



“Formulation And Evaluation Of Herbal Hair Conditioning Cream By Using Flaxseed And Okra”

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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 and okra 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, glycerine, liquid paraffin, methyl cellulose, sodium lauryl sulphate, 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.

1. INTRODUCTION

Hair conditioners are used for maintaining cleanliness of the scalp and giving proper moisturization to hair. Hair care products also help control the structure and behaviour of the hair so that it is kept in a controlled environment as well in a desirable way. Hair has simple structure made of root and shaft and is made of tough protein called keratin. This keratin decides the strength of hair.[1] Omega-3 fatty acids aid to reduce hair loss by inhibiting follicle inflammation. It stimulates circulation in the scalp, which encourages hair growth. Alpha-linolenic acid has anti-inflammatory properties and offers sustenance and nutrients to the scalp. The antioxidants produced by flaxseed are lignans. Lignans could help suppress or inhibit bacterial development. Lignans may promote hair regeneration and prevent hair loss. Vitamin E, an antioxidant found in flaxseed, helps to prevent hair loss and nourish the hair. [2]

♣ 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.

Objectives of hair Conditioner .[3]

- Protects hair from chemical and mechanical damage.
- Reduce split ends and to restore damaged hair.
- To Leaves hair soft and moisturized and keep it soft and flowing
- To Makes hair more manageable and easier to comb.
- To revitalizes and replenishes hair strands.

❖ PROBLEMS RELATED TO HAIR [6]

- Dandruff
- Dry hair
- Split ends
- Oily hair
- Frizzy hair
- Limp hair
- Hair loss
- Heat damage
- Colour damage
- Grey hair

Formulation of herbal hair conditioning cream

[Formulation of water phase]

Sr.no	Ingredients	Quantity	Ingredient Role
1	Flaxseeds	5gm	Conditioning agent
2	Okra	5gm	Moisturizes and Hydrate
3	Glycerine	5ml	Humectant
4	Sodium lauryl sulphate	5gm	Surfactant
5	Methyl cellulose	5gm	Thickening agent
6	Rose water	10ml	Astringent
7	Water	100ml	Vehicle

[Formulation of oil phase]

Sr.no	Ingredients	Quantity	Ingredient Role
1	Cocoa butter	4gm	Lubrication
2	Liquid paraffin	0.5 ml	Emollient
3	Jasmine oil	1ml	Fragrance
4	Castor oil	1ml	Moisturizing agent
5	Sodium benzoate	0.5gm	Preservative
6	Triethanolamine	0.5ml	Adjust pH

COMPOSITION OF CONDITING CREAM

Sr no	Ingredients	F1CC	F2CC	F3CC
1	Flaxseed	5 ml	3 ml	7 ml
2	Okra	5 ml	4 ml	3 ml
3	Glycerine	5 ml	5 ml	6 ml
4	Sodium lauryl sulphate	4 gm	3 gm	5 gm
5	Methyl cellulose	10 gm	7 gm	12 gm
6	Rose water	10 ml	10 ml	10 ml
7	water	q.s	q.s	q.s
8	Cocoa butter	4 gm	3 gm	5 gm
9	Liquid paraffin	1.5 ml	1.5 ml	1.5 ml
10	Jasmine oil	1 ml	1 ml	1 ml
11	Castor oil	1 ml	1 ml	1 ml
12	Sodium benzoate	1 gm	1 gm	1 gm
13	Triethanolamine	0.5 gm	0.5 gm	0.5 gm

MATERIAL AND METHOD

1. FLAXSEED



Botanical name: *Linum usitatissimum*

Synonym- linseed, flaxseed.

Family: Linaceae

Biological source- linseed is dried seed

ripe seed of *Linum usitatissimum*.

Uses:

- flaxseed is full of fatty-acids and anti-oxidants which help to remove toxins and dead cells from the scalp.
- Flaxseeds are rich in vitamin E, which is great for both skin and hair health.
- It helps improve circulation in the head, thus promoting hair growth and slowing down hair breakage.
- It may also help prevent premature greying of hair.[5]

2. OKRA

Biological name: *Hibiscus esculentus*, *Abelmoschus-esculentus*.

Scientific classification:

Kingdom: Plantae Division: Magnoliophyta

Class: Magnoliopsida

Order: Malvales

Family: Malvaceae

Genus: *Abelmoschus*

Species: *A.Esculentus*

USES:

Okra, when boiled, releases a mucilage that can be used as a natural hair conditioner, offering benefits like moisture retention, frizz reduction, and promoting softer, shinier hair[18]

The mucilage of okra can be used as hair conditioner. Wash your hair and squeeze out excess water. Massage the watery mucilage through your hair and rinse thoroughly with water[19]

3 . 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.



4.. JASMINE OIL



Botanical name: *Jasminum officinale*.

Synonyms: Jasmine, jessamine. Family: Oleaceae

. Biological source: jasmine oil is extracted from *Jasminum grandiflora*.

soothes dry skin and helps seal the hair cuticle, which may help help breakage and encourage new hair growth.

Nourish the crown and hair.

Keep the crown doused Make hair brilliant and softer Stimulate hair growth.

Make hair brilliant and softer.[7]

5. GLYCERIN



Glycerine is a humectant. This means that it can actually absorb moisture from the air, keeping your hair moisturized and healthy. It is a popular ingredient in skin and hair care products because of its effectiveness. Glycerine's antibacterial properties help treat itchiness caused by dryness and dandruff. Glycerine is used to nourish and condition hair, leaving it soft and frizz-free.[8]

6. ROSE WATER



Rosewater softens hair in many ways. Rosewater is a mild astringent and can help reduce oiliness and dandruff. Rosewater acts as an astringent on the scalp, tightening the skin and preventing excess sebum production. By reducing oil production, rose water prevents the formation of dandruff on the scalp. [9]

7.Methyl Cellulose [12]

Methyl cellulose 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.

8. Sodium lauryl sulphate [15]

Sodium lauryl sulphate 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.

9. Liquid paraffin[13]

Liquid paraffin 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.

10. Sodium benzoate:

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

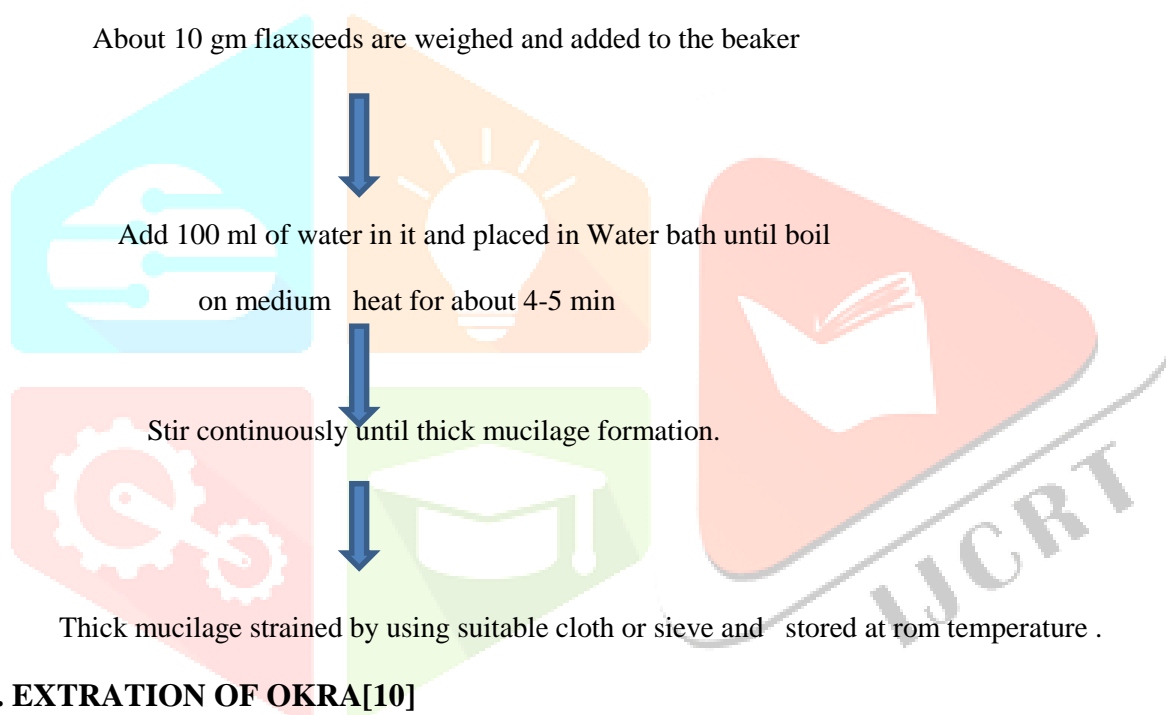
11. Triethanolamine: [14]

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.[11]

METHOD OF PREPARATION

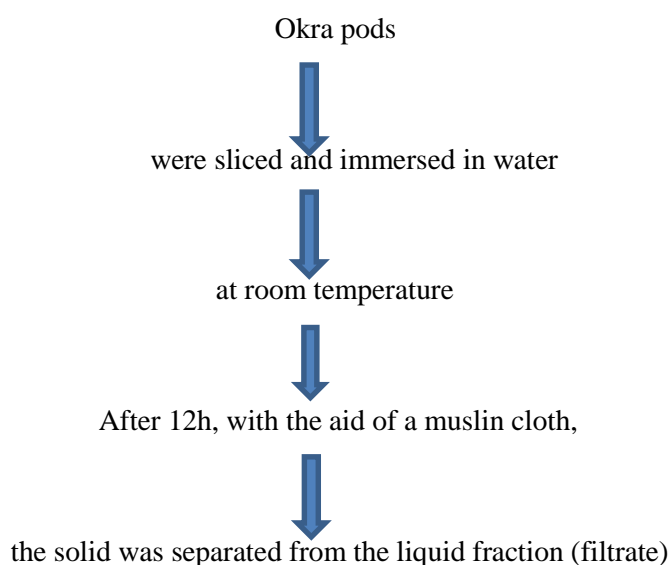
1. EXTRATION OF FLAXSEED

About 10 gm flaxseeds are weighed and added to the beaker



Thick mucilage strained by using suitable cloth or sieve and stored at rom temperature .

2. EXTRATION OF OKRA[10]



Formulation of herbal hair conditioning cream by using flaxseed, okra extract and cocoa butter:

1. In a beaker add water phase, such as flaxseed extract, glycerine, Sodium lauryl sulphate, methyl cellulose, Rose water and mix it well.
2. In another beaker melt cocoa butter and add liquid paraffin and dissolve it at suitable temperature. Add jasmine oil and castor oil in it and stir well.
3. Stir the content of water phase with the help of mechanical stirrer and add the oil phase drop wise in it, until it become thick.
4. After mixing both phases properly, add sodium benzoate to it and add triethanolamine.
5. Transfer the mixture to suitable container and label it.

CREAM:

Creams are semisolid dosage forms containing more than 20% water or volatile components and typically less than 50% hydrocarbons, waxes, or polyols as vehicles. They may also contain one or more drug substances dissolved or dispersed in a suitable cream base.[20]

TYPES OF CREAM

They are divided into two types:

• Oil-in-Water (O/W)

creams which are composed of small droplets of oil dispersed in a Continuous phase, and an emulsion in which the oil is dispersed as droplets throughout the Aqueous phase is termed an oil-in-water (O/W) emulsion.

• Water-in-Oil (W/O)

creams which are composed of small droplets of water dispersed in A continuous oily phase. When water is the dispersed phase and an oil the dispersion Medium, the emulsion is of the water-in-oil (W/O) type [4]



EVALUATION TEST

1. Physical Properties:[21]

- **Appearance:** The cream's colour, odour, and texture are evaluated visually and by touch.
- **Homogeneity:** The cream should be uniform and free from lumps or separation.
- **Organoleptic Properties:** These include the cream's colour, odour, and texture, assessed through sensory evaluation.

2. pH:

The pH of the cream is measured using a digital pH meter, calibrated with standard buffer solutions[22]

3. Washability Test:

Applied hair conditioner on damp hair and washed with tap water. Then the hair International Journal was assessed for easiness of washability, rinse out and presence of residue [23].

4. Irritancy Test :

Applied a small amount of the hair product on the elbow and behind the ear lobe using a cotton pad dipped in the product. Allowed the product to dry completely and then repeated the process twice. Held for a period of 24 hours [24]

6. Stability Test:

The stability of the sample under accelerated conditions was evaluated by heating and cooling methods at 45°C and 4°C for 24 hours. All the evaluations were repeated after the stability test [25].

RESULT

Physical evaluation parameters of hair conditioning cream

SR NO	Evaluation parameter	Observation
1	Colour	Milky white
2	Odour	Pleasant
3	Texture	Smooth
4	Washability	Easily washable

Result evaluation parameters of hair conditioning cream

Sr no	Evaluation parameter	F1CC	F2CC	F3CC
1	pH	4.5	5	5.3
2	Homogeneity	Good	Good	Good
3	Irritancy	Nil	Nil	Nil
4	Spredability	7 (sec)	5(sec)	6 (sec)
5	Stability	Stable	Stable	Stable

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 conditioning cream contains ingredients which are useful to strengthening, smoothen and makes hair shiny and healthy. Herbal hair conditioning cream is safe to use in compare to chemical containing conditioning cream . While shampoo used to cleanse the dirt, a conditioning cream 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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