Formulation and Evaluation of Herbal Hair Oil

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ABSTRACT:

Herbal preparations have garnered significant interest due to their therapeutic efficacy and relatively low risk of side effects compared to synthetic alternatives. Hair loss is a widespread concern affecting both genders, often resulting from issues such as dandruff, scalp irritation, and hair breakage. This study focused on formulating a herbal hair oil utilizing natural ingredients including Brahmi, onion, banyan root, amla, and fenugreek seeds. The final product was subjected to various physicochemical evaluations such as pH, saponification value, viscosity, and specific gravity to assess its quality and effectiveness.

Introduction:

Hair fall is a growing concern among men and women alike, causing both physical dis- comfort and emotional stress. This condition, often referred to as alopecia, has prompted a search for safe and effective treatments. Herbal remedies are widely used as alternatives to chemical-based products, offering benefits such as improved scalp health, reduced dan- druff, and stimulation of hair growth. Traditional Indian medicine emphasizes the use of herbs like amla, brahmi, onion, banyan root, and fenugreek, which have been shown to possess properties that support healthy hair development.

Collection and Importance of Herbal Ingredients

Onion(Allium Cepa): Family- Amaryllidaceae

Onion is rich in sulfur-containing compounds that enhance blood circulation to hair fol- licles, supporting hair regrowth. The bulb also contains flavonoids and antioxidants like quercetin, which help reduce inflammation and oxidative stress on the scalp.

Figure 1: onion

Amla(Indian gooseberry): Family- Phyllanthaceae

It is a powerful source of vitamin C and antioxidants. It strengthens hair roots, prevents premature graying, and nourishes the scalp, making it an essential component in hair treatment formulations.

Figure 2: Amla

Brahmi(Bacopa monnieri): Family- Plantaginaceae

Brahmi helps reduce dryness, itchiness, and scalp flakiness. It is traditionally known to nourish hair roots, reduce hair fall, and add natural shine to the hair due to its saponin and alkaloid content.

Figure 3 : Brahmi

Banyan tree root(Ficus benghalensis): Family- Moraceae

Extracts from the banyan tree have been used in folk remedies for promoting hair thick- ness and controlling hair loss.   The roots contain beneficial phytochemicals such as flavonoid glycosides and phytosterols.

Figure 4: Banyan tree root

Fenugreek seeds(Trigonella foenum-graecum): Family- Fabaceae

That seeds are famous for their high protein and iron contents. They help prevent   dandruff, improve hair density, and may inhibit DHT (dihydrotestosterone), which is a known contributor to hair loss.

Figure 5: Fenugreek seed

Hibiscus (Hibiscus rosa-sinensis): Family- Malvaceae

Hibiscus, commonly known as China rose or shoe flower, is a flowering plant widely recognized for its use in traditional hair care remedies. The vibrant red petals are rich in amino acids, flavonoids, mucilage, and antioxidants that help rejuvenate hair follicles, stimulate growth, and reduce hair fall.

The flower is often used in powdered or paste form in herbal oils to condition hair and enhance shine. Additionally, hibiscus supports scalp health by combating dryness and dandruff. Due to these benefits, hibiscus is frequently incorporated in Ayurvedic and herbal hair formulations aimed at improving hair thickness and promoting natural hair color retention.

Figure 6: Hibiscus

Advantages of ingredients:

S. NO.	contents	Advantages
1	Onion	For good hair health, promoting hair growth as well as Preventing hair loss.
2	Amla	For Hair growth, make strong hair roots, maintains colour and increase luster.
3	Brahmi	For Nervine tonic, decrease hair dryness, decrease itchiness and flaking.
4	Banyan tree roots	For decrease Hair fall control and make hair strong from roots.
5	Fenugreek seeds	For getting high proportion iron as well as protein, and hair growth and its anti-inflammatory and antifungal.
6	Hibiscus	Treating scalp conditions like dandruff and itchiness

Formulation Process:

Equal quantities of dried and powdered herbal ingredients were measured and combined. The blend was simmered with 100 ml of coconut oil and 50 ml of purified water over low heat with constant stirring until the water evaporated. The oil was then filtered through a muslin cloth, collected in dark glass bottles, and fragranced lightly with a natural essence.

Table 1: **Formulations**

Sr. No	Ingredients	F1	F2	F3	F4
1	Onion	7gm	9gm	11gm	13gm
2	Fenugreek seeds	7gm	9gm	11gm	13gm
3	Amla	7gm	9gm	11gm	13gm
4	Banyan tree roots	7gm	9gm	11gm	13gm
5	Brahmi	7gm	9gm	11gm	13gm
6	Purified water	50ml	50ml	50ml	50ml
7	Coconut oil	100ml	100ml	100ml	100ml

Evaluation Methods for Herbal Hair Oil

Skin Sensitivity Test: To assess potential irritation, a small amount of the formulated oil was applied to a 1 cm² area of skin on the hand. The test site was then exposed to sunlight for 4–5 hours to observe any adverse reactions.

Saponification Value: This was determined by dissolving a measured quantity of the oil in an ethanol-ether mixture, followed by the addition of 0.5N alcoholic potassium hy- droxide (KOH).

pH Determination: The pH of the oil was measured using a calibrated digital pH meter. The electrode was rinsed with deionized water before each reading to ensure ac- curacy.

Viscosity Measurement: The oil's viscosity was assessed using an Ostwald viscometer. The flow time of the oil between two marked points was recorded and compared with the flow time of distilled water to calculate viscosity.

Specific Gravity: This parameter was measured using a specific gravity bottle (pyc- nometer).

RESULTS: Evaluation of herbal hair oil

S. No.	Parameter	F1	F2	F3	F4
1	Sensitivity test	No Reaction	No Reactionn	No Reaction	No Reaction
2	pH	6.9	6.8	6.9	6.9
3	Saponification value	199.16	198.14	199.34	197.99
4	Odour	Pleasant	Pleasant	Pleasant	Pleasant
5	Grittiness	Soft	Soft	Soft	Soft
6	Viscosity	0.00533	0.00533	0.00532	0.00530
7	Specific gravity	114.8	114.4	114.2	115.4
8	Colour	Faint Brown	Faint Brown	Faint Brown	Faint Brown

CONCLUSION:

Herbal hair oil formulated using traditional Ayurvedic ingredients offers a natural and effective approach to hair care. This preparation not only hydrates the scalp but also helps in alleviating dryness and brittleness of the hair. Enriched with essential nutrients such as vitamins, minerals, and natural phytochemicals, the oil supports the normal function of sebaceous glands and encourages healthy hair growth. Based on the evaluation parameters, the product falls within acceptable quality standards. Overall, the herbal oil shows promising potential in minimizing hair damage caused by environmental stress and in improving overall scalp and hair health.