



# FORMULATION AND EVALUATION OF HERBAL HAIR CONDITIONER BY USING FLAXSEED EXTRACT AND COCOA BUTTER.

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## ABSTRACT-

Hair is an important part of human body that protects the scalp. Herbal hair conditioners are safe for use and made from natural ingredients which provide shine, smoothens and promotes healthy hairs. They can be used on all types of hair, as they are safe and do not cause harmful effects. Hair conditioner could be hair care item that are applied to the end of hair and improve the feel, appearance of hairs and makes them manageable. Main purpose of Hair conditioner is to reduce the friction between strands of hair and makes the brushing or combing easier which might else can cause damage to the scalp and hairs. Hair conditioning is second step while shampoo is first step which removes dirt, sweat from hairs and scalp. Chemicals in shampoo can cause dryness, roughness to the hair follicles therefore, conditioner is used to make hair soft, flaxseed which is also known as linseed is rich in omega 3 fatty acids and also promotes faster hair growth. It provides nourishment to the hair by reducing hair damage. flaxseed hair conditioner is a hair care product formulated from flaxseed extract. Mucilage of flaxseed can also apply directly on the hair and scalp. Ingredients such as flaxseeds, cocoa butter, jasmine oil, castor oil, glycerin, cetyl alcohol, HPMC, benzalkonium chloride, sodium benzoate, triethanolamine and water are used to formulate hair conditioner. Hair care products were evaluated and analyzed based on various organoleptic properties and physicochemical criteria such as pH test, dirt dispersion test, moisturizing time, cleaning action and stability test.

**KEYWORDS:** Hair, Herbal hair conditioner, Hair care, flaxseed, cocoa butter.

## INTRODUCTION :

Herbal cosmetics are products which are made from various permitted cosmetic products to form a base in which one or more herbal ingredients are used exclusively for a specific cosmetic benefit.

It takes variety of ingredients to make a good herbal medicine. Each of these ingredients has a specific role in the composition of the conditioner. Hair products are highly valued these days. Hair lotions and conditioners are included in many cosmetics products. Plant extracts such as flax extract may be included. Flax extract plays an important role in reducing hair loss and improving its condition. Hair conditioner is usually a colorless, viscous liquid that is applied and massage.

### ▪ *What is hair conditioner?*

Conditioner is a hair care product that is used after shampooing. In addition to ingredients like silicone, oils and emollients, this moisturizer also contains cationic surfactants (cleansing ingredients) that remove oily elements from your hair. And with these two powerful factors, the conditioner replenishes the moisture lost during shampooing. Hair conditioner could be hair care item that are applied to the end of hair and improve the feel, appearance of hairs and makes them manageable.

### ▪ *What does a conditioner do to your hair?*

Conditioning helps to moisturize and hydrate hair, especially after shampooing, which can strip natural oils and leave hair dry and brittle. It replenishes moisture lost during cleansing and helps seal moisture into the hair, keeping it soft, smooth and bouncy.

### ▪ *Why you should use hair conditioner?*

Simply put, while the shampoo cleans and removes oils, the conditioner brings moisture back into your hair and helps smooth it for shiny, soft and healthy finish.

### ➤ Ideal properties of herbal hair conditioner are:

1. It should have detangling ability.
2. It should provide moisture to hair.
3. It should repair damaged hair.
4. Remove oil from hair.

➤ Objectives Of Hair Conditioner Are:

1. To straight the curly hair.
2. To make hair smooth.
3. To moisturize hair.
4. To increase the growth of hair.

➤ ADVANTAGES OF HERBAL HAIR CONDITIONER:

1. Make hair smooth and manageable.
2. Decreases split ends.
3. Give protection to the hair from chemicals.
4. Reduces breaking of hair.

➤ DISADVANTAGES OF HERBAL HAIR CONDITIONER:

1. They can be more expensive.
2. Excessive use in onetime can cause harm to hair.
3. Application on scalp can cause Hairfall.
4. It cannot be applied without shampooing.

➤ OBJECTIVES-

The main objective of formulation and evaluation of herbal hair conditioner by using Flaxseed and cocoa butter is to reducing friction between hair strand and slips the hair easily from comb. Ingredients such as jasmine oil, castor oil are used on the basis of their antiseptic, antibacterial, moisturizing and strengthening properties.

## MATERIALS AND METHOD

• Collection of Ingredients

Ingredients such as Flaxseeds, Glycerin, rose water were collected from local market. All other ingredients such as cocoa butter, jasmine oil, castor oil, Cetyl alcohol, benzalkonium chloride, sodium benzoate, triethanolamine are collected from L.N.B.C Institute of Pharmacy, Raigaon, Satara.

A. Flaxseeds:



Botanical name: *Linum usitatissimum*

Synonym- linseed, flaxseed.

Family: *Linaceae*

Biological source- linseed is dried, ripe seed of *Linum usitatissimum*.

Benefits of flaxseeds for hair:

Promotes Hair Growth factor.

Strengthens Hair Strands.

Adds Shine and Softness.

Help Condition Your Hair.

Cocoa butter



Botanical name: *Theobroma cacao*

Synonym: *Theobroma* oil, cacao butter, cacao beans, *semina theo-bromatis*.

Family: *Malvaceae*

Biological source: It is obtained from roasted seeds of *Theobroma cacao*.

Benefits of cocoa butter for hair:

Increase strength of hair shaft.

Provide moisture.

Hair volume increases.

Protects from hair damage.

**Castor oil:**

Botanical name: *Ricinus communis*.  
 Synonym: castor bean oil, oleum ricini.  
 Family: Euphorbiaceae.  
 Biological source: castor oil is obtained by cold expression of seed of *Ricinus communis*.

Benefits of castor oil for hair:  
 Increase hair growth.  
 Moisturize dry scalp.  
 Antibacterial and antifungal properties.  
 Reduces dandruff.

**Jasmine oil**

Botanical name: *Jasminum officinale*.  
 Synonyms: Jasmin, jessamine.  
 Family: Oleaceae.  
 Biological source: jasmine oil is extracted from *Jasminum grandiflora*.

Benefits of jasmine oil for hair:  
 It works on dry, brittle and damage hair.  
 Deeply nourishes and moisturizes hair strands.  
 It shows antiseptic and antibacterial properties.  
 Increases blood flow and cause hair growth.

- **Glycerin:**

Glycerin is used as humectant. It actually absorbs moisture from air, keeping hairs moist and healthy. The antibacterial properties of glycerin help to treat itching caused by dandruff and dryness. Glycerin is used to nourish and condition hair and make it soft and fluffy.

- A. **HPMC (Hydroxypropyl methylcellulose):**

HPMC used as thickening agents in products such as shampoo and conditioners to increase their viscosity and improve stability and spreading ability and gives soft and smooth texture.

- B. **Benzalkonium chloride:**

Benzalkonium chloride is a class of quaternary ammonium compounds. It is a surfactant which is used to decrease surface tension and also acts as foaming and cleansing agent in hair conditioner. It shows anti-microbial property and used for antiseptic and disinfectant purpose.

- C. **Cetyl alcohol:**

Cetyl alcohol shows moisturizing property on hair and functioning as an emollient, and emulsion stabilizer. It does not solubilize in water but much soluble in alcohol and in waxy substance at about 50 °C.

- D. **Sodium benzoate:**

It is a preservative used in cosmetics, food products and also to increase shelf life of product for atleast 2 years. It has antimicrobial and anti-fungal properties and mostly used as food preservative.

- E. **Triethanolamine:**

Triethanolamine is used as emulsifier in hair conditioner and also it adjust the pH. It is used in shampoo conditioner and many other cosmetics products. It is slightly soluble in water. Triethanolamine is considered to be safe for use to skin and hair.

- F. **Rose water:**

Rose water is used for moisturizing and hydration purpose, avoid dryness of hair and make them soft. It is a mild astringent used to avoid dandruff. It is much beneficial for curly hair to avoid frizz and make them shiny.

- Ingredients used for preparation of herbal hair conditioner with roles and their sufficient quantities are listed below:

- **FORMULATION OF HERBAL HAIR CONDITIONER:**

**Formulation of water phase:**

Sr.no	Ingredients	Quantity	Roles of ingredients
1.	Flaxseeds	10 gm	Conditioning agent
2.	Glycerin	5 ml	Humectant
3.	Benzalkonium chloride	5 ml	Cationic surfactant
4.	HPMC	5 gm	Thickening agent
5.	Rose water	10 ml	Astringent
6.	Water	100 ml	vehicle

#### Formulation of oil phase:

Sr.no	Ingredients	Quantity	Roles of ingredients
1.	Cocoa butter	4 gm	Lubrication
2.	Cetyl alcohol	0.5 gm	Emollient
3.	Jasmine oil	1 ml	Fragrance
4.	Castor oil	1 ml	Moisturizing agent
5.	Sodium benzoate	0.5 gm	Preservative
6.	Triethanolamine	0.5 ml	Adjust pH

## Methodology

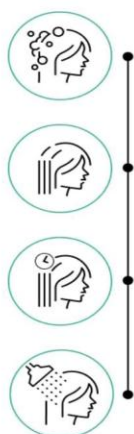
### Preparation of flaxseed extract

- About 10 gm flaxseeds are weighed and added to the beaker.
- Add 100 ml of water in it and placed in Water bath until boil on medium heat for about 4-5 min. Stir continuously until thick mucilage formation.
- Thick mucilage strained by using suitable cloth or sieve and stored at room temperature.

### Preparation of herbal hair conditioner by using flaxseed extract and cocoa butter:

- In a beaker add water phase, such as flaxseed extract, glycerin, benzalkonium chloride, HPMC, Rose water and mix it well.
- In another beaker melt cocoa butter and add cetyl alcohol and dissolve it at suitable temperature. Add jasmine oil and castor oil in it and stir well.
- Stir the content of water phase with the help of mechanical stirrer and add the oil phase dropwise in it, until it become thick.
- After mixing both phases properly, add sodium benzoate to it and add triethanolamine.
- Transfer the mixture to suitable container and label it.

## HOW TO USE



### Step 1 :

Apply conditioner to shampooed hair

### Step 2 :

Distribute evenly along the lengths, focusing on the ends

### Step 3 :

Leave on for 2-3 minutes

### Step 4 :

Rinse thoroughly

### Evaluation parameters-

- Physical appearance

### To determine organoleptic properties of hair conditioner such as:

- Odour.
- Colour.
- Texture.
- Transparency.
- Dirt dispersion test

- 2 drops of conditioner added to the test tube containing 10 ml distilled water. Add 1 drop of Indian ink to it, close tightly and shake for 10 times. The amount of ink in the foam was considered zero, light and heavy.
- a. Wettability test
  - Surfactant wettability depends on its concentration in the formulation and is primarily tested to evaluate surfactant effectiveness. Wetting time can be found by measuring the time it took for the disc sink into the conditioner.
- b. pH test
  - pH of hair fibre is about 3.5-4.5, so including an anti-static agent in conditioner, it is important that the final PH formula and ingredients does not exceed 5.5 and not damage the scalp.
- c. Cleansing action
  - Conditioner has different detergent than shampoo, so its cleansing action is less than shampoo and it contains cationic surfactant which has ability to stick to the hair, therefore the provide conditioning.
- d. Washability
  - Texture is smooth and it can be easily wash by rinsing with water after shampooing.
- e. Stability testing
  - Herbal conditioner is to be stored at 37 °C for 6 weeks and observe the changes takes place such as colour and viscosity.

#### RESULTS

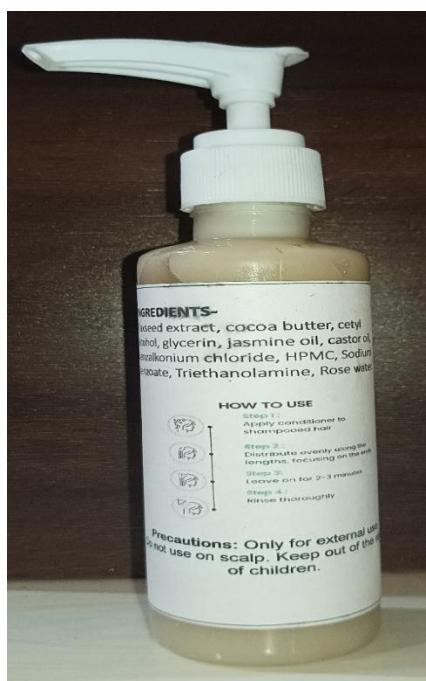
##### Physical evaluation parameters of hair conditioner

Sr. no	Evaluation parameters	Observations
1.	Colour	Milky white
2.	Odour	Pleasant
3.	Texture	Smooth
4.	Washability	Easily washable

##### Result Evaluation parameters of hair conditioner.

Sr. no	Evaluation parameters	Observations
1.	pH	4.5
2.	Homogeneity	Good
3.	Foamability	Light foam

Formulated herbal hair conditioner is given below:



## Conclusion

From all the above studies, we can conclude that after shampooing hair becomes dry, to avoid the dryness and damage of hair conditioning is most important. Hair conditioner contains ingredients which are useful to strengthening, smoothen and makes hair shiny and healthy. Herbal hair conditioner is safe to use in compare to chemical containing conditioner. While shampoo used to cleanse the dirt, a conditioner locks the moisture and help to repair damaged hair, makes them manageable and protects from environmental damage. Parameters such as pH test, dirt dispersion test, determination of wetting time, cleansing action are tested and has to be found that it is safe and effective for use.

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