

# The Experimental Study Effects of Coconut Milk and Egg White as A Pack to Enhance the Hair Health Among Adult Male and Female Volunteers

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**Abstract:-** Our aim of our study is the scientific effect of coconut milk with egg white as a pack on scalp for hair health. This experimental research study done among the faculties of Sree Ramakrishna medical College of Naturopathy and Yogic science, Kulasekharam, Tamilnadu. It involves 20 people as the research samples with application on alternate days as a pack for 90 days. It obtained results showed that all samples experienced that the hair fall was turned down and hair growth was procured. During the period of treatment, the symptoms of subjects relieved is assessed periodically.

## I. INTRODUCTION

Hair fall is the most common problem in the world, Among both genders. The reason may vary depends upon the individual. Basically proteins are the building blocks of hair which stimulates the hair follicles by the formation of Keratin.

Hair plays a role in the first impression; people make of us. Hair is the protein filament that grows out of follicles in the junction between the deep layers of dermis and hypo dermis. The hair is made up of 90% of Keratin. Keratin is synthesized by Keratinocytes and is insoluble in water. This ensuring impermeability and protection for the hair.

## II. ANATOMY AND PHYSIOLOGY OF HAIR

Human hair is divided into 2 parts, Hair root and Hair Shaft. The structure of hair root includes hair follicles hair bulb, dermal papilla, erector pill muscle, sebaceous gland. The hair shaft consist of three layers cuticle, cortex, medulla. Normal hairs are categorized by 2 types ie Vellus hair – it is a short fine, unpigmented hair on body; Terminal hair – it is a long, thick, pigmented hair found on scalp, leg and arms.

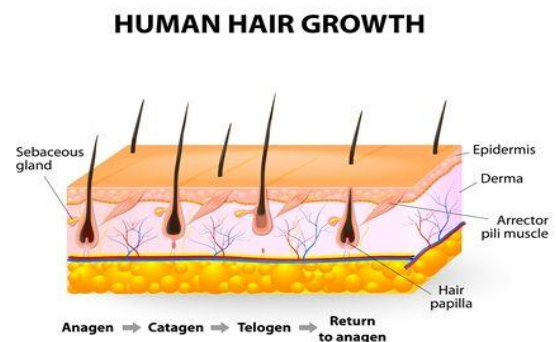


Fig 1:- Hair growth phase

The three hair growth phases are Anagen, Catagens, and Telogen.

Anagen phase it also known as growth phase. In this phase new hair is produced and new sensor actively manufactured in the hair follicles. The average growth of healthy scalp hair is about 0.5 inch per month. Scalp hair grows rapidly between the age of 15 – 30 but slows down after 50. Catagen phase is also known as transition phase. During this phase the follicle canal strengths and detached from dermal papilla. Telogen phase is also known as resting phase. It's is the final phase in the hair cycle and last until the grown hair is shed. This phase last for approximately 3 – 6 months, as soon as Telogen phase ends, the hair returns to the Anagen phase and begins the entire cycle again.

## III. CHEMICAL COMPOSITION OF HAIR

The chemical composition of hair contains Carbon 45%, Oxygen 28% Nitrogen 15% Hydrogen 7% Sulphur 7%., Also it has Keratin, lipids, minerals and Pigments. Keratin is a protein found in cortex, and it's composed of 18 amino acids. Hair keratinization process is regulated by various elements such as hormones, vitamins, genetic factors and metabolism. Dietary deficiencies and enzyme defects due to

cholesterol and FA synthesis may lead to irregular keratinization which results in structural defects in the hair shaft. Protein deficiencies create hair problems like presence of thin shaft associated with small bulbs. Lipid present in the hairs structure are made up of triglycerides, waxes, phospholipids, cholesterol, squalene and free fatty acids derived from sebum, minerals and trace elements are an essential component of the protein-enzymatic systems. The substance Eumelanin provides dark brown and black color to the hair and Pheomelanin is substance which gives the yellow to red and ginger color to the hair. The natural colour of the hair is result of the ratio between Eumelanin and Pheomelanin. Absence of melanin pigments shows the result of grey color hair.

#### IV. EGG AND COCONUT MILK

Egg white provides necessary dietary protein to improve the appearance and promote the growth of hair. Using egg white directly on the hair consider to be a low-cost way to improve the appearance and promote the growth of hair. In addition to high protein egg white also rich in vitamins like riboflavin and niacin. All these nutrients play a vital role in hair growth. Egg white contains bacteria eating enzyme that keep the scalp fresh and clean. As a result, it is beneficial for dry scalp. The protein also helps in taming humidity infected and damaged hair. Since hair is made of 70% protein, the protein in eggs helps rebuild the damaged keratin gaps in the structure of hair. This helps heal damages.

Coconut milk is enrich with vitamin (C, E, B1, B3, B5), iron, selenium, sodium, calcium, magnesium, phosphorus, stearic acid and magnesium stearate. Lauric acid (medium chain fatty acid) is one of the main ingredients in coconut milk helps to strengthen the cuticle. Coconut milk has high protein profile that can potentially keep the hair strong. The natural fatty acid profile of coconut milk has moisturizing effect. That can restore dry hair and scalp act as a powerful condition for damaged hair. Sulfur is an essential nutrient to grow healthy hair. The white part of the egg, known as albumin, is rich in sulfur. Sulfur helps Keratin to add strength to the hair strands as well as prolongs the 'growth' phase of our hair growth cycle.

#### V. DATA COLLECTION/ STUDY PROTOCOL

Questionnaires were used in the study to assess the quality of samples hair. It was constituted of 30 close ended questions, which were framed based on the objectives of our study. It includes questions about scalp, hair and its types, styling and caring of subjects. Totally 20 members including both genders were taken for this experiment as subjects. The questionnaire was given to the subjects and they were instructed to fill their own responses. Then the questionnaire

was validated by our research team before the treatment has been started. Based on the questionnaire responses, the subjects were segregated as 2 groups by their regular usage of hair style and hair care products as hairstyling (group A), and hair care (group B). Then the pull-up test was done twice in a month as 6 sessions on shampooing and oily day. The amount of hair stray was collected, calculated and documented for each subject.

Then the subjects were asked to apply a hair pack of coconut milk with Egg white in alternative days for 90 days.

#### VI. METHODS TO APPLY HAIR PACK

- Combine 3 tablespoon of coconut milk with 3 tablespoon of egg white in a ratio of 3:3 and blend until smooth and fluffy.
- Use the hands to coat the mixture over the hair from root to tip.
- Cover the scalp with plastic cap or towel.
- Wait for 20 minutes and rinse the hair by cold water.
- No shampoos and conditioners are advised to wash the hair
- Using this mask in alternative days.

#### VII. DISCUSSION

Hair fall is the most common problem in the world among both genders. The reason may vary depends upon the individual. Basically, proteins are the building blocks of hair which stimulates the hair follicles by the formation of keratin.

Coconut milk and egg whites is rich in 5 different types of protein is Albumin, Globulin, Prolamine, Glutein-1, and Glutein -2. Moderately it has well balanced globulin fraction has Aspartic acid, Glutamic acid, Arginine and Lysine. Albumin fraction has higher proportion of amino acid with polar side chain. Most amino acid levels are lower in albumin fraction except Glutamic acid, Arginine., Lysine which are higher than those found in Gluteline -1, and Globulin fraction. Globulin contain more essential amino acids including Valine, Phenyl Alanine commonly cryptophane, threonine, isolucin, lucin, lysin, methionine, cystine, phenyl Alanine, tyrosine, Valine, arginine, hystine, Alanine, Aspartic acid, prolyne, serine, are identified in coconut milk and it also has essential minerals such as Iron, selenium, Sodium, calcium, magnesium, phosphorus which nourishes, strengthens hair follicles and promotes hair growth. Coconut milk also contains fats, zinc, vitamin b12, vitamin C and E. Vitamin E proves to protects and compact the damage by free radicals. These constitutions of coconut milk help to nourish the scalp and moisture the hair and prevents hair loss and restore dry hair and scalp.

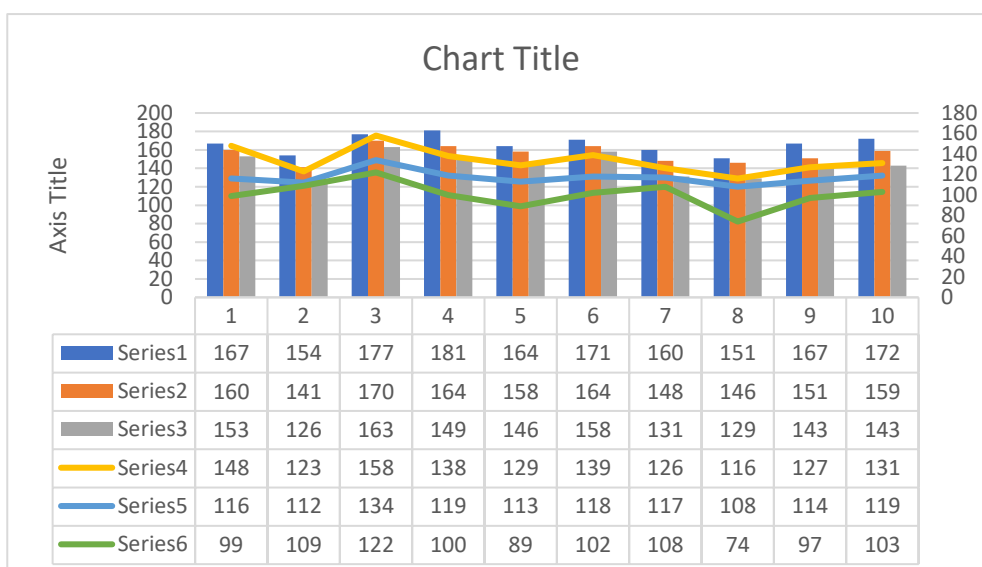


Chart 1:- represents the data value for group A

Coconut milk referred as a miracle liquid with its creamy consistency and richer nutrient availability helps to get rid of dryness, flakes, freeze hair and helps in boosting the hair growth. Lauric acid is a median chain fatty acid which act as anti-bacterial, anti-viral, anti-inflammatory and also strengthens the hair cuticle.

Egg white is nutrient rich hair super food. White is high in protein biotin b7 in combination with coconut milk helps in promoting hair growth. Biotin/B7 in egg act as mini transporter that carries oxygen to cells in the hair follicles and other body systems. Biotin produce amino acids which helps in keratin formation essential for hair growth. Both Biotin and Keratin works for healthier hair.

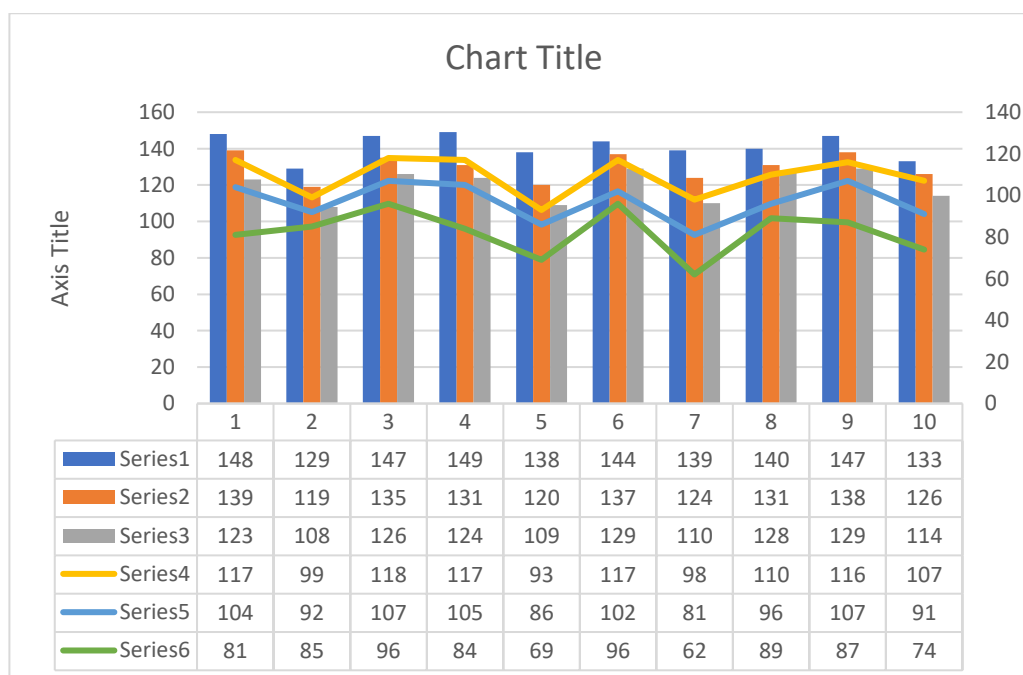


Chart 2:- represents the data value for group B

Coconut milk, is the liquid obtained by manual or mechanical extraction of coconut meat with or without water. It is enriched with protein such as Albumin, globulin, proline, and glutin1,glutin 2. Coconut milk contain 54% moisture, 35 fats and 11 solid nonfat and protein and emulsifying agent such as phospho lipids, cephalin, and lecithin. Coconut milk has moderately well-balanced amino acid profile in term of nutritive value ie 75 globulin, 25 albumin.

The molecular weight of albumin fraction ranging from 18 – 52 K Da, molecular weight of globulin fraction was below 60 K Da. Cocosin is the major protein with molecular weight of 55 K Da was absorbed in the endosperm of coconut. Cocosin promotes arrival of fibroblast cells into the wound heralds the healing process, eventually, these fibroblastsbecome the dominant cell type, during healing process. As the fibroblast proliferate, the keratinocytes and endothelial cells population are also stimulated to increase

their number. Thus, an active, which promotes the proliferation of fibroblasts has good wound healing potential.

And also, Cocosin is a natural cell growth promotor has been evaluated for its efficiency as a hair growth promotor.

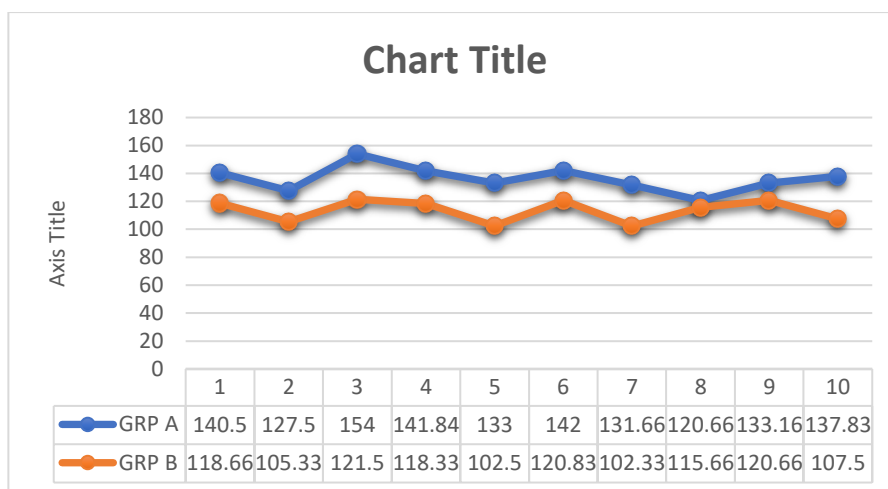


Chart 3:- represents the comparative of group A and group B

Hair growth promoters are known to potentiate the transition of telogen phase to anagen phase. This is manifested by increasing follicle count in subcutis, increase in skin thickness and graying of the pink skin.

### VIII. CONCLUSION

The various types of medication usually used for hair loss with high side effects, but we concluded our experimental data suggests that, coconut milk with egg white pack has effectively enhance the hair health by promoting the vascularization of scalp and hair root and it transitive to make the hair follicle stronger. This pack could be used as preventive and alternative therapy for hair loss.

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