

IN VITRO STUDY OF HERBAL ACTIVE ENRICHED HAIR OIL TO GET MAXIMUM BENEFIT FOR HAIR FALL REDUCTION, STRENGTHENING, SHINE AND NOURISHMENT

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ABSTRACT

Hair Care segment is growing by massive double digits in this arena. Main reason behind is the consumer trend. Most of the consumers want to have beautiful hair and they don't want to put much attention to this mainly due to lack of time and efforts required. This dilemma is pushing us to look for all new entrants and looking in to the best results with minimal intervention. There are so many ways to strengthen the hair and improve scalp health. We can choose and try pretreatment, in wash, post wash treatments in the form of oils, Tonics, serums, shampoos, conditioners, Masks etc.

All these products are either having some unique ingredients or techniques to take care scalp health and avoiding hair breakages. Some of these are mainly ingredients base and some of these are old school remedy and always remain in tradition. One of the most common remedy is to use healthy food which can lead us to a healthy body and all of our organs will work perfectly to avoid any disorder. Perhaps in daily routine it is becoming challenge to do so. Secondly the experts pushes to have physical treatments with different products containing Superfood ingredients.

Hair oil is one of the best treat, trial and tested for decades and it always shows success for those who make it routine and control their life style with healthy eating. This is proven that those who do care about their scalp and hairs are rarely encounter hair fall issues.

Keywords: Hair Oil, D-Pantheryl Triacetate

INTRODUCTION

Everyday pollution and the use of detergents such as shampoos and chemical-based products change the physical property of the hair resulting in increased roughness and hair fall. It is fundamental truth that regular oiling increases the tensile strength of hair. Oil also acts like conditioner and may help the hair to retain moisture. Regular oiling makes hair stronger and shinier on the outside. Hair combing is the most common practice in hair care. The brushing/combing provides a physical force against the hair.

Based on the static charges and the overall bio-physical status of the hair; the comb force results in breakage of hair from the shaft. Repeated combing in a controlled condition is therefore a result of biophysical property of the hair. A hair treatment brings about superficial changes to the hair surface and therefore results in varied hair breakage under the same condition.

A good hair care product will provide increased strength, less breakage and makes hair more manageable. Also help scalp health for new growth can be maintain right strength.

Here is the subjected oil formulation which is very light and having herbal ingredients to nourish the hairs, which prevents the hair from sudden damage.

Table 1. Hair Oil ingredients and manufacturing details

RM Description	Method of manufacturing
Canola Oil	- AMLA extract is extracted by using Canola oil with AMLA powder. Mix k Amla powder in suitable amount of Canola oil and heat it at 80°C for 2 hours. Filter the aliquot.
D-Panthenyl Triacetate	
Light Liquid Parafin	
Tocopheryl Acetate	- Add all component in main vessel one by one and mix it well
Amla dry Powder	- Filter oil to pass with suitable filter to get final product
Aloe Vera Extract	
Fragrance	

STUDY DESIGN

This was an open-label test where we use hair swatches and made these swatches damaged under a standard protocol. As a next step we use those damaged Hair swatches to run 12 complete application cycle. Finally we run a hair in-vitro Fatigue Test in wet condition (150 strokes).

Damage Creation: Following were used to create damage:

I. Surfactant Damage

Wash for 10 cycles using 0.2 g of SLES for each gm of hair

II. Heat Damage

The hair swatches were swept 100 times with the thermal straightening iron at 220°C.

Each sweep is made vertically, downwards, lasting for 20 seconds

III. UV exposure (30 minutes)

The hair swatches were exposed to 30 minutes of UV exposure.

IV. Pollution exposure

30 minutes of exposure to automotive exhaust with internal combustion, 145.45cc, 6.6Kwatt at 5000 rpm for 20 minutes

Application of sebum model, mixed with iron oxide (4%), carbon black (4%), and 0.1 gm /gm of SPM

Post damage, Oil was applied on the hair swatches and allowed to rest for 2 hours, post this they were washed with the shampoo and dried using a hood dryer. The cycle was repeated for 12 times. Post 12 application, Hair swatches were subjected to Fatigue test in wet condition (150 strokes)

For control group- The hair swatches were washed with 14% SLES solution/Non conditioning shampoo (0.2g/gm of hair) for 12 times and post wash they were subjected to Fatigue test

All the tests were performed in controlled condition (Temp 20-23°C, RH 50-60%)

STATISTICAL ANALYSIS

After completion of the study, the instrumental data was exported into an excel and then the data validation was performed. After completion of data validation, the data was locked for analysis. In analysis, a 2-tailed t-test at significance level of 5% (p-value < 0.05) was used to determine significance difference. Results on continuous measurements are presented on Mean \pm SD. Significant values. Results are presented on Mean \pm SD (Min - Max) Significance is assessed at 5% level of significance. Statistical analysis using T-test was done to compare efficacy of test product and control. Paired t- test was performed to compare significance between the groups.

RESULTS

The study was conducted to evaluate efficacy of subject Hair Oil showed in comparison to No Oil Group.

Hair Fall due to breakage-Fatigue test

Hair oil in experiment showed significantly lesser hair fall due to breakage when compared to No Oil Group. Hair oil showed 97.30% and 37.09x times lesser hair fall when compared to Control (Non- conditioning shampoo).

Automated Combing/ Brushing (Fatigue-wet)

Set the room condition to 20-23oC, RH 50-60%

The swatches were placed in the combing machine holder

The counter was reset to zero

The machine was run for 150 strokes at the rate of 50 stokes per minute

The broken hair fibres were collected from the hair brush and from the panel at the bottom

Hair Fall due to breakage

Only broken hair fibres were considered in counting. To avoid full length hair in the counting cut off of 3/4 of full length was taken into consideration.

The count was further categorized based on the length of the broken fibre as: Short: Below 6.25cm

Medium: 6.25-12.5cm Long: Above 12.5 cm

Table 2. Fatigue Test hair fall due to breakage

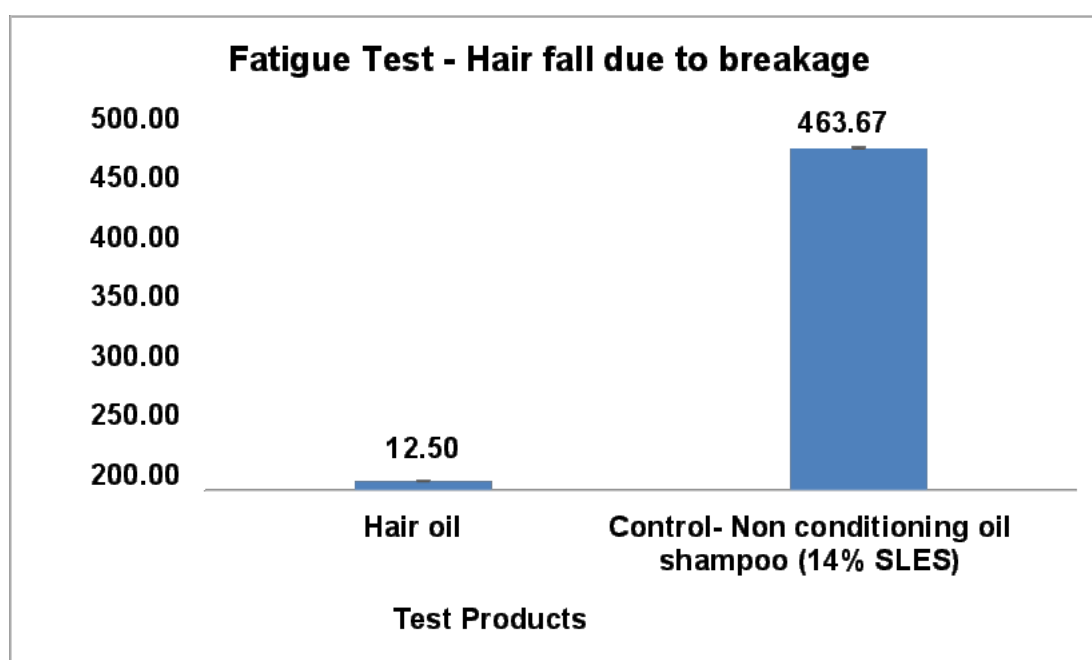
Sl. No	Control /No oilgroup	Hairoil
SWATCH-1	462	13
SWATCH-2	461	12
SWATCH-3	464	13
SWATCH-4	467	12
SWATCH-5	467	13
SWATCH-6	461	12

In the above table the mean value is the average hair fall count after 150 combing strikes where Higher the value, higher is the hair fall due to breakage.

Statistics

	Hair oil	No Oil Group
Mean	12.50	463.67
SD	0.55	2.80
Min	12.00	461.00
Max	13.00	467.00
% vs. Control	-	97.30
X times vs. Control		37.09
p-value vs. control	-	0.0000

Graph 1. Fatigue- hair fall due to breakage



OBSERVATION AND CONCLUSION

1. Hair swatches treated with Herbal hair oil had significantly lesser hair fall due to breakage when compared to Control (No Oil group).
2. Hair swatches treated with hair oil had 97.30% and 37.09X times lesser hair fall when compared to Control (No Oil group).
3. In-vitro evaluation showed that
4. This is evident from the study that the usage of oil strengthen the hair follicles and protects from environmental harshness.

ACKNOWLEDGEMENT

The researchers thank to Mr. Kirshna Kumar Chutani, CEO and Mr. Subba Rao – Head of operation for their constant encouragement and support for the study.

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