

A Clinical Study to Evaluate Effectiveness of *Rosmarinus officinalis* Mother Tincture in Improving Hair Volume and Density in Patients with Diffuse Cyclical Hair Loss Through Hair Shedding Visual Scale and Ponytail Thickness Test

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ABSTRACT

Diffuse hair loss is a common, non-scarring condition characterized by uniform thinning of hair across the scalp. It often results from disturbances in the hair growth cycle, particularly an increase in the number of follicles entering the telogen (resting) phase, a condition known as telogen effluvium. Diffuse cyclical hair loss, though not life-threatening, can significantly affect self-esteem and quality of life. Early assessment and appropriate intervention help in preventing progression and promoting healthy hair regrowth. This clinical study evaluated effectiveness of *Rosmarinum officinalis* mother tincture in improving volume and density of hair using hair shedding visual scale and ponytail thickness test. Statistical analysis revealed a highly significant improvement in hair parameters.

KEY WORDS: *Rosmarinus Officinalis*, Telogen Effluvium, Hair Shedding Visual Scale, Ponytail Thickness Test, Homoeopathy.

INTRODUCTION

Hair is a skin appendage unique to mammals. It develops from the primary epithelial germ

layer during the third month of gestation. Although hair is a vestigial structure with no vital function, it holds immense psychological importance.

Hair growth is cyclic. The growing phase, known as Anagen, lasts for an average of three years. The involutionary stage is Catagen, which is driven by apoptosis and lasts for a few weeks. Telogen is a quiescent resting phase that lasts for a few months. Normally, 10% of follicles are in this phase; the active process of hair shaft shedding is called Exogen.

The human scalp has approximately 100,000 hair follicles, and on average, 100 hairs are shed daily. Scalp hair grows at a rate of 0.3 mm per day.

Stress disrupts the naturally asynchronous growth cycles of individual hairs, forcing them to become synchronous. Consequently, a significantly larger number of anagen hairs prematurely enter the telogen phase at the same time.

This leads to the clinical presentation of Telogen Effluvium, a non-scarring scalp disorder characterized by diffuse hair loss that typically manifests approximately three months after a triggering event, such as pharmacological intervention, physiological or emotional stress, or trauma.

Additional triggers include acute or chronic illnesses, hormonal fluctuations like pregnancy or hypothyroidism, and nutritional deficiencies or heavy metal exposure. Furthermore, medications such as anticoagulants and retinoids, as well as psychological stress and allergic contact dermatitis, can further disrupt the hair cycle. The most prominent clinical sign of Telogen Effluvium is increased hair shedding, particularly noticeable during washing and combing, which eventually leads to generalized thinning.

Investigations include Complete Blood picture, serum Iron, renal, liver, thyroid profile to rule out any underlying systemic or metabolic disorders that may contribute to hair shedding.

ASSESSMENT TOOLS:

1. Hair Pluck Test (Trichogram): An examination of the hair roots to determine the ratio of growth phases; a finding of more than 25% of hairs in the telogen phase is diagnostic of Telogen Effluvium.
2. Wash Test: A quantitative method where patients collect hair shed during washing after five days of abstinence from shampooing to count the total loss.
3. Hair Shedding Visual Scale: This is a validated visual tool used to assess hair shedding in women, categorizing loss on a scale of 1 to 6. Grades 1–4 are typically considered within the normal range, while grades 5 and 6 indicate pathological shedding.
4. Ponytail Thickness Test: The circumference of a secured high ponytail was measured using a flexible tape measure. where a circumference of less than 2 inches suggests low density, 2–3 inches indicate medium density, and 4 inches or more signifies high density.

THE INTERVENTION:

Rosmarinus officinalis belongs to the family Labiatae. In homeopathic therapeutics, this remedy is indicated for the treatment of hair

loss, dandruff, and lice. Existing literature also highlights its efficacy in reducing anxiety and improving both memory and sleep quality. This study was undertaken to clinically evaluate its effectiveness in improving hair volume and density.

AIMS AND OBJECTIVES:

AIM: To study the effectiveness of Rosmarinus officinalis mother tincture in the management of Diffuse cyclical hair loss (Telogen effluvium).

OBJECTIVES:

To determine the effectiveness of Rosmarinus officinalis mother tincture in the management of Diffuse cyclical hair loss by using hair shedding visual scale and ponytail thickness test.

HYPOTHESIS:

NULL HYPOTHESIS (H0): Rosmarinus officinalis mother tincture is not effective in improving hair volume and density in patients with diffuse cyclical hair loss

RESEARCH HYPOTHESIS (H1): Rosmarinus officinalis mother tincture is effective in improving hair volume and density in patients with diffuse cyclical hair loss

SELECTION CRITERIA:

INCLUSION CRITERIA:

1. Patients of age group 15-45 are taken for the study.
2. Both sexes and all religions.
3. Patients who are suffering with hair fall.
4. Subjects who are willing to give consent for continuous follow-up throughout the study period.

EXCLUSION CRITERIA:

1. Patients having crust formation on scalp and seborrheic dermatitis.
2. Patients who are under the treatment of radiation therapy and chemotherapy.
3. Patients who are suffering with psoriasis of scalp and eczema condition.

- Patients having hair fall due to systemic illness like hypothyroidism, pcod, postpartum hair loss etc are not taken into the study.

MATERIAL AND METHODS

SOURCE OF DATA: 20 cases were selected for the study on a simple random basis from the patients attending the IPD, peripheral OPD, and camps of MNR Homoeopathic Medical College and Hospital. The study was carried out over a period of 10 months.

TYPE OF STUDY: Clinical prospective study.

STUDY DESIGN: Experimental

Assessment tool:

Qualitative Assessment: Hair Shedding Visual Scale (to see the pattern of improvement).

Physical Assessment: Ponytail Thickness Test (to measure volume).

Quantitative/Statistical Assessment: The Hair Wash Test was utilized to collect raw data (daily hair count) for paired t-test calculation.

Ethical consideration: Ethical clearance to this research topic was taken from the institutional ethical committee.

METHODOLOGY

It was ensured that patients were made aware of the study in their own language, and informed consent was obtained from every individual. All patient details were kept confidential. The case was taken in standardized case format of MNR. After ensuring each case met the predefined selection criteria, patients were evaluated using the designated assessment tools before and after the intervention. Total scores were calculated, and the Hair Wash Test data was subjected to a paired t-test to demonstrate statistical significance.

OBSERVATION AND RESULTS

Table 1: distribution of cases according to age group:

SNO	Age group	No of patients	Percentage
1.	15-30	13	65%
2.	31-45	07	35%
3.	TOTAL	20	100%

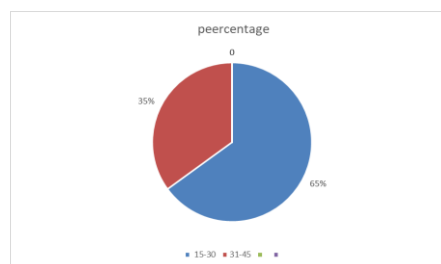


Fig 1: Pie chart showing distribution of cases according to age group:

Table 2: Distribution of cases according to Gender

S.no	Gender	No.of patients	Percentage
1	MALE	7	35%
2	FEMALE	13	65%
3	TOTAL	20	100%

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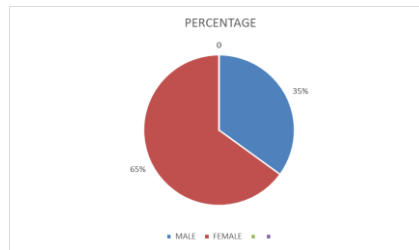


Fig 2: Gender incidence of diffuse cyclical hairloss:

Table 3: Showing occupation of patients:

SL NO	NAME	AGE	GENDER	OCCOPATION
1.	Ms.NH	23	F	Student
2.	Ms.PK	26	F	Teacher
3.	Ms.AY	24	F	Student
4.	Ms.KY	18	F	Student
5.	Ms.AS	21	F	Student
6.	Ms.DY	20	F	Student
7.	Mrs.SB	41	F	Bank employee
8.	Mrs.SD	31	F	Home maker
9.	Mrs.AJ	32	F	Software engineer
10.	Mrs.ST	40	F	Home maker
11.	Mrs.LK	35	F	Teacher
12.	Mrs.SH	27	F	Marketing executive
13.	Mr.RH	23	M	Student
14.	Mr.AR	26	M	Pharmacist
15.	Mr.HR	15	M	Student
16.	Mr.AD	21	M	Student
17.	Mr.KR	39	M	Business
18.	Mr.RM	29	M	H R Manager
19.	Mr.KR	24	M	Student
20.	Ms.SN	22	F	Student

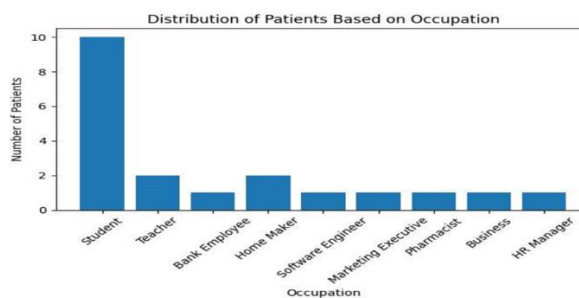


Fig 3: Showing occupation of patients

Table 4: Showing hair shedding visual scale values before and after treatment

SNO	NAME	AGE	SEX	Diffuse cyclical hairloss before treatment with score	Diffuse cyclical hairloss after treatment with score.
1	Ms.NH	23	F	Excessive shedding (5)	Improved (1)
2	Ms.PK	26	F	Excessive shedding (5)	Improved (2)
3	Ms.AY	24	F	Excessive shedding (6)	Mildly improved (2)
4	Ms.KY	18	F	Excessive shedding (6)	No improvement (6)
5	Ms.AS	21	F	Excessive shedding (5)	No improvement (5)
6	Ms..DY	20	F	Excessive shedding (5)	Mildly improved (3)
7	Mrs.SB	41	F	Excessive shedding (6)	Mildly improved (3.5)
8	Mrs.SD	31	F	Excessive shedding (5)	Improved (2)
9	Mrs.AJ	32	F	Moderate shedding (4)	Improved (2)
10	Mrs.ST	40	F	Excessive shedding (5)	Mildly improved (3)

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11	Mrs.LK	35	F	Excessive shedding (6)	Improved (2.5)
12	Mrs.SH	27	F	Excessive shedding (5)	Improved (1)
13	Mr.RH	23	M	Moderate shedding (4)	Improved (2)
14	Mr.AR	26	M	Excessive shedding (5)	No improvement (5)
15	Mr.HR	15	M	Excessive shedding (6)	No improvement (6)
16	Mr.AD	21	M	Excessive shedding (5)	Improved (2)
17	Mr.KR	39	M	Excessive shedding (5)	Mildly improved (3)
18	Mr.RM	29	M	Moderate shedding (4)	Improved (1.5)
19	Mr.KR	24	M	Moderate shedding (4)	No improvement (4)
20	Ms.SN	22	F	Excessive shedding (5)	No improvement (5)

Table 5: Hair shedding visual scale reference table

EXCESSIVE SHEDDING	SCORE (5-6)
MODERATE SHEDDING	SCORE (3-4)
MINIMUM SHEDDING	SCORE (1-2)

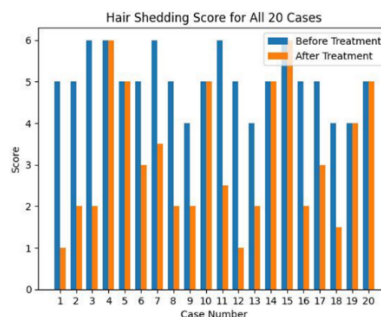


Fig 4: Showing hair shedding visual scale values before and after treatment.

Table 6: Showing density and thickness before and after treatment by using ponytail thickness test

SNO.	NAME	AGE	SEX	HAIR VOLUME & DENSITY BEFORE TREATMENT	HAIR VOLUME & DENSITY AFTER TREATMENT
1	Ms.NH	23	F	LOW DENSITY (2inches)	IMPROVED (4 inches)
2	Ms.PK	26	F	LOW DENSITY (1.5 inches)	IMPROVED(4inches)
3	Ms.AY	24	F	LOW DENSITY(1inch)	MILDLY IMPROVED(2.5inch)
4	Ms.KY	18	F	LOW DENSITY(2inches)	NO IMPROVEMENT(2inches)
5	Ms.AS	21	F	LOW DENSITY (1.5 inches)	NOIMPROVEMENT(1.5inches)
6	Ms..DY	20	F	LOW DENSITY(2inches)	MILDLY IMPROVED(3inches)
7	Mrs.SB	41	F	LOW DENSITY(2inches)	MILDLY IMPROVED (3.5inches)
8	Mrs.SD	31	F	LOW DENSITY(1.5inches)	IMPROVED (4inches)
9	Mrs.AJ	32	F	MEDIUM DENSITY (3inches)	IMPROVED(5inches)
10	Mrs.ST	40	F	LOW DENSITY(2inches)	MILDLY IMPROVED(3inches)
11	Mrs.LK	35	F	LOW DENSITY(2inches)	IMPROVED(4inches)
12	Mrs.SH	27	F	LOW DENSITY(2inches)	IMPROVED(4.5inches)
13	Mr.RH	23	M	MEDIUM DENSITY(3inches)	IMPROVED(5inches)
14	Mr.AR	26	M	LOW DENSITY(1.5inch)	NO IMPROVEMENT(1.5inch)
15	Mr.HR	15	M	LOW DENSITY(2inches)	NO IMPROVEMENT(2inches)
16	Mr.AD	21	M	LOW DENSITY(2inches)	IMPROVED(4inches)
17	Mr.KR	39	M	LOW DENSITY(1.5inches)	MILDLY IMPROVED (3inches)
18	Mr.RM	29	M	MEDIUM DENSITY(3.5inches)	IMPROVED(5inches)
19	Mr.KR	24	M	MEDIUM DENSITY (3inches)	NO IMPROVEMENT(3inches)
20	Ms.SN	22	F	LOW DENSITY(2inches)	NO IMPROVEMENT(2inches)

Table 7: Ponytail thickness test reference table

S NO.	DENSITY	IN INCHES	IN CENTIMETRES
1.	LOW DENSITY	≤ 2INCHES	≤ 5 CENTIMETRES
2.	MEDIUM DENSITY	>2-3 INCHES	>5-7.5CENTIMETRES
3.	HIGH DENSITY	>4 INCHES	>10CENTIMETRES

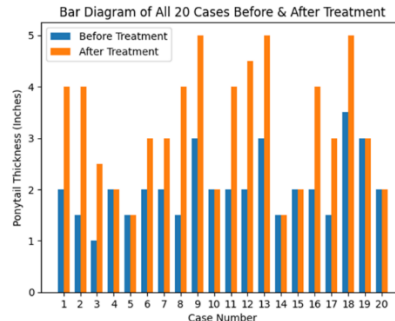


Fig 5: Showing density and thickness before and after treatment by using ponytail thickness test

Statistical Analysis

A paired t-test was applied to evaluate the quantitative reduction in hair shedding, as measured by the Wash Test (Daily Hair Count). This test was chosen because the same subjects were assessed before and after treatment, and the data is continuous and paired ($n=20$).

Data Summary

- Number of subjects (n) = 20
- Mean hair fall score before treatment = 182.45 hairs/day
- Standard deviation before treatment = 28.64
- Standard error of mean before treatment = 6.40
- 95% confidence interval before treatment = 169.08 – 195.82

- Mean hair fall score after treatment = 118.30 hairs/day
- Standard deviation after treatment = 24.12
- Standard error of mean after treatment = 5.39
- 95% confidence interval after treatment = 107.03 – 129.57
- Mean difference (Before – After) = 64.15
- Standard deviation of difference = 15.72
- Standard error of difference = 3.51
- 95% confidence interval of difference = 56.80 – 71.50

Test Results

- t value = 18.27
 - Degrees of freedom (df) = 19
 - p value (two-tailed) = 0.00000001
- $P < 0.001$

Table 8: Paired t-Test Showing Comparison of Hair fall Before and After Treatment (n= 20)

Variable (Mean Daily Hair Count (Hairs/Day))	Mean	Standard Deviation (SD)	Standard Error (SE)	95%Confidence Interval	t value	df	p value
Before Treatment	182.45	28.64	6.40	169.08-195.82			
After Treatment	118.30	24.12	5.39	107.03-129.57			
Mean Difference (Before -After)	64.15	15.72	3.51	56.80-71.50	18.27	19	<0.001

Interpretation

The paired t-test demonstrated a statistically highly significant reduction in daily hair shedding following treatment with *Rosmarinus officinalis* mother tincture ($p < 0.001$).

DISCUSSION

The study was conducted to evaluate the efficacy of Rosmarinus Q in the management of Diffuse Cyclical Hair Loss among subjects selected from the outpatient and inpatient departments, peripheral health centers, and

camps of MNRHMC. Based on the inclusion and exclusion criteria, a total of 20 cases were recorded and prescribed Rosmarinus Q. Clinical assessments were performed before and after treatment using the Hair Shedding Visual Scale and Ponytail Thickness Test to determine the level of significant improvement based on symptom severity and duration. Based on the analysis of the cases of Diffuse Cyclical Hair loss, the following observations were made: out of 20 cases studied, 13 individuals (65%) belonged to the age group of 15–30 years, while 07 cases (35%) belonged to the age group of 31–45 years; regarding gender distribution, 13 individuals (65%) were female and 07 individuals (35%) were male; in terms of clinical outcomes, there was relief in 09 individuals (45%), partial relief in 05 individuals (25%), and no relief in 06 individuals (30%). The statistical significance of these results was demonstrated through a paired t-test ($t = 18.27$, $p < 0.001$), confirming a highly significant reduction in hair shedding and an improvement in hair volume and density following the intervention.

CONCLUSION

The study concludes that Rosmarinus officinalis Q is a statistically significant intervention ($p < 0.001$) for reducing hair shedding and improving hair volume and density in patients with Diffuse Cyclical Hair Loss.

Limitations Of Study

The study was based on a single remedy; thus, the totality of the case for each patient could not be fully taken into consideration. The medicine was not prescribed based on the totality of symptoms; a well-selected constitutional remedy might achieve a cure more rapidly or effectively. The study duration was limited to 10 months, so long-term outcomes of the condition might not be fully covered.

The sample size was small ($n=20$); therefore, further research with larger cohorts is necessary to generalize these findings.

Declaration by Authors

Ethical Approval: Approved

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Conflict of Interest: No conflicts of interest declared.

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