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Efficacy of ayurvedic oil (Advanced Emami Kesh King Scalp and Hair Medicine Ayurvedic Oil) – Hair growth, hair fall reduction and dandruff protection

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ABSTRACT

Advanced Emami Kesh King Scalp and Hair Medicine Ayurvedic Oil contains potent extracts of various herbs such as Manjistha, Nagkesara, Brahmi, Bhringaraja, etc. This present study attempts to support the claims made by the above mentioned ayurvedic oil for hair growth, hair fall reduction and protection from dandruff. Consenting adults (n=30) who were experiencing hair fall and dandruff issues were enrolled in a prospective open-label, phase 4 study. Each of them was provided 2 bottles of the product for the study (60 days) and asked to answer questions regarding product efficacy on a visual analogue scale. The scores were traced on days 0, 15, 30 and 60. Subjects observed an effective reduction in hair fall over 15 days and improvement in hair growth and dandruff signs over 60 days (p <0.001). Conclusion: Advanced Emami Kesh King Scalp and Hair Medicine Ayurvedic Oil works effectively for hair fall and dandruff issues.

Keywords: Kesh King, Hair, Dandruff, Ayurvedic Oil

1. INTRODUCTION

Hair is an integrated complex structure of several morphological components that act as a unit, it is divided into cuticle, cortex and medulla. The cuticle consists of flap overlapping scales (keratinocytes), the thickness of this region depends much on races (6-8 scales thick for Asians, lesser in Caucasians and much less in African hair). The cortex is formed by elongated, fusiform cells connected by a cell membrane complex (CMC) which forms the mass of the hair. The medulla is present in coarser hair as thick hair and beard, weakness of the medulla causes splitting of hair.

Hair grows repeated 5-7 years of life cycles. It undergoes three phases: Anagen phase (growth phase), Catagen phase (transitional phase), Telogen phase (resting phase). In this modern age, many people experience hair problems such as Telogen effluvium (Hair thinning) which occurs due to hair thinning or shedding resulting from the early entry into the telogen phase (resting phase of the hair follicle). Dandruff causes flaking and mild itchiness of the scalp, seborrheic dermatitis which is the more severe form accompanied by inflammation of the scalp. Hair loss (alopecia) refers to a loss of hair from part of the head or body.

All these mentioned medical conditions also contribute to self-esteem and social issue. Hence in the pursuit of boosting self-confidence and maintaining well-groomed hair, hair care products are the point of attraction for customers, especially non-surgical procedures and home use products. Global market surveys point out that Asia-Pacific Hair Care Market is forecasted to touch USD 33.89 billion by 2024 (CAGR of 3.74%). Ayurvedic hair care products are formulated using various internationally sourced herbs and are intended to help desirably manage hair. Ayurvedic hair oil is deemed an easy and excellent way to moisture and hydrate the hair. It also helps protect the hair from damages caused by the environment and harsh hair treatments. In addition to general hair care, other conditions such as dandruff can also be attended to by suitably incorporating the related active ingredients.

Advanced Emami Kesh King Scalp And Hair Medicine Ayurvedic Oil comprises goodness of Manjistha extract St. 2.0 g, Neem seed oil (0.5g), and Curry Patta extract. Lf. (1.0g) which forms the majority of the formulation along with extracts of Nagkesara (0.115g), Brahmi (0.05g), Bhringaraja (0.05g), Amalaki (0.5g), Yasti (0.05g), Haritaki (0.05g), Bibhitaka (0.05g), Lodhra (0.05g), Sthulaila (0.025g), Jatamansi (0.01g), Kola (0.05g), Madayanti (0.05g), Musta (0.05g), Methi (0.05g), Japa (0.05g), Tulasi (0.05g), Karanja (0.05g), Mandukaparni (0.05g), Goksuru (0.05g), Neem oil. 0.5g, Vetasa (1.0g) present in smaller quantities. The formulation also contains excipients such as BHT, Phenoxyethanol, isopropyl myristate, Tony red(CI 26100), Quinizarine Green(CI 61565), Sugandhit Dravya.

Advanced Emami Kesh King Scalp And Hair Medicine Ayurvedic Oil claims to promote hair growth, reduce hair fall within 15 days of usage and also help protect from seborrheic dermatitis and pityriasis capitis simplex (dandruff). This study is undertaken to substantiate these claims.

2. MATERIAL AND METHODS

Study design

This was a prospective open-label phase 4 study that was carried out with Advanced Emami Kesh King Scalp And Hair Medicine Ayurvedic Oil. 30 subjects all between the age of 18-60 years and those who were experiencing hair fall issues and/or dandruff issues were included after presenting them with informed consent in their mother tongue or English. Participants who had preexisting skin conditions such as psoriasis, eczema etc were not included in the study.

We conducted the study over two months (Dec 7th 2019 to Feb 7th 2020). During the study duration, each participant was given two bottles of Advanced Emami Kesh King Scalp And Hair Medicine Ayurvedic Oil (100ml). The participant's feedback was recorded by the investigators through specifically curated questions. The responses were recorded on a visual analogue scale of 0-4 as 'poor' -0, 'fair' -1, 'good' -2, 'very good' -3, 'excellent' -4. The test parameters that were taken into consideration were: years of hair fall, years of dandruff and hair fall, hair population density, hair length, combing test- number and weight of hair strands fallen, dandruff parameters - itching, flaking, dryness and lesions The scores were noted on the day 0, 15, 30 and 60.

Statistical methods: A two-tailed student t-test was carried out to find the significance of the efficacy parameters of Advanced Emami Kesh King Scalp And Hair Medicine Ayurvedic Oil.

Results

The demographics of the subjects were analysed (Table 1 and table 2) it was observed that female subjects comprised the majority of the study population (70%) while the male subjects made up the rest (30%). In terms of age, the mean age among the female subjects were found to be 36.76 years, while in the male subjects it was 34.44 years. Overall the mean age of the sample population was 30.06 years.

Table 3 portrays the existing hair conditions, 56.6% of subjects experienced hair fall and 43.4% of them experience hair fall with dandruff. Regarding the number of years of the issues mentioned above, 41.18% of the subjects had hair fall issues for the past 1-2 years. 47.06% of the for the past 3-5 years and 11.76% for more than 5 years (Graph 1). While 46.15% of the subjects had been suffering from dandruff and hair fall for the past 1-2 years, 38.46% for the past 3-5 years and 5.38% of the subjects more than 5 years. (Graph 2)

Efficacy parameters – Hair fall and Hair growth

The efficacy of parameters such as hair population and density (Table 4 and Graph 3) were analyzed on days 0, 15, 30, 60 while using the hair oil of interest, responses were given on the visual analogue scale. The score was kept to 0 to measure the improvement of the parameters. It was observed that a steady increase was seen with the means score of the hair strand population, which was 0.9 on day 15, 1.83 on day 30 and 3.13 on day 60. While the mean scores of hair length were 1 on day 15, 1.9 on day 30 and 3.2 on day 60. A two-tailed test for significance (Table 5) exhibited a significant difference between the results of day 0 and day 15 ($p < 0.001$). A significant variation in values was also seen on the following day 30 and day 60.

Table 6 exhibits the responses given by the subject on the efficacy parameters population/density, on day 15, 83.33% of the subjects reported a “fair” improvement on average, while on day 30, 53% of the subjects reported “good” on an average. On day 60, 60% of the subjects scored “very good” while 26.67% scored “excellent” (Graph 4). With regards to increment in the length of the hair, 66.67% of the subjects reported “fair” on day 15, 53.33% of the subjects reported 'good" on day 30 and 46.67% of the subjects reported, “very good” growth and 36.67% reported “excellent” on day 60 (Graph 5).

Table 7 and Graph 6 elicits the combing parameters which include the mean number of hairs fallen and the mean weight of the fallen hair. On day 0 the mean number of hairs fallen was 161 strands and the mean weight was 182 mg. On day 15 it was 117 strands and 132mg while on day 30 it was 76 strands and 85mg. On day 60, it was 31 strands, and the average weight of the fallen hair strands was 35mg. Further, the test of significance was done on the same parameters to observe the significant decrease in hair fall during the combing test (Table 8). There was a significant difference between the values found on days 0, 15 and day 30 (< 0.001). The overall performance of the combing test portrayed a decrease of value from 100% to 19% (Table 9 and Graph 7)

Efficacy parameters – Dandruff

The dandruff efficacy parameters i.e., flaking, itching, dryness, and lesions were investigated from day 0 - 60. It was observed that the mean score of the parameters mentioned above on day 0 was 3.31, 3.08, 3.15 and 1.38 respectively which was significantly different from the scores observed on day 60 which was 0.38, 0.15, 0.15 and 0.08 respectively. (Table 10 and Graph 8).

Table 11 exhibits the T-test for significance, significant differences were observed from day 0 throughout the study. ($p < 0.001$). The visual analogue scores given by the subjects regarding dandruff efficacy parameters are shown as a percentage distribution in Table 12. In terms of flaking, 61.54% of the subjects scored “excellent” and 38.46% reported, “very good” scores on day 60 (Graph 9) while itching parameters were scored “very good” by 15.38% and “excellent” by 84.62% of the subjects on day 60 (Graph 10). On the dryness parameter, 84.62% of the subjects reported “excellent” scores and 15.38% reported “very good:” scores on day 60 (Graph 11). Regarding the lesions parameter, 92.31% scored “excellent” while 7.69% was scored very good on day 60 (Graph 12). All these values were significant when compared to the score given on days 0, 15 and 30

Table 13 and Graph 13 presents the overall performance of the product regarding dandruff reduction efficacy, day zero was set at 100% to observe the improvement. Flaking was shown to reduce to 65.12% on day 15, 39.53% on day 30 and 11.63% on day 60. The itching was observed to be reduced to 70% on day 15, 47.50% on day 30 and 5% on day 60. While dryness and lesion were shown to reduce to 75.61 % on day 15, 46.34% on day 30, 4.88% on day 60 and 61.11 % on day 15, 33.33% on day 30 and 5.56% on day 60 respectively.

3. DISCUSSION

The efficacy of topical ayurvedic hair oil was observed over 60 days in 30 subjects. The efficacy and performance of the product were analyzed from the visual analogue scores provided by the subjects on days 0, 15, 30 and 60. Firstly, considering the hair fall efficacy parameter i.e., the hair population/density and length were analyzed. The mean scores collected from the subjects showed a steady hike from day 0 to day 60 in terms of hair stand population and density. A T-test of significance exhibits that there was a significant increase in the hair population and density on day 15 itself when compared to day 0. The Emami Kesh King Scalp and Hair Medicine Ayurvedic Oil continued to show positive results throughout the study which implies that it does improve hair growth. This improvement was also evident in the visual analogue scores submitted by the subjects. On day 60, regarding the population and density of hair, 60% of subjects scored very well and 26.67% scored excellently. While in terms of hair length increment 46.67% of the subjects reported very good and 36.67% reported excellent results.

To substantiate the claim of hair fall reduction, a combing test was carried out, it was observed that there was an evident reduction in the mean number of hair strands and the mean weight of the fallen hair. The results regarding the combing parameters were also found to be significant (P<0.001). This shows a steady improvement in the reduction of hair fall throughout the study. There was also an overall reduction in hair fall from 100% to 19% on using the Advanced Emami Kesh King Scalp and Hair Medicine Ayurvedic Oil.

Secondly, regarding the dandruff parameters, the efficacy of the parameters was observed by taking into consideration the symptoms and signs experienced during dandruff I.e flaking, itchiness, dryness and presence of lesions. The mean score showed an evident improvement over 60 days. The two-tailed t-test for significance also portrayed a significant improvement on day 15, day 30 and day 60 compared to day 0. This states that the signs of dandruff improved over 60 days on the usage of the product.

The visual analogue scale score provided by the subjects scored 61.54%, 84.62%, 84.62% and 92.31% of “excellent” scores for improvement in flaking, itching, dryness, and lesions respectively. The overall performance also exhibited a reduction from 100% on day 0 to 11.63% for flaking, 5% for itching, 4.88% for dryness and 5.56% for lesions on day 60. The evident improvement in the signs and symptoms of dandruff support the claim that the product of interest does help protect against seborrheic dermatitis and Pityriasis capitis simplex (dandruff).

4. CONCLUSION

For the study population, the above 60-day prospective open-label clinical trial findings for efficacy suggest that the product could control hair fall and dandruff and improve hair growth significantly for all study subjects. All the above complaints experienced by the study population irrespective of the severity were shown to be effectively relieved by the use of the product. There was excellent overall compliance to the treatment and no clinically significant adverse reactions. Hence it may be concluded that the Advanced Emami Kesh King Scalp and Hair Medicine Ayurvedic Oil matches the claims of reducing hair fall in 15 days, improving dandruff, and hair growth

Table 1: Age

	N	Mean
female	21	36.76
male	9	34.44
total	30	36.06

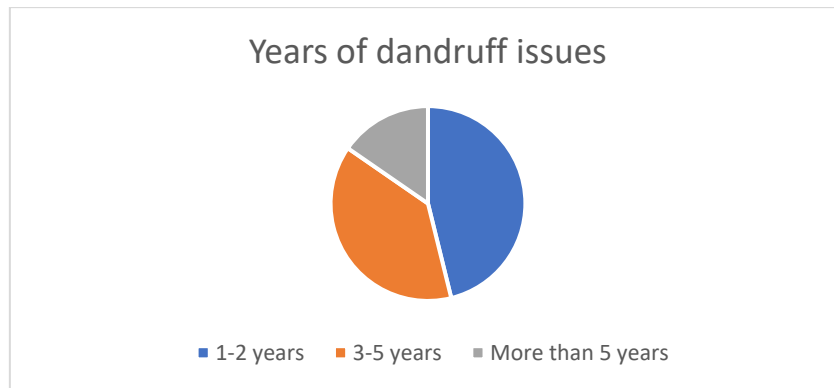
Table 2: Gender

	N	%
female	21	70
male	9	30
total	30	100

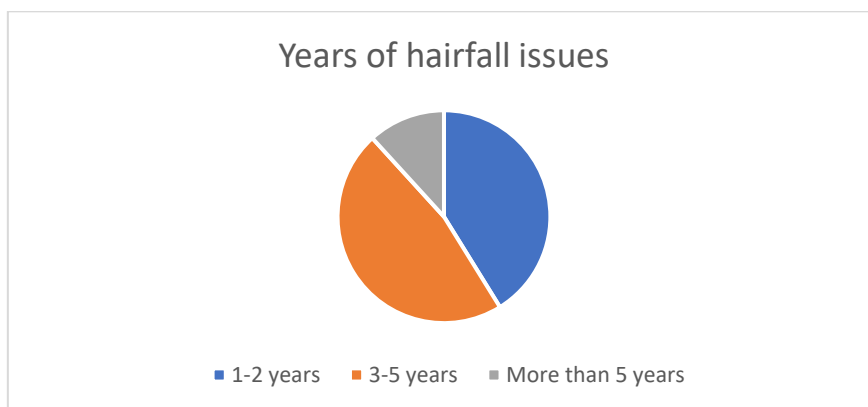
Table 3: Existing hair and scalp issues

Problems	N	%
Hair fall	17	56.60
Dandruff and hair fall	13	43.40
Years of dandruff issues		
1-2 years	6	46.15

3-5 years	5	38.46
More than 5 years	2	15.38
Total	13	100.00
Years of hair fall issues		
1-2 years	7	41.18
3-5 years	8	47.06
More than 5 years	2	11.76
Total	17	100.00



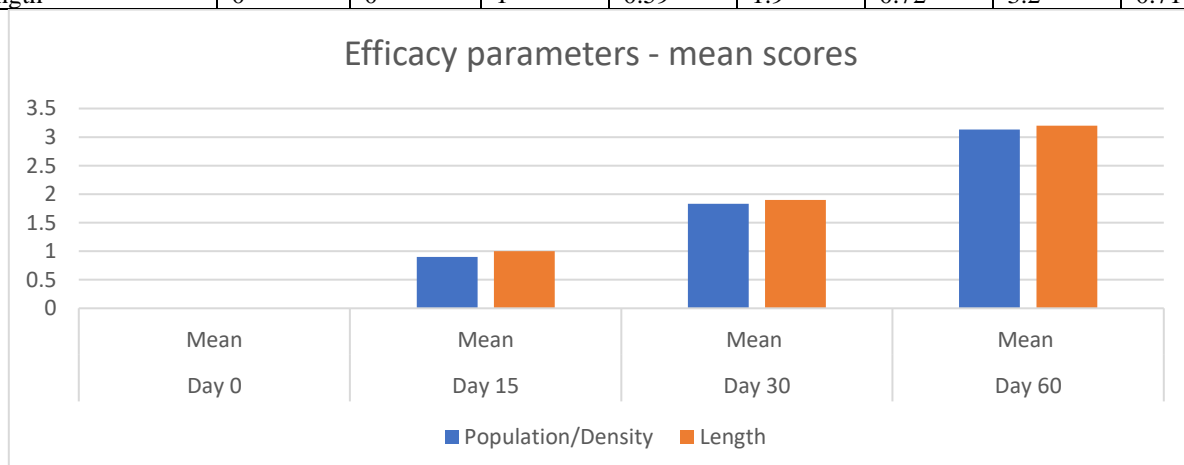
Graph 1: Years Of Dandruff Issues



Graph 2: Years Of Hairfall Issues

Table 4: Efficacy Parameters- Mean Scores

Efficacy	Day 0		Day 15		Day 30		Day 60	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Population/Density	0	0	0.9	0.4	1.83	0.69	3.13	0.63
Length	0	0	1	0.59	1.9	0.72	3.2	0.71



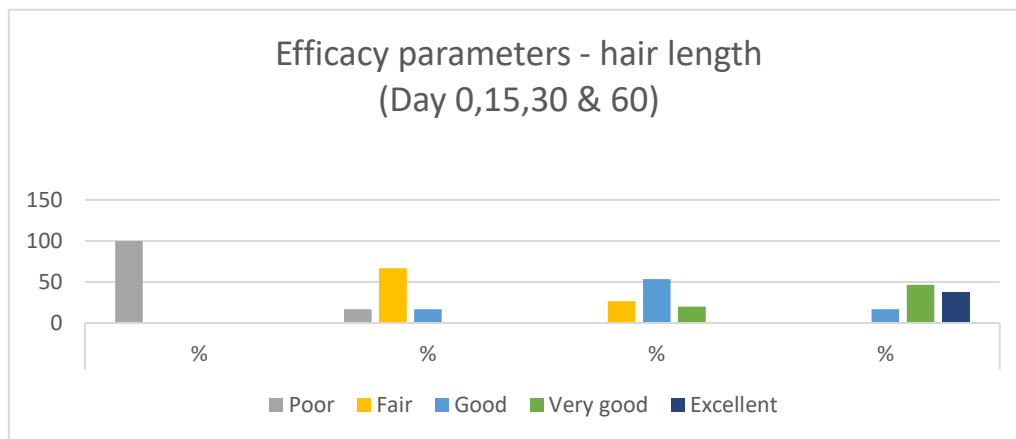
Graph 3: Efficacy Parameters – Mean Scores

Table 5: Efficacy parameters- test for significance

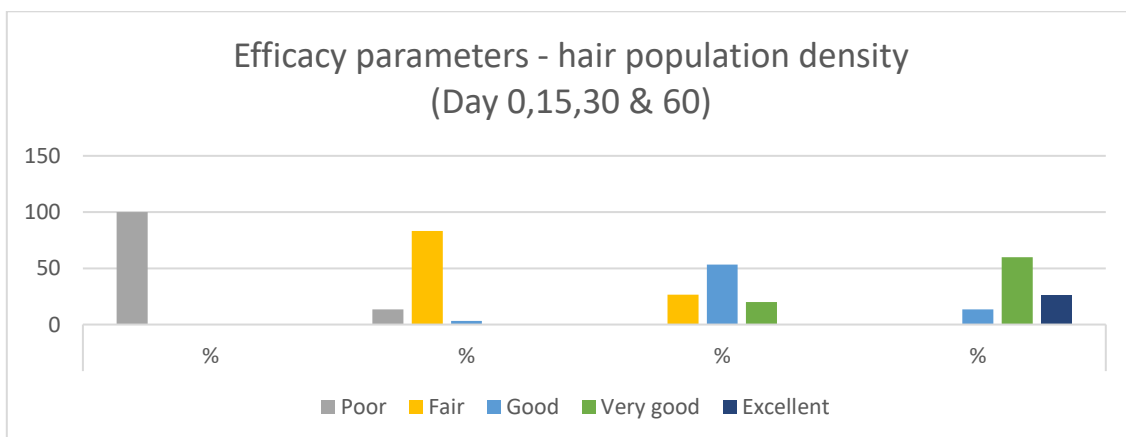
Efficacy	Population/Density		Length	
	T value	Sig	T value	Sig
Day 0 vs 15	5.538	p<0.001	3.126	p<0.001
Day 0 vs 30	1.967	p<0.001	6.534	p<0.001
Day 0 vs 60	3.116	p<0.001	6.045	p<0.001
Day 15 vs 30	4.188	p<0.001	5.988	p<0.001
Day 15 vs 60	3.087	p<0.001	1.569	p<0.001
Day 30 vs 60	4.22	p<0.001	8.394	p<0.001

Table 6: Efficacy parameters- percentage distribution

Efficacy	Day 0		Day 15		Day 30		Day 60	
	N	%	N	%	N	%	N	%
Population/Density								
Poor	30	100	4	13.33	0	0	0	0
Fair	0	0	25	83.33	8	26.67	0	0
Good	0	0	1	3.33	16	53.33	4.00	13.33
Very good	0	0	0	0	6	20.00	18.00	60.00
Excellent	0	0	0	0	0	0	8.00	26.67
Length	30							
Poor	0	100	5	16.67	0	0	0	0
Fair	0	0	20	66.67	8	26.67	0	0
Good	0	0	5	16.67	16	53.33	5	16.67
Very good	0	0	0	0	6	20.00	14	46.67
Excellent	0	0	0	0	0	0	11	36.67



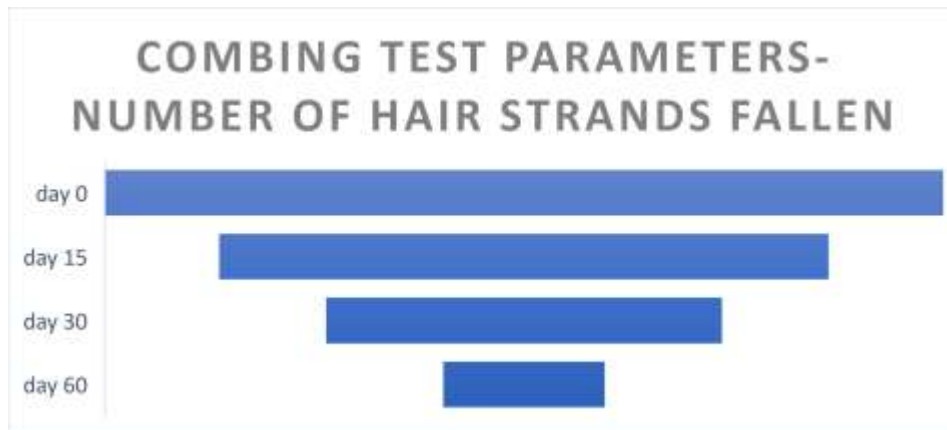
Graph 5: Efficacy Parameters – Hair Length



Graph 4: Efficacy Parameters – Hair Population Density

Table 7: Combing test parameters

	number of hair strands fallen (mean)	weight of fallen hair strands in mg (mean)
day 0	161	182
day 15	117	132
day 30	76	85
day 60	31	35



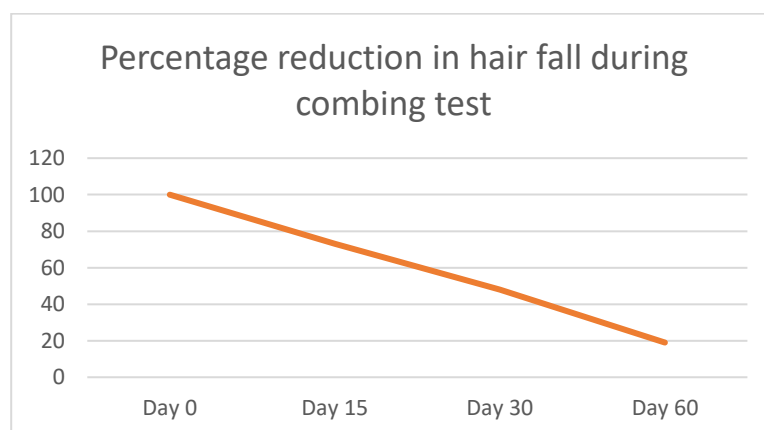
Graph 6: Combing Test Parameters – Number Of Strands Fallen

Table 8: Combing Parameters - Test For Significance

Efficacy	No. of hair strands fallen		Weight of hair strands fallen	
	T value	Sig	T value	Sig
Day 0 vs 15	2.04	p<0.001	2.197	p<0.001
Day 0 vs 30	9.719	p<0.001	2.505	p<0.001
Day 0 vs 60	3.054	p<0.001	1.518	p<0.001
Day 15 vs 30	2.739	p<0.001	3.788	p<0.001
Day 15 vs 60	2.402	p<0.001	6.104	p<0.001
Day 30 vs 60	6.037	p<0.001	4.694	p<0.001

Table 9: Number Of Hair Strands Fallen Percentage Reduction

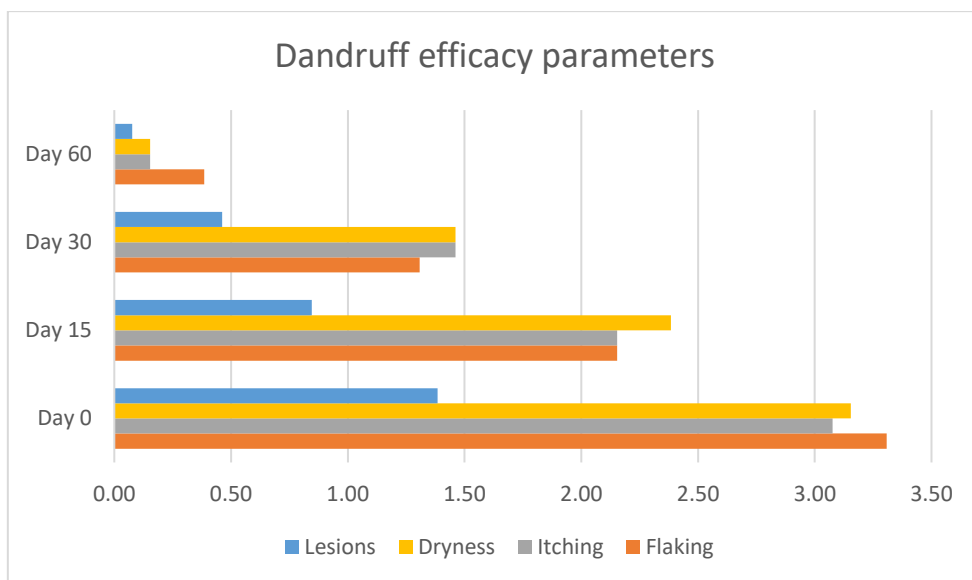
	Percentage	Mean
Day 0	100	161
Day 15	73	116.7
Day 30	48	76
Day 60	19	31



Graph 7: Percentage Reduction In Hairfall During Combing Test

Table 10: Efficacy parameters on dandruff – mean scores

Criteria	Day 0	Day 15	Day 30	Day 60
Flaking	3.31	2.15	1.31	0.38
Itching	3.08	2.15	1.46	0.15
Dryness	3.15	2.38	1.46	0.15
Lesions	1.38	0.85	0.46	0.08



Graph 8: Dandruff Efficacy Parameters

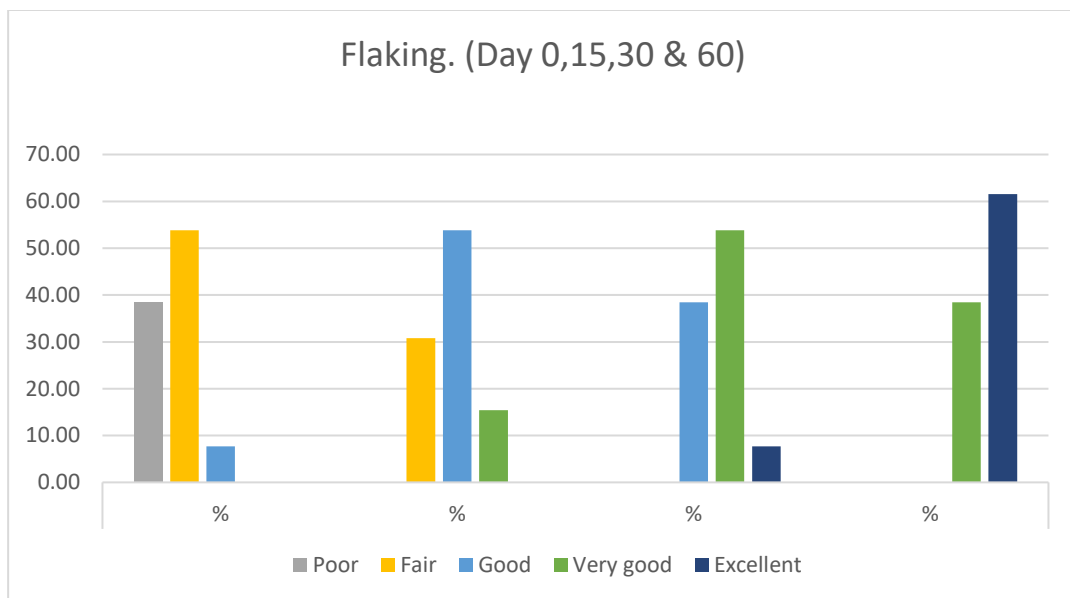
Table 11: Dandruff parameters - t-test for significance

Efficacy	Flaking		Itching		Dryness		Lesions	
	T value	Sig	T value	Sig	T value	Sig	T value	Sig
Day 0 vs 15	7.233	p<0.001	4.835	p<0.001	5.809	p<0.001	2.813	p<0.01
Day 0 vs 30	3.092	p<0.001	7.742	p<0.001	5.09	p<0.001	8.935	p<0.001
Day 0 vs 60	9.441	p<0.001	9.441	p<0.001	3.105	p<0.001	6.426	p<0.001
Day 15 vs 30	3.21	p<0.001	2.233	p<0.001	4.835	p<0.001	1.797	p<0.05
Day 15 vs 60	1.811	p<0.001	2.896	p<0.001	1.372	p<0.001	2.415	p<0.01
Day 30 vs 60	2.063	p<0.001	7.44	p<0.001	4.38	p<0.001	1.797	p<0.05

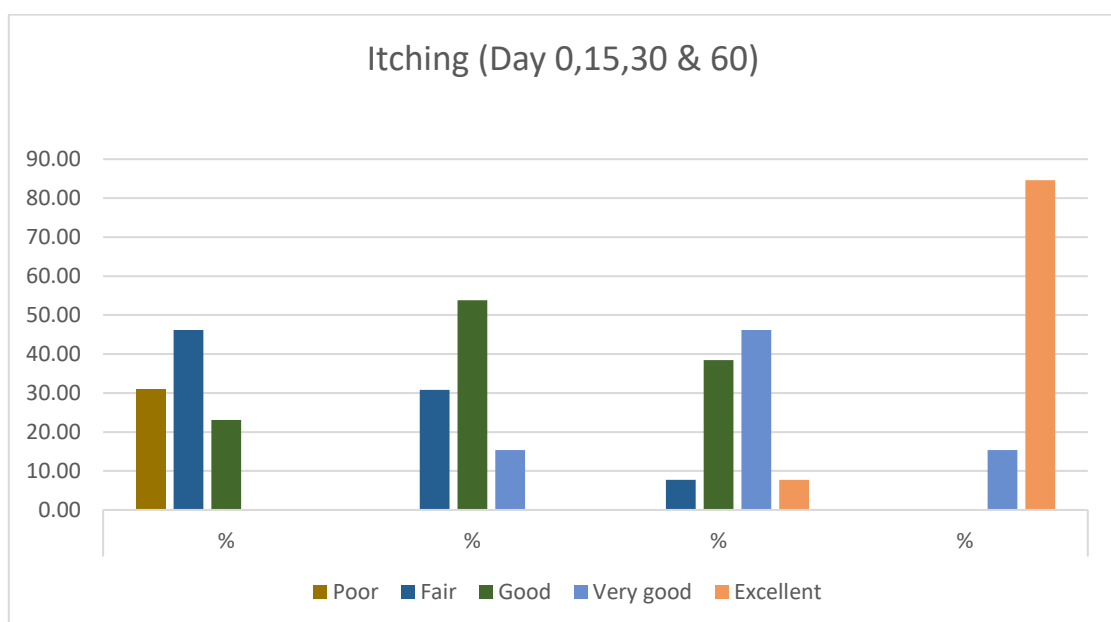
Table 12: Dandruff parameters- percentage percentage distribution

Efficacy	Day 0		Day 15		Day 30		Day 60	
	N	%	N	%	N	%	N	%
Flaking								
Poor	5	38.46	0	0.00	0	0.00	0	0.00
Fair	7	53.85	4	30.77	0	0.00	0	0.00
Good	1	7.69	7	53.85	5	38.46	0	0.00
Very good	0	0.00	2	15.38	7	53.85	5	38.46
Excellent	0	0.00	0	0.00	1	7.69	8	61.54
Itching								
Poor	4	30.77	0	0.00	0	0.00	0	0.00
Fair	6	46.15	4	30.77	1	7.69	0	0.00

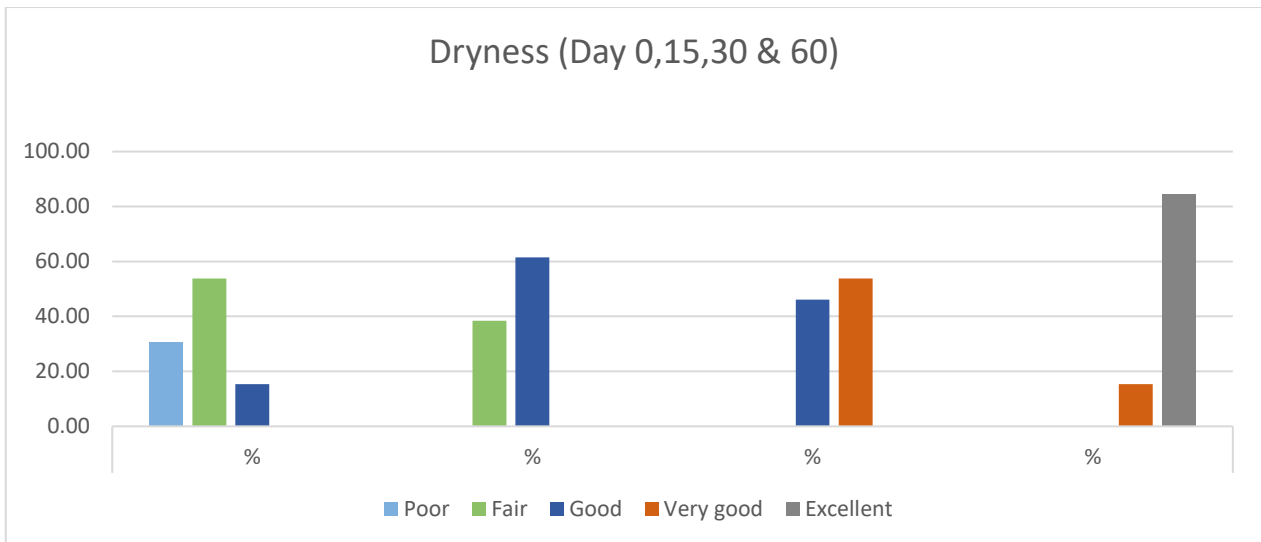
Good	3	23.08	7	53.85	5	38.46	0	0.00
Very good	0	0.00	2	15.38	6	46.15	2	15.38
Excellent	0	0.00	0	0.00	1	7.69	11	84.62
Dryness								
Poor	4	30.77	0	0.00	0	0.00	0	0.00
Fair	7	53.85	5	38.46	0	0.00	0	0.00
Good	2	15.38	8	61.54	6	46.15	0	0.00
Very good	0	0.00	0	0.00	7	53.85	2	15.38
Excellent	0	0.00	0	0.00	0	0.00	11	84.62
Lesions								
Poor	0	0.00	0	0.00	0	0	0	0.00
Fair	2	15.38	0	0.00	0	0	0	0.00
Good	5	38.46	3	23.08	1	7.69	0	0.00
Very good	2	15.38	5	38.46	4	30.76	1	7.69
Excellent	4	30.77	7	53.85	8	61.53	12	92.31



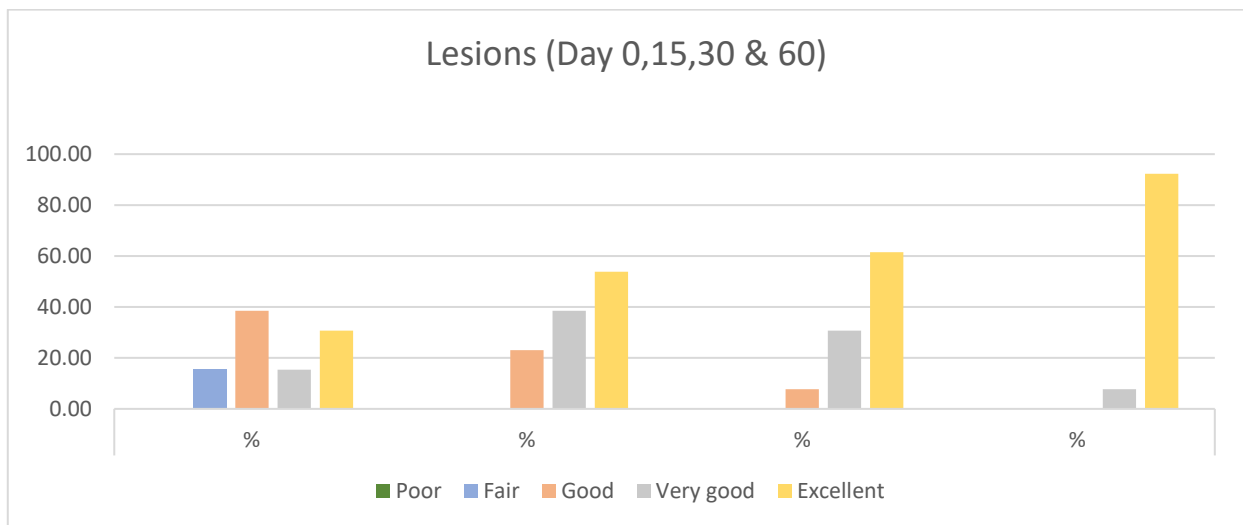
Graph 9: Dandruff Parameter – Flaking



Graph 10: Dandruff Parameter – Itching



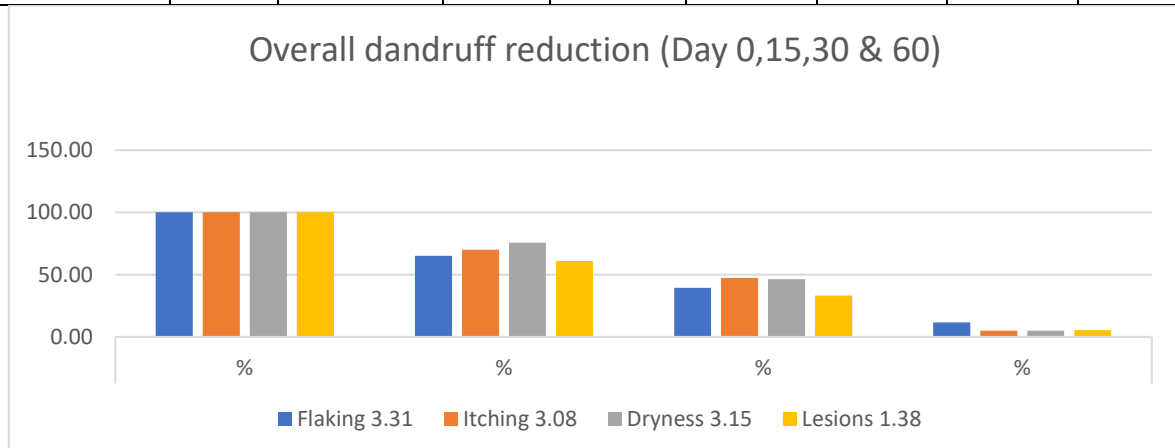
Graph 11: Dandruff Parameter – Dryness



Graph 12: Dandruff Parameters – Lesions

Table 13: Overall performance on dandruff reduction

	Day 0		Day 15		Day 30		Day 60	
	N	%	N	%	N	%	N	%
Flaking	3.31	100.00	2.15	65.12	1.31	39.53	0.38	11.63
Itching	3.08	100.00	2.15	70.00	1.46	47.50	0.15	5.00
Dryness	3.15	100.00	2.38	75.61	1.46	46.34	0.15	4.88
Lesions	1.38	100.00	0.85	61.11	0.46	33.33	0.08	5.56



Graph 13: Overall Dandruff Reduction