



Research on formulation and evaluation of herbal hair conditioner

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ABSTRACT:

Hair is an essential element of the human body, providing protection to the scalp. After shampooing, a hair conditioner is applied to enhance hair care by conditioning the strands and ends before rinsing it out. The primary purpose of hair conditioner is to improve manageability and add shine, thereby reducing friction between individual hair strands. This reduction in friction facilitates easier combing and brushing, contributing to overall hair health and appearance [7]. The objective of this study is to develop herbal hair conditioners. Compared to synthetic conditioners, all herbal variants exhibited similar solid content, high viscosity, consistent foaming, pH levels within the acceptable range, and excellent wetting properties [17]. Three varieties of hair conditioners were formulated: Herbal Hair Conditioner, Synthetic Hair Conditioner, and Ayurvedic Hair Conditioner. The Herbal Hair Conditioner was developed using fenugreek and mint as its primary ingredients. The primary ingredient in the Synthetic Hair Conditioner is sodium lauryl sulphate, accompanied by PABA (para- aminobenzoic acid) and benzophenone. In the Ayurvedic Hair Conditioner, the key ingredients included powdered henna, amla, shikakai, and reetha. All hair conditioner formulations were subsequently assessed and evaluated based on various organoleptic characteristics and physicochemical factors, including pH, dirt dispersal test, moisturizing duration, cleansing efficacy, and stability assessment [21].

INTRODUCTION:

A hair conditioner is a cosmetic product designed to enhance the softness, texture, appearance, and manageability of hair. Its primary purpose is to reduce friction among hair strands, allowing for gentler brushing or combing, which can help prevent damage to the scalp [1]. Conditioner is a formulation designed to improve the condition of hair and is beneficial for all hair types. It works by replenishing moisture and smoothing the cuticles of hair strands. Herbal hair conditioners, in particular, help reduce hair breakage and strengthen the hair [15]. Flaxseed (commonly referred to as linseed) processing results in the product called flaxseed gel. It is rich in magnesium, vitamin E, and omega-3 fatty acids. This gel plays a vital role in improving your skin and hair [2]. In simple terms, once shampoo has cleansed and eliminated oils, conditioner brings moisture back into your hair and aids in smoothing your strands for a glossy, soft, and healthy appearance. It's similar to washing your face and then applying moisturizer [23]

DIRECTIONS FOR USE



STEP 1

WASH HAIR WITH A MILD SHAMPOO, RINSE OFF PROPERLY AND SQUEEZE EXCESS WATER FROM HAIR GENTLY WITH HANDS. LEAVE FOR 1-2 MINUTES AND RINSE OFF WITH A GENEROUS QUANTITY OF WATER.



STEP 2

TAKE 2-3 PUMPS OF VANAURA CONDITIONER AND APPLY OVER THE HAIR STRANDS FROM HAIR REGION TO TIP. AVOID THE SCALP AREA.



STEP 3

LET IT SIT FOR ABOUT 2 MINUTES AND RINSE OFF WITH A GENEROUS QUANTITY OF WATER.



STEP 4

PAT DRY WITH A TOWEL AND GET TANGLE-FREE SILKY SMOOTH AND HEALTHY HAIR NATURALLY.

Fig. 1: Direction for use

Characteristics of herbal hair conditioner:

The primary goal of a conditioner is to deliver optimal moisture levels. It should be highly hydrating, effectively restoring the natural oils stripped away by regular washing and styling[9]. Ingredients such as humectants and emollients play a crucial role in enhancing shine and hydration. An effective conditioner will not only infuse moisture but also provide slip, making it easier to detangle the hair[20]. For optimal hair care, a conditioner should penetrate the hair shaft, ensuring deep absorption and protection. One effective method to achieve this is by using a water-based conditioner. If you prefer natural ingredients, it's crucial to check the label for quality components. A good conditioner will not only soften your hair upon application but also leave it feeling luxuriously soft, akin to cotton. When a conditioner meets these criteria, it has truly fulfilled its purpose. If you often find yourself touching your hair, it may be beneficial to incorporate a conditioner into your hair care routine [14]

The conditioners' functions include:

Enhance Compatibility: Improve the conditioner's ability to work effectively with various hair types and products.

Mimic Natural Lipids: Replicate the natural lipid outer layer of the hair to promote overall health.

Ensure Hydrophobicity: Maintain the hair's natural ability to repel water and prevent excessive moisture loss.

Enhance shine and Seal the Cuticle: Close the hair cuticle to reduce damage.

Reduce Frizz and Friction: Minimize frizz and friction to combat the damaging effects of environmental factors.[3]

Herbal conditioner benefits:

Enhances Smoothness and Luster: Adds shine and silkiness to the hair.

Reduces Split Ends: Helps minimize the occurrence of split ends for healthier-looking hair.

Improves Manageability: Makes hair easier to style and maintain.

Prevents Breakage: Reduces the risk of hair breakage for stronger strands.

Protects Against Damage: Guards against both mechanical and chemical damage.[3]

Other conditioners available in the market share similar disadvantages:

- Causes Eye Irritation: These products can lead to irritation and discomfort in the eyes.
- Key Ingredients: Common components of alternative conditioners often include ammonium and sodium laureth sulphates.
- Worsen Damage: These sulphates can exacerbate split ends and frizz by dehydrating the hair shaft.[5]
- Generally Toxic and Harmful: Many conventional conditioners contain

Herbal hair conditioner usage:

- Enhances Shine: Designed to boost the natural shine of your hair.
- Retains Smoothness and Softness: Helps maintain a silky and smooth texture.
- Promotes Hair Growth: Encourages healthier and faster hair growth.
- Improves Manageability: Makes hair easier to detangle and control.
- Leaves Hair Moisturized: Ensures hair feels hydrated and silky.
- Repairs Damage: Aids in mending existing hair damage.
- Straightens Curly Hair: Helps to straighten and smooth out curly textures.
- Hydrates and Rejuvenates: Provides essential hydration to rejuvenate hair strands.
- Protects from Heat and UV Exposure: Shields styles from damage caused by heat styling.
- Adds Smoothness and Shine: Contributes to an overall polished look.
- Reduces Split Ends: Helps minimize the occurrence of split ends.
- Facilitates Easier Management: Makes hair simpler to style and maintain.
- Prevents Breakage: Reduces the risk of hair breakage.
- Offers Protection Against Damage: Safeguards hair from mechanical and chemical damage.[4]

COMPONENTS :-

- H2O
- Fenugreek seeds
- Mint leaves
- Curry leaves
- Aloe vera gel

- Coconut oil
- Almond oil
- Rose water
- Glycerine
- Methyl paraben

Fenugreek seeds :-

Fabaceae Synonym : Trigonella, Greek clover, Trigonella foenum-graecum, Methi dana

Biological source : It is composed of the dried mature seeds of the Trigonella foenum-graecum plant. Family



Figure 2 : Fenugreek seed

Uses:

- **Reduces Dandruff:** Fenugreek hair oil helps decrease dandruff while promoting healthy blood circulation in the scalp.
- **Nutrient-Rich Seeds:** Fenugreek seeds are rich in protein and nicotinic acid, making them effective in combating dandruff and hair loss.

Mint leaves :-

- Synonym : Mentha, Pudina, Peppermint
- Biological source : It is made up of the dried foliage and flowering tops of Mentha spicata Linn., Family : Lamiaceae



Figure 3 : Mint Leaves

Uses :

- **Promotes Hair Growth:** Mint leaf extract is a remarkable source of carotene and antioxidants, which promote hair growth and help reduce hair loss.

- Fights Dandruff and Infections: Mint leaves are effective in addressing dandruff, head lice, and various infections due to their potent antibacterial and antifungal properties

Curry leaves :-

- Synonym : Kadi Patta , Karibevu , Mitho Limbo ,Karuvepillai , Meetha neem Biological source : Curry leaves are a part of a small deciduous aromatic
- shrub, scientifically Named *Murraya koenigii*. Family : Rutaceae



Figure 4 : Curry Leav

Uses :

- Stimulates Hair Growth: Encourages healthy hair growth for thicker, fuller hair.
- Repairs Damaged Hair: Helps restore and rejuvenate damaged hair strands.
- Boosts Volume and Luster: Enhances hair's natural volume and shine.
- Improves Oral Health: Contributes to better oral hygiene and health.

Aloevera Gel :-

Synonym : Ghritkumari, Aloe, Mussabar, kumari, Korphad.

Biological source : Aloe is the desiccated sap gathered through cuts from the bases of the foliage of different Aloe species. Aloe perryi Baker, Aloe vera Linn or Aloe barbadensis

Family : Liliaceae



Figure 5 : Aloevera

Uses :

- Conditions and Fortifies Natural Hair: Nourishes and strengthens hair for enhanced health.
- Promotes Hair Regrowth: Encourages the growth of new, healthy hair.
- Balances Natural Curls: Helps define and manage natural curls for a more uniform look.
- Maintains Internal Moisture: Ensures hair stays hydrated from within.
- Reduces Frizz: Minimizes frizz for smoother, more manageable hair.
- Detangles Hair: Eases the process of detangling, making hair easier to style

Coconut oil :-

Synonym: copra oil, vegetable oil, edible oil, nariyal tel.

Biological Source: Coconut oil is the oil extracted from the dried solid portion of the endosperm of coconut, *Cocos nucifera* L..

Family: Arecaceae



Figure 6 : Coconut oil

Uses :

- Provides Hydration: Delivers essential moisture to your hair.
- Efficient Absorption: Absorbs more readily than other oils, effectively repairing dry hair.
- Nourishes Hair: Ensures that hair is well-nourished for optimal health.

Almond Oil :-

- Synonym : *Prunus Amygdalus Dulcis* Oil, Sweet almond oil
- Biological source : Almond oil is a fixed oil obtained by expression from the seeds of *Prunus amygdalus* (Rosaceae) var. *dulcis* (sweet almonds) or *P. amygdalus* var. *amara* (bitter almonds). Family : Rosaceae

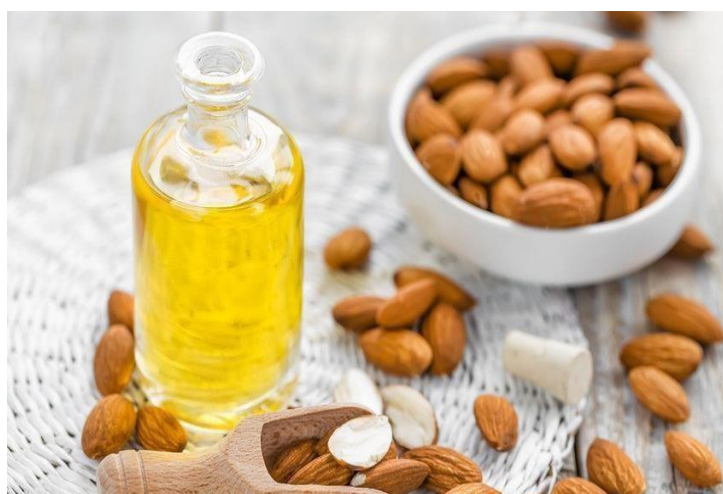


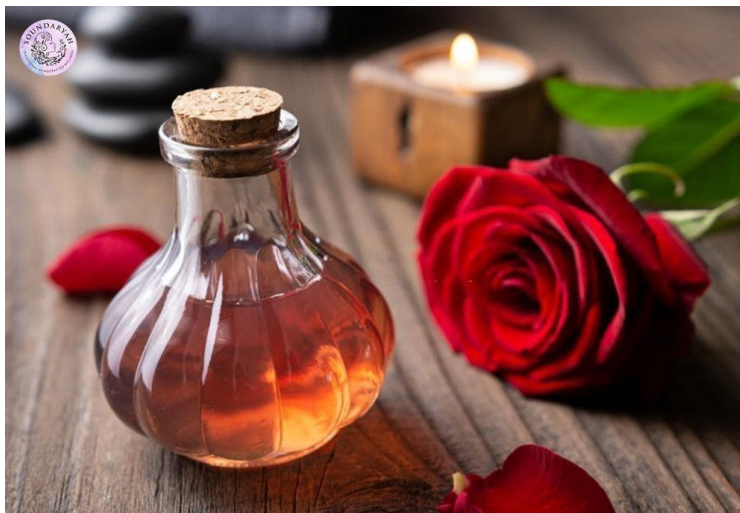
Figure 7 : Almond Oil

Uses :

- Hydrates the Scalp: Almond oil provides moisture to the scalp, alleviating irritation and flakiness.
- Reduces Thinning and Damage: Its mineral-rich composition helps minimize hair thinning and damage while promoting the growth of strong, healthy hair.

Rose Water :-

- Alternative Name: Gulab jal
- Biological Origin: Rose water is derived from the blossoms of *Rosa damascena* Family : Rosaceae

**Figure 8 : Rose Water****Uses**

- Soothes a Distressed Scalp: Helps alleviate scalp discomfort and reduce stress levels.
- Minimizes Shine and Enhances Color: Reduces excessive shine while enhancing the hair's natural

Glycerine :-

- Synonym: Glycerol, 1,2,3-Propanetriol
- Biological Source : Glycerin is generated through the hydrolysis of lipids and oils and serves as a secondary product in biodiesel

**Figure 9 : Glycerine**

Uses :

Due to its powerful conditioning properties, glycerin helps soften and smooth the hair cuticle, resulting in enhanced shine and luster. Its hydrating qualities can also benefit individuals with curly hair by managing frizz and taming unruly strands, leading to a more polished appearance.

FORMULATION:-

Ingredients	Quantity	Purpose
Aloe Vera Gel	30g	Moisturizer
Honey	15g	Humactant
Fenugreek Paste	15g	Hair Straightener
Curry & Mint Extract	25g	Scalp Cleanser And Stimulant
Glycerine	12g	Humactant And Softner
Rose Water	30g	Mild Antiseptic
Coconut Oil	27g	Antifungal Agent
Methylparaben	0.3g	Preservative

Procedure:

- Prepare Fenugreek Paste:
- Soak fenugreek seeds in water overnight.
- In the morning, grind into a smooth paste using minimal water.

Make Herbal Extract:

- Boil curry leaves and mint leaves in 1 cup of water for 5–7 minutes.
- Cool and blend with boiled water into a fine paste.
- Strain to remove any coarse particles.

Melt and Mix Oils:

- Gently warm coconut oil (optional, for better blending).
- Mix in honey, glycerine, and aloe vera gel.

Combine Ingredients:

- Add fenugreek paste and herbal extract into the aloe-honey mixture.
- Stir in rose water and mix thoroughly.

Add Preservative:

- Dissolve methylparaben in a small amount of warm water (or warm rose water).
- Add to the conditioner mixture and stir well to distribute evenly.

Blend:

- Use a hand blender for a smoother texture (recommended).
- Strain again if needed.
- Packaging & Storage:
- Pour into a clean, airtight container or bottle.
- Store in a cool, dark place or refrigerate.
- With methylparaben, shelf life extends to 1–2 months.

Procedure for Using Hair Conditioner:

- Cleanse Your Hair: Use your preferred shampoo to cleanse your scalp before rinsing with warm water.
- Apply Conditioner: Dispense a coin-sized portion of conditioner onto your palm and apply it to your hair, focusing on the mid-lengths to the ends[16].
- Let it Sit: Allow the conditioner to remain in your hair for a few minutes.
- Rinse Thoroughly: Rinse your hair thoroughly with warm water.

Result:-

Natural conditioner combines ingredients that have been traditionally used and scientifically studied for their beneficial effects on hair health. Regular use may help in nourishing the scalp, strengthening hair follicles, and promoting overall hair vitality.

EVALUATION:**Physical Assessment**

- Document physical traits, including color, odor, and texture (feel), with meticulous attention to detail[6].

Cleanability

- Evaluate the ease of rinsing the product from the hair after application by assessing how effectively the product can be removed with water[18].
- **Sensitivity** Test
- Apply 1-2 ml of the product mixture to the dorsal surface of the left hand. Monitor for any signs of redness, sensitivity, or swelling for a duration of two hours[11].

pH of Mixture

- Measure the pH of the product using litmus paper. Immerse both blue and red litmus papers in the solution to observe any color changes that indicate acidity or alkalinity.

Conditioning Impact

- Use an adequate amount of the formulation during the shampooing process. Assess the difference in hair condition after drying and rinsing, focusing on moisture retention and smoothness[19].

Thickness (Viscosity)

- Transfer the product from one container to another to evaluate viscosity, flow characteristics, and pour efficiency[8].

Room Temperature Stability Evaluation

- Conduct a stability test by storing the product at room temperature for a duration of three months and monitoring for any changes in consistency or effectiveness[12].

Reactivity

- Confirm that the product is not reactive with common materials or skin, ensuring safety during use.

Conclusion:-

Research indicates that applying a conditioner following .shampooing your hair prevents dryness and damage caused by the shampoo. It also protects the outer layer of the hair fiber. Additionally, this approach can help prevent the friction associated with anti-dandruff shampoo.

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