



## A Review on Formulation and Evaluation of Herbal Hair Conditioner by Custard Apple Extract

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### ABSTRACT:

Hair conditioner is one of the cosmetics which is widely used in daily life. Hair is an imperative part of the human body which protects scalp. Hair conditioner is hair care product, which is applied to the hair and hair tips after shampoo in order to condition the hair and then it is rinsed out. Hair conditioner is used to improve the manageability and to enhance lustrous look of hair. Its main purpose is to reduce friction between the hair strands to allow easier brushing and combing. The main objective is to develop the most effective hair care product to meet people's compliance. The plants product used in herbal hair conditioner like Custard Apple, Aloe Vera, Hibiscus Flower, Lemon, Curry Leaves, Almond oil having various properties like Stimulate hair growth, prevent breakage, prevent dandruff, reduces hair fall, improve manageability, helps in smoothing. Herbal hair conditioner was evaluated by different types of parameters like pH test, dirt dispersion test, cleansing action, stability testing, moisturizing time determination, viscosity, physical appearance.

**Key Words:** Herbal drugs, herbal plant extract, hair conditioner, evaluation, effective hair care.

### INTRODUCTION

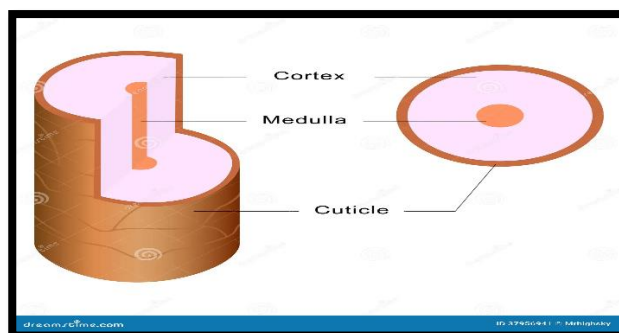
Herbal hair conditioner that helps to prevent the hair from breakage and makes the hair strong and lustrous. Made with the key ingredients of aloe Vera and hibiscus, this herbal conditioner for healthy hair is a solution for keeping the hair dirt-free and smooth. To put it simply, after shampoo cleans and removes oils, conditioner reintroduces moisture back into your hair and helps to smooth your strands for a shiny, soft, healthy finish. It is kind of like how you wash your face and then apply moisturizer. Deeply condition the hair and retain the scalp and hair moisture which helps to detangle the hair and support easy combing (use a wide tooth comb). Hair becomes smoother and stronger. It can't break out easily. All these prevent the hair from unwanted breakage.

Target market nearly holds a 5.9% share in the overall beauty products industry. Increasing focus on healthy skin and hair and surging demand for natural remedies have positioned the herbal beauty products market to surpass US\$ 134.0 Billion in 2033. Herbal drugs constitute a major share of all the officially recognised systems of health in India viz. Ayurveda, Yoga, Unani, Siddha, Homeopathy and Naturopathy, except Allopathy. More than 70% of India's 1.1 billion population still use these non-allopathic systems of medicine.

### Hair:<sup>8</sup>

Hair is a natural part of their look and an expression of their personality. Hair can also offer protection: For instance, it helps to keep the sun's rays from reaching our scalp. Eyelashes and eyebrows keep dust, dirt and sweat out of our eyes. Even the hairs in our nose and ears help to keep out germs and other foreign objects. Body hair helps to regulate our body temperature: The hairs stand up when it's cold, keeping the air that is warmed by the body close to the body – like a warming layer of air. Hair is a keratinous filament growing out of the epidermis. It is primarily made of dead, keratinized cells. Strands of hair originate in an epidermal penetration of the dermis called the hair follicle. At the hairline, the hair root spreads into a round bulb. There is a dermal papilla inside the hair bulb, which supplies blood to the hair root. New hair cells are constantly forming in the hair bulb near the papilla. The hair shaft of mammals is three main regions: Cuticle, Cortex, and Medulla.

- a) Cuticle: The cuticle is your hair's protective layer, composed of overlapping cells like fish scales or roof tiles, but facing downwards. A healthy cuticle is smooth and flat. This gives your hair shine and protects the inner layers from damage.
- b) Cortex: The cortex of the hair shaft is located between the hair cuticle and medulla and is the thickest hair layer. It contains most of the hair's pigment, giving the hair its colour. The major pigment in the cortex is melanin, which is also found in skin.
- c) Medulla: The medulla, also referred to as the pith or marrow of the hair, is the innermost layer. Composed of round cells, this layer is normally found in thick and/or coarse hair. Naturally blonde and fine hair generally does not have a medulla.



### ***Herbal hair conditioner:*<sup>14</sup>**

Herbal hair conditioners are more than just a conditioner. They are made with natural ingredients that help to nourish and condition your hair. Best hair growth conditioners can help to repair damaged hair, add shine, make your hair more manageable and protect your hair from environmental damage.

### **Types of Conditioners:**

1. **Rinse-Out Conditioner:** Rinse-Out conditioners (rinse through conditioner) are the most common type of conditioner. For this type of conditioner, you don't have to leave it in your hair for a long period of time, and the effects are usually instant. Use it by applying a sufficient amount to damp hair, then leave it in for at least three minutes. It is the most common type of conditioner for all hair types. Rinse-Out conditioners work by closing the cuticle scales of the hair. Some of them coat the hair in a thin film to fill in some of the gaps in the broken scales so the hair becomes shinier and more manageable. The best ones are acid based.

2. **Deep Conditioners:** Deep conditioners are normally for damaged and dry hair. As the name suggests, they provide a deeper conditioning compared to other conditioners. The ingredients in deep conditioners are understandably less harsh than other conditioners and are meant to combat dry and damaged hair. They are also sometimes used for reconditioning hair. It is important to note that deep conditioners might not be ideal for normal hair as they may weigh them down since they are not meant for normal use. Deep conditioning hair is also a long and tedious task. Apply the deep conditioner to your hair and leave it for 30-40 minutes before rinsing it off.

3. **Hair Masks conditioners:** Hair masks are best suited for deeply penetrating root hairs. They instantly make your hair shiny and radiant and should be used on average two times per week. Hair masks are made with a concentrated formula that provides the hair with much needed nourishment. They have the most long-lasting results. Normally, anyone can use a hair mask regardless of hair type but they are pricier than alternatives. Apply by leaving it in hair for 15 - 20 minutes before washing off.

4. **Leave-In Conditioner:** Leave-In conditioners like Daily Dose contains moisturizing and protective ingredients and can be sprayed or applied directly to hair. They are the best type of conditioner for kinky African natural hair and can also be used in place of a detangler. They are also useful in preventing hair from drying out. They are lighter and thinner than other conditioners so they are not as heavy. They can be used as a moisturizer or styling product and are suitable for all hair types.

### **Application of herbal hair conditioner:**<sup>13,14</sup>





1. To Designed to add shine to your hair.
2. To keep it soft and flowing.
3. To Increase hair growth.
4. To Makes hair more manageable and easier to comb.
5. To Leaves hair soft and moisturized
6. To restore damaged hair.
7. To straightening curly hair.
8. To revitalizes and replenishes hair strands.
9. To Prevents styling from UV rays and heat.
10. Gives hair shine and softness.



11. Reduce split ends.
12. Improve manageability.
13. Prevent hair breakage.
14. Protects hair from chemical and mechanical damage.

### Properties of herbal hair conditioner:<sup>12</sup>

The inherent quality that must exist is the conditioner must provide maximum moisture. It should be super hydrating and restore natural oils removed from hair from daily styling and shampooing. Emollients and humectants will provide moisture and shine. In addition to moisture, a good conditioner will provide slip and thus have detangling ability. Slip is imperative to length retention and effective detangling. Consistency partial to rich, thick and creamy conditioners. The conditioner must be able to absorb and protect at a high level, which means it needs to penetrate the hair shaft. This can be achieved by using a water-based conditioner. If you are partial to all natural ingredients, reading the ingredients is essential. Leaves hair feeling soft. A conditioner that leaves your hair feeling like cotton has done its job. If you suddenly have hand in hair syndrome, you can add the conditioner to your hair care rotation.

### Material and Method

Sr. No	Crude Drug	Synonyms	Biological Source and Family <sup>1,2,3</sup>	Photo	Uses
1.	<b>Custard apple:</b> Custard apple helps to support the growth of hair. The anti-inflammatory action is helpful in reducing the inflammation of the scalp.	Annona squamosa	Fruit of custard apple tree, Annona squamosa		Support the Hair Growth
2.	<b>Aloe Vera:</b> Aloe vera has many active ingredients and minerals that can help strengthen your hair.	Aloe barbadensis Mill., Aloe indica Royle, Aloe perfoliata L. var. vera and Aloe vulgaris Lam.	Leaves of aloe barbadensis, Asphodelaceae		Protect From UV Damage.
3.	<b>Hibiscus flower:</b> Makes Your Hair Strands Firmly Rooted. The active ingredients of hibiscus flowers and leaves are flavonoids & amino acids that nourish your scalp and hair root	Hibiscus rosa	Flowers of hibiscus tree, Malvaceae,		Promote hair Growth.
4.	<b>Lemon:</b> Lemons contain limonene, which helps renew dry, frizzy, and rough hair	Citrus lemon	Fruit of Lemon tree, Rutaceae		Reduce Hair Dandruff.

5.	<b>Curry Leaves:</b> leaves are rich in antioxidants which help moisturise the scalp, and also remove dead hair follicles.	Murraya konini	Leaves of curry leaves plant, Rutaceae		Remove Dead Hair.
6.	<b>Almond Oil:</b> Almond oil promotes hair growth and reduces hair thinning.	Prunus dulcis	Fruit of almond tree. Rosaceae		Prevent Hair Loss.

Various excipients are used in herbal hair conditioner<sup>9</sup>

- Preservatives: substances that delay or stop the growth of bacteria in foods, spoilage, and discoloration are called food preservatives. For example: Methyl Paraben.
- Thickening agent: A thickening agent or thickener is a substance which can increase the viscosity of a liquid without substantially changing its other properties. For example: Glycerine.

### Preparation of herbal hair conditioner<sup>9</sup>

- Preparation of herbal extract: All extractions are done by Soxhlet apparatus process for 3 hours. The solvent was hydro-alcoholic. (Alcohol)
- To formulate an herbal conditioner by mixing two phases are prepared such as aqueous and oily phase.

Aqueous phase: Custard Apple extraction, Hibiscus Flowers extraction, Lemon extraction and Curry Leaves extraction were mixed.

Oil phase: Almond oil, Aloe Vera and Glycerin was mixed.

Both the aqueous and oil phase were mixed into each other with continues stirring.

- Both phases are mixed properly then add methyl paraben in it. it acts as a preservative.

### Evaluation parameters

- Organoleptic properties: <sup>4,5</sup>

Organoleptic. Evaluation means the study of drugs using organs of senses. It refers to the methods of analysis like colour, odour, taste, size, shape and special features, such as touch, texture, etc. Obviously, the initial sight of the plant or extract is so specific that it tends to identify itself.

- pH test:<sup>10</sup>.

As the hair fibre has a pH of 3.67 it is important that, besides the inclusion of antistatic agents in the conditioner formulas, the formula and ingredients must create a final pH no higher than 5.5 so not to damage the scalp.

- Dirt dispersion test: 2 drops of conditioner were added in large test tube contain 10ml of distilled water, 1 drop of India ink was added, the test tube was stoppered and shakes it 10 times. The amount of ink present in the foam was estimated as none, light, moderate heavy.
- Cleansing test:

Conditioners also have detergents, but they are different than those found in shampoos. They use cationic surfactants (or quats) which have the tendency to stick to the hair, which is how they provide conditioning. Common quats are Cetrimonium Chloride.

- Wetting time:

The wetting time test was performed by measuring the time taken for the disc to sink in the shampoo solution. Wetting efficiency is considered to be higher if the disc takes less time for sinking.

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**Conclusion:**<sup>13</sup>

A formulated herbal hair conditioner containing custard apple powder, aloe Vera gel, lemon, hibiscus flower extract, curry leaves extract and almond oil was successfully developed using methyl paraben as a preservative and glycerin as a thickening agent. The formulation was subjected to various evaluations including color, odor, consistency, pH, spreadability, washability, which yielded acceptable results. These findings suggest that the prepared formulation may be effective for its intended use, but further testing may be necessary before it can be utilized in practical applications.

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