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Design Development Formulation & Characterization Of Herbal Hair Soap

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Abstract : As per increasing demand for natural and safe hair care products has driven research into herbal alternatives to conventional hair soap. This study presents the formulation and comprehensive evaluation of herbal soap aimed at promoting hair growth utilizing a synergistic blend of traditional botanicals. The soap was prepared by homogenizing Reetha, Amla, Jasmine oil, Bhringaraj, Methi, Shikakai, Aloe vera etc, each selected for their reputed benefits in hair nourishment into 10% W/V gelatin solution to ensure uniform dispersion and stability. Jasmine oil was incorporated for its preservative aromatic properties. This finding underscores the potential of herbal formulation as a safe, effective, ecofriendly alternative for hair growth promotion, supporting the integration of traditional herbal knowledge into modern personal care products.

1. Introduction

Nowadays, herbal cosmetics are very popular. Herbal cosmetics are beauty products designed & formulated with herbal or natural ingredients, with remarkable benefits like minimum side effect & provide skin and hair care.

Herbal cosmetics commonly called as "Natural Cosmetics". They are very demanded because of lack of side effects. Herbal cosmetic is first introduced in Ayurveda. At the ancient time, no availability of fairness creams or any cosmetic surgeries. Only information of some natural ingredients about their action we had. With the art of Ayurveda, a few herbs and florals were used to make Ayurvedic cosmetics that truly worked. Ayurvedic cosmetics not only beautified the skin but acted as the shield against any kind of external affects for the body. Ayurvedic cosmetics also known as the herbal cosmetics have the same admirable resources in the present day period too. There is an extensive variety of the herbal cosmetics that are produced and commonly used for daily purposes. Herbal cosmetics like herbal conditioner, herbal soaps, herbal face wash, herbal shampoo, and many more are exceptionally acclaimed by the masses. The best thing of the herbal cosmetics is that it is purely made by the herbs and shrubs. The natural content in the herbs does not have any reactions on the human body; rather enhance the body with supplements and other helpful minerals.

Benefits to select herbal

- 1.They are natural as well as gentle . It possess very mild & non toxicity, reduces risk of allergies or irritations, as compare to synthetic products.
2. Nutrient rich products. Most of herbs contains nutrients like Vitamins, minerals, & antioxidants which provides nourishment to skin and hair.
3. Specific properties : Herbal ingredients offer a range of benefits, including antioxidant, anti-inflammatory, and antiseptic properties.

Some common example of herbal ingredients:

1. **Oils** : Coconut oils, Jojoba Oil, Essential Oil like rose oils, lavender Oil, are very commonly used.
2. **Extracts** : Aloe vera , Henna , Amla&Reetha are preferably in many products.
3. **Miscellaneous** : Turmeric, Neem,Tulsi are also use in certain herbal cosmetics due to its various properties.

Classifications of Herbal Cosmetic products:

- ❖ **Skin Care Products** : Cream , Lotion, Cleansers, gels etc.
- ❖ **Hair Care products** : Shampoos, Conditioners , serum, hair oils etc.

Major Consideration to herbal:

- ❖ **Standardization & Quality**: It ensuring the quality & consistency of herbal ingredients & their formulations .
- ❖ **Slower result**: Many natural ingredients show desired result very slow as compare to synthetic products.
- ❖ **Masking Odors**: Some herbal ingredients possess strong odors need to mask their odor .

Compatibility task

Generally it is compatible with all , no matter you are dark or fair; you can use natural cosmetics like foundation, eye shadow, & lipsticks .Women having oily or sensitive skin can use , it doesn't produce any degradation on skin conditions.

They all are available at very affordable price . According to WHO , about 80% of world population uses natural care products for health benefits.

Applications of Herbal Products in Cosmetics:

- ❖ Herbal Skin Care Products: Lavender body powder and body soap, Silk Soaps and Care Creams.
- ❖ Herbal Hair Care Cosmetics: Herbal hair care cosmetics have a several ingredient e.gShikakai (Acacia concinna), Henna (Lawsoniainermis), Guar Gum (Cyamopsistetragonolobus),Amla (Embliaofficinalis), Brahmi (Bacopamonniari).
- ❖ Herbal Lip Care Cosmetics: Herbal Lip plumper, Herbal Lipsticks, Herbal Lip Balm and Herbal Lip Gloss.
- ❖ Herbal Eye Care Cosmetics: Eye Shadow, Eye Gloss, Eye Make Up, Liquid Eye Liners
- ❖ Herbal Creams, Lotions, Gel: Creams: Rich Face and Hand Cream, Aloe Moisturizing Hand

- ❖ Herbal Oils: Herbal oils are effective for baldness, falling of hair, thinning of hair, in treating irritation & Itching of scalp
- ❖ Herbal Perfumes & fragrances: Citrus Fragrance: The light, fresh character of citrus notes (bergamot, orange, lemon, petitgrain, mandarin etc.) is often combined with more feminine scents (flowers, fruits and chypre).

Hair

Hair: It is a personality, having around over two million hair follicles that each positive & negative impact on skin health.

It is one of very important components of our body that is derived from germ line / layer of skin. It is a work for protecting appendage for the body and it is contemplated as an adjunct structure of the body having cover like structure beside sebaceous gland and sweat gland.

During embryonic stage development they all are originated from stratum thus they are additionally referred to as circular derivatives. Follicle & hair shaft square measures two basic components of a hair. Hair growth pigmentation are biological activity of hair follicle. Hair shaft is principally created from super molecules and is taken into account to be dead. For the purpose of healthy & smart trying manageable hair, to require care of each follicle and hair shaft necessary. Coconut hair oil is prime oil penetrate each into hair shaft and follicle and also into the medulla that is the innermost layer of the hairshaft. In numerous seasons hair behave differentially e.g. in summer season heat removes moisture from hair resulting hair become dry & brittle.

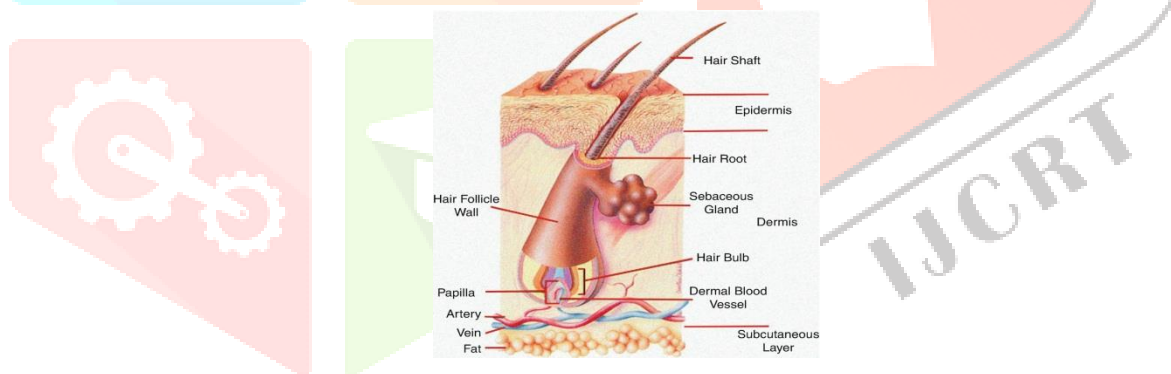


Fig. no.1: anatomy of hairs

Hair Growth cycle

There are three phases of hair growth cycle these square measure as:

- a) Anagen (Growth section)** – This is often a brief phase as 2-8 years and concerning eightieth of hair is in this phase.
- b) Catagen (Involution)** – This is often terribly short section 10-14 days and during this section the activity of hair growth will increase so hair moves to subsequent section.

c) Telogen (Resting phase) – During this stage hair is in resting stage and this stage is lasts for 90-100 days. typically 50-100 hairs square measure shed every which way a day. The telogen section could be a state at that the hairs get in resting state. over a hundred hair per day causes a state of phalacrosis (hair loss), although it may be temporary.

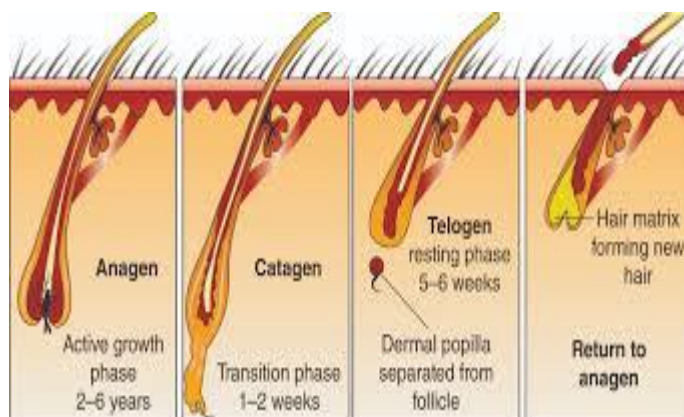


Fig.no.2 : Hair Growth cycle

Herbal Hair Soap

Importance of herbal hair soap is usually handmade and having 100% natural ingredients which impart only good for scalp & safe for environment too. Some herbs provide beautiful odor & color to the soap. Some natural ingredients relaxing to mind & stress relief. Other herb additives that contain a variety of healthy or nutritional values for hair growth, smoothing effect, nourishment to hair. While chemicals present in synthetic soap & shampoos may damage hair, change the texture & enhance hair fall.

2. Material & Methods

We collect this herbal ingredients from local vendors and glasswares used from pharmacognosy lab Talegaon Dabhade.



Fig no : 3 Collection of materials

1.Amla Powder

Biological source : *Phyllanthus emblica* L. (popular known as amla or Indian gooseberry) is an ephemeral tree belonging to the Euphorbiaceae family .



Fig.no.: 4 Amla powder

Amla (Indian gooseberry) offers numerous benefits for hair, including promoting growth, reducing hair fall, preventing premature graying, and strengthening hair follicles, all thanks to its rich nutrient content, especially vitamin C and antioxidants.

Various benefits of Amla :

- a. **Promotes Hair Growth and Strength:** Amla is known to stimulate hair follicles, which are the pockets in the skin where hair grows, leading to improved hair growth.
- b. **Strengthens Hair Follicles:** The vitamins and minerals in Amla nourish and strengthen hair follicles, reducing hair breakage and promoting stronger, healthier hair.
- c. **Reduces Hair Fall:** By strengthening hair from the roots, Amla helps to reduce hair fall and promote thicker, denser hair.
- d. **Improves Blood Circulation:** Amla helps improve blood circulation in the scalp, which is essential for healthy hair growth.
- e. **Nourishes the Scalp:** Amla nourishes the scalp, providing essential nutrients for healthy hair growth and reducing dandruff.
- f. **Conditions and Adds Shine:** Amla acts as a natural conditioner, making hair soft, smooth, and shiny.
- g. **Reduces Dandruff:** Amla's anti-inflammatory and anti-bacterial properties help to soothe and reduce dandruff.
- h. **Protects Hair from Damage:** Amla can protect hair from damage caused by heat, sun, and pollution.
- i. **Improves Hair Texture:** Amla can improve hair texture, making it smoother and more manageable.

2.Shikakai powder

Biological source : It is the dried gummy exudation of stem and branches of *Acacia Arabica* belonging to the family- Leguminosae.



Fig. no. 5: Shikakai Powder

Shikakai powder, derived from the *Acacia concinna* tree, offers numerous benefits for hair. It's a natural hair cleanser, conditioner, and a source of vitamins and antioxidants that promote healthy hair growth, reduce hair fall, and address scalp issues like dandruff. Shikakai also adds shine, softness, and manageability to the hair.

Various benefits of Shikakai powder

- a. Hair Cleansing and Conditioning (Natural Cleanser):** Shikakai contains saponins, a natural foaming agent that gently cleanses the scalp without stripping away natural oils, according to Mamaearth.
- b. Conditioning Properties:** It acts as a conditioner, adding shine, softness, and manageability to the hair, according to Amazon.in.
- c. Detangling:** Shikakai helps to detangle hair, making it easier to comb and manage, according to Amazon.in.
- d. Promoting Hair Growth and Health:** (stimulates Hair Follicles): Shikakai nourishes hair follicles, encouraging healthy hair growth and reducing hairfall.
- e. Controls Dandruff:** It has antifungal and antibacterial properties that help to combat dandruff and scalp infections.
- f. Strengthens Hair Roots:** Shikakai strengthens hair roots, making hair less prone to breakage and split ends.
- g. Prevents Premature Greying:** Antioxidants in Shikakai help to reduce oxidative stress on hair, which can slow down the greying process.
- h. Adds Shine and Softness:** Shikakai nourishes hair and improves its texture, making it look shiny and soft.
- i. Soothing for Scalp:** Shikakai can soothe irritated and itchy scalps.
- j. Maintains Natural Color:** Regular use of shikakai can help to maintain the natural color of hair.
- k.** Shikakai powder is a versatile and effective natural remedy for various hair and scalp concerns.

3.Reetha powder:

Biological source : Sapindus mukorossi (commonly known as soap nut or reetha) is a large sized deciduous tree belonging to the family Sapindaceae.



Fig no : 6 Reetha powder

Reetha fruit powder offers several benefits for hair, including promoting hair growth, reducing hair fall, and improving hair health. It's also known for its ability to cleanse the scalp, remove dandruff, and add shine to hair.

Various benefits of Reetha powder

- a.Strengthens hair follicles:**Reetha strengthens hair follicles, which can help reduce hair fall and promote healthier hair growth.
- b.Nourishes the scalp:**Reetha provides essential nutrients to the scalp, promoting a healthy environment for hair growth.
- c.Improves circulation:**Reetha powder on the scalp can improve blood circulation, which is beneficial for hair follicle health.
- d.Mild cleanser:**Reetha acts as a gentle cleanser, removing dirt, excess oil, and product buildup from the scalp without stripping away natural oils.
- e.Anti-dandruff properties**Reetha has anti-dandruff and anti-fungal properties, which can help combat dandruff-causing fungi and keep the scalp healthy.
- f.Balances pH levels:**Reetha can help maintain the scalp's natural pH balance.
- g.Restores natural shine:**Reetha can help restore hair's natural shine and remove dullness, leaving hair looking healthy and vibrant.
- h.Conditions and softens hair :**Reetha contains natural conditioning properties that can soften and smoothen hair, making it easier to manage.
- i.Reduces frizz and detangles hair:**Reetha can help tame frizz and detangle hair, making it easier to comb and style.
- j.Help with lice removal:** Rreetha can help remove lice from the scalp.
- k.Prevent hair damage:** Reetha's natural antioxidants may help protect hair from environmental damage and free radicals.
- l.Help enhance natural hair color:** Reetha may help preserve natural hair color and prevent premature greying.

4.Hibiscus powder

Biological source:hibiscus, (genus Hibiscus), genus of numerous species of herbs, shrubs, and trees in the mallow family(Malvaceae)



Fig no7 : Hibiscus powder

Various benefits of Hibiscus powder :

Stimulates hair growth:

Hibiscus is rich in amino acids and vitamins that nourish hair follicles and stimulate hair growth.

a.Strengthens hair:

Amino acids in hibiscus help strengthen the hair shaft, making hair less prone to breakage.

b.Conditions and moisturizes:

Hibiscus powder acts as a natural conditioner, moisturizing and softening the hair.

c. Treats dandruff and scalp issues:

Hibiscus has antifungal properties that can help reduce dandruff and itchy scalp.

d. May prevent premature greying:

Hibiscus can help delay hair greying due to its natural pigments and antioxidants.

e. Reduces hair fall:

By strengthening hair and promoting growth, hibiscus can help reduce hair fall.

5.Bhringraj powder:

Biological source : Bhringraj powder is derived from the leaves and flowers of the Bhringraj plant, scientifically known as Eclipta alba or Eclipta prostrata, a member of the sunflower family Asteraceae.



Fig.No.8: Bhringraj Powder

Various benefits of Bhringraj powder

a. Promotes Hair Growth:

Bhringraj is known to stimulate hair follicles, potentially leading to increased hair growth.

b. Reduces Hair Fall: Regular use of Bhringraj powder can help strengthen hair and prevent hair loss, particularly due to scalp inflammation, infections, or dandruff.

c. Strengthens Hair Roots:

Bhringraj nourishes hair follicles, which can strengthen the hair roots and improve hair health.

d.Improves Hair Texture and Shine:

Bhringraj can enhance hair texture, making it appear smoother, softer, and more lustrous.

e.Prevents Premature Greying: Bhringraj may help prevent or delay the greying of hair due to its ability to rejuvenate hair.

f. Treats Dandruff and Scalp Infections:

Bhringraj's anti-inflammatory properties may help soothe irritated scalps and reduce dandruff and scalp infections.

g. May Help with Baldness:

While not a cure for complete baldness, Bhringraj can help slow down hair loss and encourage new growth in thinning areas

6.Aloevera :

Biological source : The botanical name of Aloe vera is Aloe barbadensis miller. It belongs to family Liliaceae.



Fig No .9 Aloevera

Various benefits of Alovera :

a.Moisturizing and Hydrating: Aloe vera helps to keep hair hydrated by locking in moisture, making it soft and shiny.

b. Promoting Hair Growth: Aloe vera contains nutrients that support hair growth and can help make hair stronger and healthier.

c. Soothing and Calming the Scalp: Aloe vera can soothe an itchy or irritated scalp, making it a good option for those with scalp conditions.

d. Reducing Dandruff: Aloe vera's properties can help to reduce dandruff, keeping your scalp clean and healthy.

e. Strengthening Hair: Regular use of aloe vera can make hair stronger and less prone to breakage.

f.Balancing Scalp pH: Aloe vera helps to balance the pH levels of your scalp, which is important for healthy hair.

g.Preserving Hair Color: Aloe vera can help to protect hair color and prevent it from fading prematurely.

h. Protecting Against Sun Damage: Aloe vera can help protect hair from damage caused by the sun.

i. Cleaning Oily Hair: Aloe vera has enzymes that can help cleanse and remove excess oil from the scalp.

7.Jasmine Oil :

Biological source : The biological source of jasmine is the Jasminum genus, a group of shrubs and vines in the olive family Oleaceae



Fig No.10 jasmine oil

Various benefits of jasmine oil

a.Hydration and Moisture:

Jasmine oil can effectively hydrate dry scalps and hair strands, helping to combat dryness and flakiness.

b.Frizz Control:

The oil's moisturizing properties can help to tame frizz and leave hair feeling smoother and more manageable.

c. Hair Strengthening and Breakage Reduction:

Jasmine oil can help strengthen hair follicles and prevent breakage, leading to healthier, more resilient hair.

d. Scalp Health:

Jasmine oil's antifungal and antibacterial properties may help to treat scalp infections and promote a healthy scalp environment.

e. Hair Growth:

By stimulating blood circulation in the scalp and nourishing hair follicles, jasmine oil may contribute to improved hair growth.

8.Neem Powder

Biological source : Neem is derived from the neem tree, scientifically known as *Azadirachta indica* (also called the Indian lilac or margosa). It is a tree in the mahogany family Meliaceae



Fig no.11 Neem powder

Various benefits of Neem powder

a. Promotes hair growth

Neem strengthens the hair follicles restricting hair fall and promoting more and more hair growth. While it does its work, it also keeps up with your hair making it look thicker and stronger. There are always risks of hair fall, damaged hair, and rough hair when you grow your hair long. **Organic neem powder** will also restrict hair breakage and dandruff, keeping your hair healthy. It also helps you maintain the volume and length of your strong hair.

b. Naturally conditions your hair

Neem not only helps in washing your hair while removing all the impurities but also conditions them. Hair conditioning is as important as washing your hair. It reduces split ends, prevents damaged hair, and eradicates roughness and frizziness.

c. No more itchy scalp

Itchy scalp is a result of dry scalp, especially during winters. We usually skip the 'hair-wash' days due to our busy schedules. Use organic neem powder on your hair or choose more such natural hair care products at Herbal Magic to get rid of an itchy scalp.

d. Strengthens

It is multi-purpose and multi-beneficial, which not only strengthens your hair deeply but also prevents it from getting dull and weak. It is also recommended to follow a hair care routine depending on your hair type. Herbal Magic's organic neem powder will be your best remedy for hair strengthening.

3. Formulation table:

Sr.no	Ingredients	Quantity taken	Uses
1	Aloevera	0.5 gm	Soothing Effect
2	Bhringraj powder	2 gm	Antibacterial
3	Shikakai powder	2.2gm	Detergent

4	Neem powder	1.9gm	Antioxidant,Cleansing Agent
5	Hibiscus powder	1.2gm	Stimulate hair growth
6	Reetha powder	1.5gm	Foaming Agent
7	Jasmine powder	QS	Hair growth nutrients,Flavouring Agent

Table no. 1

4.Procedure:

- 1.Weigh all ingredients accurately.
- 2.Weigh and melt require quantity of soap base in a beaker with low flame.
- 3.Weigh and mix herbal powder material separately without perfume.
- 4.Remove the beaker from the heating source.
- 5.Add fine powder of soap making with continuos stirring should not form thick of solid preparation.
- 6.Pour the sample after including a perfume in silicon soap mold allow to get contents and place in cool temperature for not less than 2 hours.

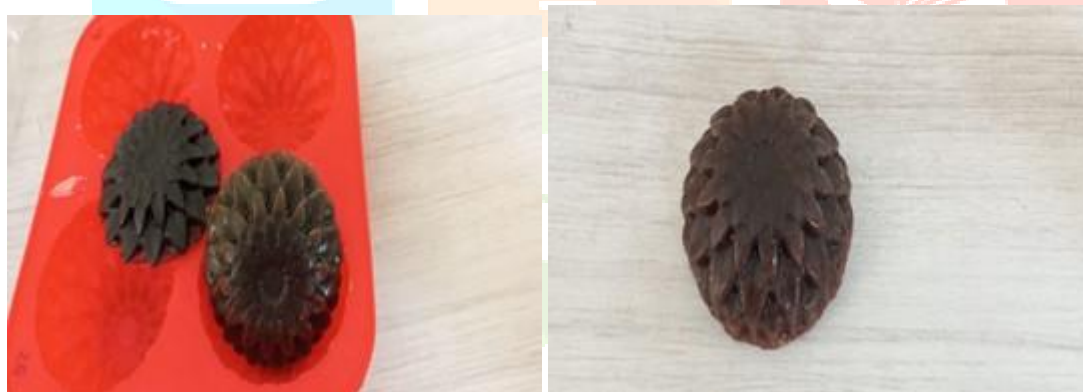


Fig no.12 : Final Product of herbal hair soap.

5.Evaluation Parameter

Sr No.	Parameter	Observation
1	Colour, Odour,Appearance	Brown,Aromatic And Smooth texture
2	PH	9.4
3	Foam height	7 cm
4	Total fatty matter	0.03%
5	Alcohol soluble matter	25%
6	Foam retention	Over 4 min foam was stable
7	Moisture content	1.01%

6.Result :

Herbal soap are known for their impurities and moisturize hair , it gives antibacterial properties , antidandruff properties , all ingredients was available to produce this soap , which give better result. Formulated herbal soap was observed to be brownish in colour. Odour of soap well accepted and pleasant. It was easily washable with water. Overall it show good result.

7.Conclusion :

All ingredients shows protective effect as we have concluded no any side effects are observed. It is ecofriendly due to natural herbal ingredients are used. It is safe. The formulated herbal soap has acceptable suitable physical characteristics for hair care. The PH similar to the natural PH of scalp. Hence we conclude that this herbal soap formulation is better than synthetic soap.

Figure and table no : Herbal soap

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