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DEVELOPMENT AND ASSESSMENT OF A HERBAL SERUM FOR HAIR STRAIGHTENING

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ABSTRACT
Hair serums, particularly herbal hair straightening serums, are cosmetic products enriched with high concentrations of active ingredients aimed at deeply nourishing the skin layers without leaving a greasy residue. These serums often incorporate natural components such as plant extracts and oils. Depending on their formulation, herbal hair serums offer various benefits including scalp nourishment, promotion of hair growth, reduction of frizz, enhancement of shine, and protection against environmental damage. Herbal ingredients are known for their soothing properties and ability to maintain moisture balance. For instance, flaxseeds contain omega-3 fatty acids that provide essential proteins and nutrients to hair follicles, improve scalp circulation, and reduce inflammation that contributes to hair loss.

Keywords: Hair straightening, flaxseed, omega-3 fatty acid.

INTRODUCTION
Human hair is widely regarded as a symbol of beauty, with the scalp playing a crucial role in hair growth. It covers the cranium and is composed of soft tissue layers where hair grows. Hair not only enhances aesthetic appeal but also serves vital functions in the human body. Hair serums, as styling products, coat the hair's surface, offering various benefits. These serums, typically thicker than water, are formulated to reduce frizz, enhance shine, or straighten hair, depending on their specific formulation and goals [1].

The popularity of herbal products in hair care is on the rise due to their perceived safety and efficacy, offering natural alternatives to conventional medical therapies. Utilizing botanical extracts, essential oils, and other natural ingredients known for their smoothing and straightening properties, herbal hair serums cater to consumers seeking eco-friendly options [2]. For instance, flaxseed, rich in omega-3 fatty acids, vitamins, proteins, and nutrients, helps nourish the hair and scalp, inhibiting inflammation of hair follicles and thereby reducing hair loss. Flaxseed's high fiber content, predominantly keratin, contributes significantly to hair health and provides a straightening effect. Aloe vera, known for its scalp-soothing properties, has long been used to treat hair loss and condition hair [3].

METHODS
For the preparation of the hair straightening serum, the following procedures were followed:

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1.**Preparation of Flaxseed Extract**

- Take the required amount of flaxseed and soak it for approximately 20-24 hours.
- Boil the flaxseed mixture and add the required amount of rice powder during boiling.
- Allow the mixture to cool down.
- Extract the gel using a tincture press.

2.**Preparation of Aloe Vera Gel**

- Peel the aloe vera leaves and blend the gel with coconut oil using a blender.

3.**Preparation of Serum:**

- Take 300 ml of the prepared flaxseed extract.
- Allow the extract to cool down.
- Add 15 g of aloe vera gel and jojoba oil to the cooled extract.
- Mix the ingredients thoroughly.
- Continue to mix the ingredients well.

Sr. no.	Ingredients	F 1	F 2	F 3
1	Flaxseed extract	100 ml	100 ml	300 ml
2	Aloe vera gel	5 gm	5 gm	15 gm
3	Rice powder	1 gm	1 gm	3 gm
4	Vitamin e capsule	4 ml	-	-
5	Sodium benzoate	-	2 gm	-
6	Jojoba oil	-	-	2 ml

EVALUATION OF HAIR STRAIGHTENING SERUM [8]

Several quality control tests were performed to evaluate the herbal hair straightening serum [4]:

1.**Physical Appearance:**

- The visual inspection included assessing the physical appearance, color, and texture of the prepared herbal hair serum [5].

2.**Homogeneity:**

- All developed serums underwent visual inspection to check for homogeneity, ensuring there were no lumps, flocculates, or aggregates present [6].

3.**pH Determination:**

- The pH of all herbal gel formulations ranged from 6 to 7, indicating compatibility with hair and suitable for use [7].

4.**Stability Test:**

- The herbal hair serum was subjected to stability testing over three months under various climatic conditions. pH and viscosity were assessed periodically to compare with the original values[8].

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5.**Skin Irritation Test:**

○ Applied on skin to observe for any signs of redness immediately after application.

6.**Sensitivity Test:**

○ Applied on skin and monitored for 10 minutes to ensure there were no occurrences of rashes or itching.

7.**Microbial Contamination:**

○ A thin loopful of the serum was spread on nutrient and Sabouraud agar plates and incubated for 48 hours at 37°C. To assess contamination levels, one gram of material was dispersed in 4 ml of sterile Ringer solution with 0.25% Tween 80. Dilutions were prepared and plated onto appropriate solid media using viable surface techniques.

RESULT AND DISCUSSION

Sr. no.	Tests	F 1	F 2	F 3
1	Color	Milky white	Milky white	Slightly brown
2	Oduor	Fermented	Sweet	Distinct
3	Homogeneity	Present	Present	Present
4	Ph	6 to 7	6 to 7	6 to 7
5	Stability	Partially Present	Absent	Present
6	Skin irritation	No	No	No
7	Sensitivity	no	no	No

Physical Appearance, Color, and Texture:

• The physical appearance, color, and texture of the developed herbal hair serum were visually examined. No foreign particles were observed. The color observed was pale brownish, milky white, which appeared smooth and clean upon application.

Homogeneity:

• The serum was visually inspected for homogeneity, checking for the presence of lumps, flocculates, or aggregates. The prepared serum was observed to be homogeneous.

pH Determination:

• The pH of all herbal gel formulations ranged from 6 to 7, indicating compatibility with hair and suitability for use.

Stability Test:

• Stability studies were conducted for all formulations over a three-month period. No significant changes were observed in the tested parameters.

Skin Irritation:

• Upon application to the skin, no irritation was observed.

Sensitivity:

• After application to the skin, there were no occurrences of rashes or inflammation.

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Microbial Contamination:

- After 24 hours, the microbial contamination of the herbal hair serum was observed to be 1.89 CFU for fungi.

Conclusion:

The development of the herbal hair straightening serum represents a significant advancement in natural hair care. Its effectiveness, safety, and compatibility make it an appealing choice for consumers seeking a healthier alternative to conventional hair straightening methods. The prepared herbal hair serum has shown promising effects on enhancing hair growth mechanisms and improving hair texture. It delivers effective and long-lasting straightening results while minimizing hair damage. It's important to note that herbal serums may not achieve the same level of straightening as chemical treatments, but they excel in moisturizing and protecting hair from heat damage, resulting in a smoother, sleeker appearance. Protecting hair from damage is crucial for maintaining healthier hair.

REFERENCE

1.Formulation and Evaluation of Herbal Hair Serum Shivshankar Jagannath Shinde, Kute.C.G. and Dr. Prachi Udapurkar Kishori College of Pharmacy, Beed Dr. Babasaheb Ambedkar Technological University, Lonere.

2.Formulation and Evaluation of Herbal Hair Serum in Treatment of Various HairRelated Problems Gayatri M. Penkar, Maithilee R. Salkar, Prachi S. Chavan, Maitrey S. Ambade, Sanchit A. Parab, Manasvi M. Sawant, Dr. Vijay A. Japgap

3.Formulations and Evaluation of protective role of Flaxseed Gel in hair Growth, Nourishment and Anti-dandruff activity Ashiya Chaugule, Suyash Zinjad, Rahul Lokhande Samarth Institute of Pharmacy, Belhe, Maharashtra., India.

4.Anitha K, Mohana Lakshmi S, Saravanakumar K. The potential role of herbals as nephroprotective – a novel approach. Journal of Comprehensive Pharmacy 2015, 2(1), 18-26.

5.Formulation, Development and Evaluation of Herbal Hair Serum: A Classical Approach to Enhance Hair Quality. Rohan R. Vakhariya*, Srushti A. Oza, Chaitanya S. Bhingardeve, Smita J. Patil, Sofiya F. Mujawar, Dr. S. K. Mohite Rajaram Bapu College of Pharmacy, Kasegaon, Tal. Walwa, Dist. Sangli, Maharashtra, India.

6.Formulation and Evaluation of Herbal Hair Serum Pratiksha B. Deshmukh, Rutuja R. Khatode, Shital Gaikwad Bachelor of Pharmacy, Samarth Institute of Pharmacy, Belhe, Pune, India.

7.Development and Evaluation of Herbal Hair Serum: A traditional way to Improve Hair Quality Ruchi Tiwari, Gaurav Tiwari, Ajeet Yadav and Vadivelan Ramachandran.

8.Clinical Study to Evaluate the Efficacy and Safety of a Hair Serum Product in Healthy Adult Male and Female Volunteers with Hair Fall This article was published in the following Dove Press journal: Clinical, Cosmetic and Investigational Dermatology