rich plasma, exosomes, microneedling, and more invasive techniques like hair transplantation. Treating alopecia can be challenging due to the non-uniformity in patient responses to conventional therapies and an incomplete understanding of the exact pathogenesis of the condition. Selecting an appropriate therapy should consider the individual's age, aesthetic concerns, lifestyle, preferences, access to treatment, compliance, extent of hair loss, and financial budget.[4]

Mintop Pro+ hair regrowth serum contains the following ingredients: purified water (aqua/eau) acts as a diluent, while propylene glycol and glycerin serve as humectants. Redensyl and procapil are included for hair strengthening.

Hibiscus extract and dexpanthenol function as emollients. PEG-40 hydrogenated castor oil is used as a solubilizer, and sodium benzoate acts as a preservative. The formula also includes several nourishing agents such as saw palmetto extract, panax ginseng extract, ginkgo biloba liquid extract, emblica extract, and eclipta alba extract. Follicusan and kopexil are hair volumizers, and pyridoxine hydrochloride contributes to hair nourishment. Additionally, the product contains rejuvenating ingredients like orange oil, biotin, and rosemary oil. Lavender oil provides a soothing effect, and tween-20 functions as a co-surfactant.

This study evaluated the effects of Mintop serum on hair, in hair management by using a consumer questionnaire. The outcomes of this study contribute to the growing need for evidence supporting the use of topical solutions in non-surgical approaches to hair restoration, thereby addressing a significant aspect of dermatological care and consumer health.

METHODS

Study design and selection criteria

This consumer survey design employed a single-group, single-center, non-comparative, safety, and efficacy study in adult human subjects having hair fall complaints (alopecia). A total of 165 subjects aged 18 to 55 years were screened, out of them 161 completed the study. The total duration of the study was 90 days which includes a total of 3 visits. Visit 01 was scheduled on day 01, visit 2 on day 30, and visit 3 on day 90. Potential subjects were screened based on inclusion and exclusion criteria only after obtaining their signed written informed consent. During the screening period, information was collected on the subjects' well-being, demography, dermatological examination, medical history, and current medications (both prescription and over-the-counter) used over the past four weeks. A dermatologist-trained evaluator performed a 60-second hair count test.

Inclusion criteria

Women between 18 and 55 years (inclusive) of age willing to participate voluntarily; participants having self-declared hair fall (confirmed by hair pull test); participants who can understand written and/or verbal instructions and are ready to comply with all survey requirements with a willingness to participate and ready to give written informed consent voluntarily; and participants agreeing to use only test product (Mintop serum) provided by Sponsor for hair fall management were included.

Exclusion criteria

Participants allergic to any cosmetic product; pregnant women or lactating mothers; any clinical hair condition for which treatment is being taken; history of thyroid, anemia, or hormonal problems; participants who had COVID infection during the past 6 months; and participants who had a fever and prolonged illness recently were excluded.

Test product

In this study, the test product evaluated was Mintop serum (Mintop Pro+ hair regrowth serum–B, no: PAL/HSSP-E/23/015), which was provided in sufficient quantity and was instructed for twice-daily application over 3 months. Participants were instructed to apply approximately 1 ml of Mintop serum to the scalp and hair and were provided with diaries to record usage details. The product, sponsored and labeled by C.L.A.I.M.S. Pvt. Ltd., contains purified water (aqua/eau), propylene glycol, glycerin, redensyl, procapil, hibiscus extract, dexpanthenol, PEG-40 hydrogenated castor oil, sodium benzoate, as well as nourishing agents such as saw palmetto extract, panax ginseng extract, ginkgo biloba liquid extract, emblica extract, and eclipta alba extract. It also includes follicusan, kopexil, pyridoxine hydrochloride, and rejuvenating ingredients like orange oil, biotin, rosemary oil, and lavender oil.

Safety assessments

Subjects were asked about adverse events including erythema, edema, pain, pruritus, and urticaria at each clinical visit. They were also instructed to report any adverse reactions telephonically between visits.

Dermatologist evaluation and data collection

Changes in the general appearance of hair and scalp were evaluated by a dermatologist-trained evaluator on day 1, day 30, and day 90 of the study. Data collection occurred at three distinct time points: baseline, 1 month, and 3 months. Assessments included a consumer survey questionnaire covering various parameters related to hair health, such as hair fall and strength, administered at each visit (Figure 1).

On day 1, participants were briefed about the trial, signed informed consent forms, and underwent selection based on inclusion and exclusion criteria. Initial assessments on day 1 included the hair pull test, the 1-minute comb test, and the completion of a self-assessment questionnaire. On day 30 and day 90, assessments again included the hair pull test, the 1-minute comb test, and completion of the self-assessment questionnaire.

Changes in the general appearance of hair were assessed using a standardized clinical questionnaire, categorizing parameters such as hair volume (full, medium, small), hair density (dense, thinned), hair reflection (shiny, blunt), hair plasticity (waved, flat), hair shininess (poor, average, good), and hair smoothness (poor, average, good).

The general appearance of the scalp was evaluated in terms of experiencing problems such as itchiness, redness, roughness, dryness, and scaliness. This assessment used a

subjective product perception scale ranging from 1 (no experience) to 5 (severe experience).

1-minute comb test for hair breakage

A sixty-second hair count test (hair combing test) was performed to discover a range of hair shedding during a 60-s hair combing period. In this study, participants were asked to comb their hair for 60 seconds starting at the vertex and combing forward, under the supervision of a CRA. The hair was combed over a white sheet of paper so that any shed hairs could be adequately visualized. The shed hairs were collected, and their number was recorded.

Hair pull test

The hair pull test was done to obtain a semi-quantitative clinical impression about the easy falling of scalp hair. Approximately 40 hair shafts were taken between the thumb and index finger, close to the surface of the scalp skin, and pulled firmly, but not forcibly away from the scalp with constant strength along with the hair shaft up to the upper hair tip. Epilated hairs were then counted.

Statistical analysis

Statistical analysis focused on descriptive statistics to summarize participant demographics, adherence to product application, and changes in hair health parameters over time. Analysis of variance (ANOVA) or non-parametric tests were used to assess changes in hair strength, hair breakage, and other relevant outcomes.

RESULTS

Demographic characteristics

The study initially enrolled 165 participants, with 161 completing the trial, reflecting a high retention rate throughout the evaluation period. Participants had a mean age of 35.91 years, ranging from 18 to 55 (Table 1).

Table 1: Demographic characteristics.

Variables	N
Number of participants enrolled	165
Number of complete cases	161
Age (years)	35.91
Mean SD	8.64
Range (years)	18 to 55

Participant views on product effectiveness in hair fall reduction and effectiveness in new hair growth

After both 1 month and 3 months of product usage, 100% of participants agreed that Mintop serum effectively reduced hair fall. Similarly, nearly all participants reported significant satisfaction with the product's ability to stimulate new hair growth, with 99.4% endorsing its effectiveness after 1 month and 100% after 3 months (Tables 2 and 3).

Figure 1 (a-e): Participant's pre- and post-photograph samples.

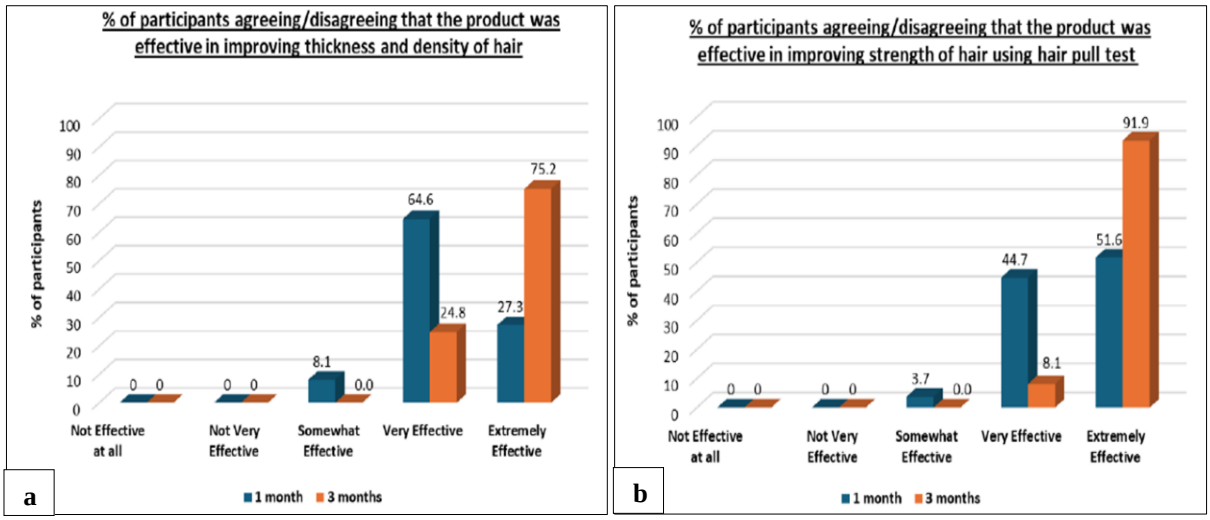

Figure 2 (a and b): Participant perspectives on enhancing hair thickness, density, and strength.

Table 2: Participant views on product effectiveness in hair fall reduction.

Assessment	Percentage of participants agreeing/disagreeing that the product was effective in slowing or reducing hair fall (n=161)			
	1 month		3 months	
	No	%	No	%
Not effective at all	0	0.0	0	0.0
Not very effective	0	0.0	0	0.0
Somewhat effective	12	7.5	0	0.0
Very effective	107	66.5	35	21.7
Extremely effective	42	26.0	126	78.3
Top 3 scores	161	100.0	161	100.0

Table 3: Participant perspectives on product effectiveness in hair growth.

Assessment	Percentage of participants agreeing/disagreeing that the product was effective in the growth of new hair (n=161)			
	1 month		3 months	
	No	%	No	%
Not effective at all	1	0.6	0	0.0
Not very effective	0	0.0	0	0.0
Somewhat effective	23	14.3	4	2.5
Very effective	76	47.2	34	21.1
Extremely effective	61	37.9	123	76.4
Top 3 scores	160	99.4	161	100.0

Participant perspectives on product effectiveness in hair thickness, density, strength, and subjective assessments

Participants consistently rated Mintop serum as highly effective in enhancing hair thickness, density, and strength. After 1 month and 3 months of use, all participants agreed that the product visibly improved their hair health. Moreover, subjective assessments such as reductions in dryness, dullness, frizziness, and improvements in manageability, shine, softness, smoothness, conditioning, and nourishment all garnered 100% agreement from participants across both evaluation time points (Figures 2 and 3).

Participant agreement on product effectiveness in hair strength via pull test

The hair pull test demonstrated a significant decrease in the mean number of hairs pulled out after 1 month (17.27±10.01) and 3 months (6.53±4.64) compared to baseline (36.33±20.34), with $p<0.001$. Similarly, the 1-minute comb test showed a substantial reduction in hair shedding after 60 seconds of combing at 1 month (25.05±16.28) and 3 months (9.98±9.32) compared to baseline (58.53±28.58), with $p<0.001$ (Tables 4 and 5).

Table 4: The mean number of hairs falling out after using hair pull test.

Timepoints	Mean hair count (n=161)	P value	Z score
Baseline		36.33±20.34	
1 month	17.27±10.01	<0.001*	-10.144
3 months	6.53±4.64	<0.001*	-11.007

*Significant

Table 5: The mean number of hairs falling after 60 seconds of combing.

Timepoints	Mean hair count (n=161)	P value	Z score
Baseline		58.53±28.58	
1 month	25.05±16.28	<0.001*	-10.764
3 months	9.98±9.32	<0.001*	-11.007

*Significant

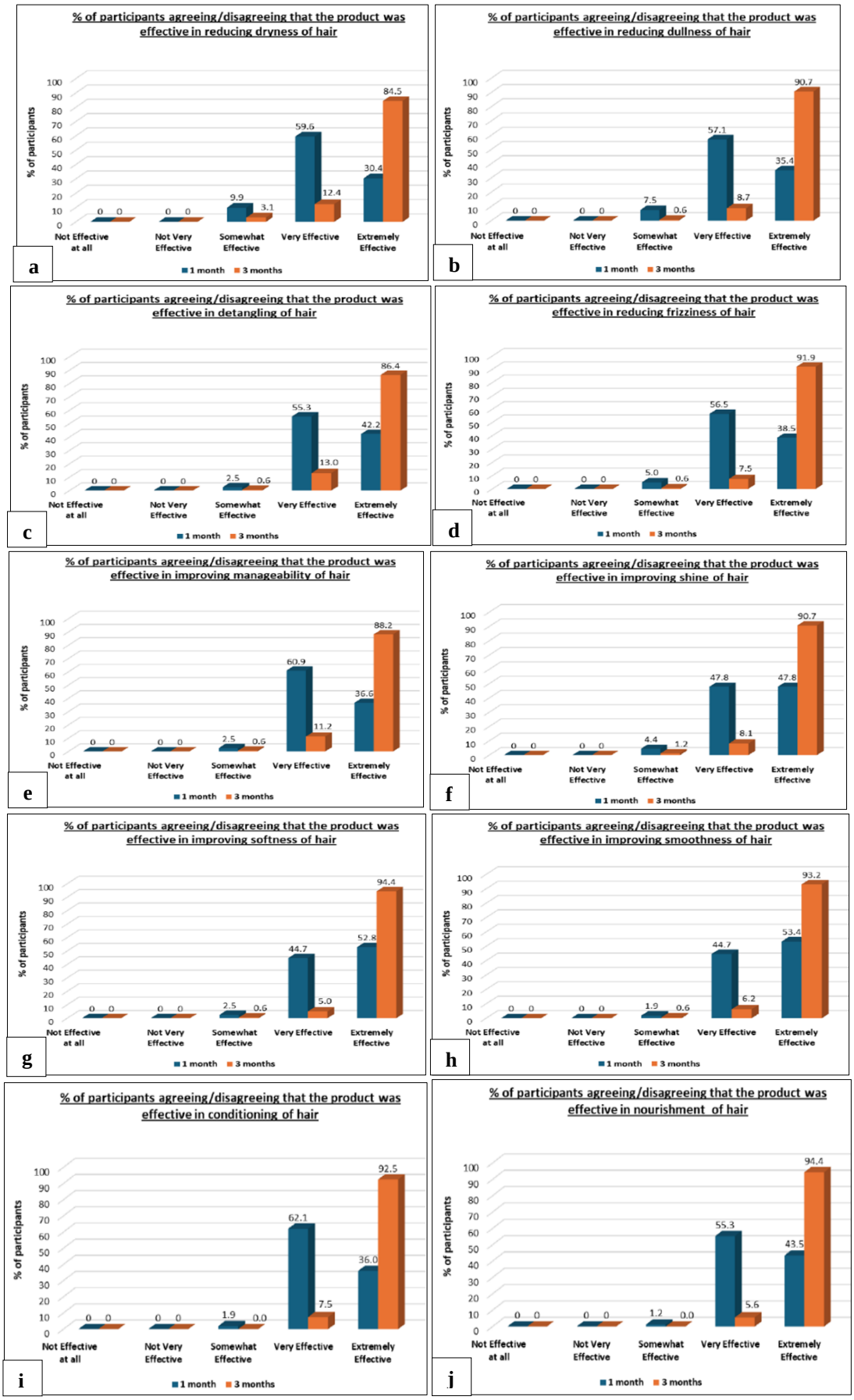

Figure 3 (a-j): Participants perspectives on subjective assessments.

Adverse reactions

Throughout the study duration, there were no reports of adverse events or serious adverse events from any participant.

DISCUSSION

Various treatments are available for hair loss in adults, with topical minoxidil and finasteride being the most common. However, these medications can have side effects. The most frequent side effect of topical minoxidil is irritant contact dermatitis, characterized by scaling and itching.[5] In women, minoxidil use can also lead to facial hypertrichosis.[6] Oral finasteride, another USFDA-approved treatment for hair loss, can cause adverse effects such as gynecomastia, hypersensitivity reactions, dizziness, orthostatic hypotension, testicular pain, and impaired sexual function in males. It is contraindicated in pregnant women and those of childbearing potential due to the risk of feminization of a male foetus.[7,8]

In our study, all participants reported that Mintop serum effectively reduced hair fall after both 1 month and 3 months of usage, with nearly all expressing significant satisfaction with its ability to stimulate new hair growth 99.4% endorsing its effectiveness after 1 month and 100% after 3 months. A similar study also compared the safety and effectiveness of redensyl, capixyl, and procapil (RCP) versus 5% minoxidil in treating androgenetic alopecia (AGA) in adult male patients over 24 weeks, showing that the RCP group achieved significantly higher scores in researcher assessments, global photographic evaluations, and self-evaluations, indicating better outcomes.[9] Additionally, a randomized controlled trial examined the efficacy of Procapil with PRP versus redensyl, saw palmetto, and biotin (RSB) with PRP in treating AGA in 54 male patients, revealing significant improvements in AGA grading scores for both groups, with PRP and RSB emerging as a potentially superior alternative to current therapies.[10] Rosemary oil, derived from a Mediterranean evergreen shrub, is used to manage hair loss due to its antioxidant, antimicrobial, and anti-inflammatory properties, and can be applied topically or inhaled to enhance microcapillary perfusion and promote hair growth.[9] Similarly, saw palmetto extract, from a Florida-native shrub, inhibits 5α-reductase, reducing dihydrotestosterone levels to help manage hair fall.[11] Despite their popularity, scientific evidence supporting the efficacy of rosemary oil and saw palmetto remains limited.[12]

Throughout the study duration, there were no reports of adverse events or serious adverse events from any participant. This finding is consistent with the existing studies that indicate the overall incidence of side effects with minoxidil use is low and non-serious.[13] However, more often, patients may report discomfort and inconvenience of topical application rather than actual side effects. One advantage of the 5% foam is that it is free of propylene glycol, the irritant component present in solution forms, and it is associated with a lower incidence of skin irritation.[14] Additionally, resistance to minoxidil with consistent use does not seem to be an issue.[15] The absence of adverse events in our study suggests that Mintop serum, which may incorporate similar formulations to minimize irritation, is well-tolerated by users.

In conclusion, the findings from this study support Mintop Pro+ hair regrowth serum as an effective and well-tolerated treatment option for individuals experiencing mild to moderate AGA. The significant reduction in hair fall, improvements in hair density, and high levels of consumer satisfaction underscore its potential to enhance overall hair health and restore confidence in affected individuals.

Limitations

Despite the promising results, several limitations should be acknowledged. The study design, which lacked a control group, limits the ability to establish causality between Mintop Pro + hair regrowth serum and observed improvements in hair health. Additionally, variations in individual treatment responses and adherence to application protocols may have influenced study outcomes. Future research could benefit from randomized controlled trials with larger sample sizes and longer follow-up periods to further elucidate the serum's long-term efficacy and safety.

CONCLUSION

Moving forward, research efforts should focus on expanding our understanding of the serum's molecular mechanisms, optimizing treatment protocols to maximize efficacy, and exploring its potential in combination therapies with other hair loss treatments. Long-term studies assessing the sustainability of hair regrowth and the serum's effectiveness across diverse demographic groups would provide valuable insights into its broader clinical utility.

ACKNOWLEDGEMENTS

The authors are grateful to C.L.A.I.M.S. Private Limited and its team for their kind collaboration.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Aich B, Bhagat S, Muchhala S, Sanghavi A, Katare S, Kotak B. Consumer survey to evaluate the effects of Mintop serum in the management of hair fall. Int J Res Dermatol 2024;10:366-72.