

A Review on Herbal Hair Gel

Gunjal Komal¹, Kopnar Vishal², Khedkar Amol³, Giramkar Ankita⁴

¹Research Scholar, ²Project Guide, ³Principal Sir, ⁴Teacher

Abstract

Hair gel is made with natural components and herbal extracts, herbal hairgel eliminates dandruff and helps regulate hairloss. Vitamin E found in flaxseed (*Linum usitatissimum*) promotes stronger follicles and better hair development. Color, smell, gel texture, clarity, pH, viscosity, spreadability, extrudability, gel strength, homogeneity, stability studies, and in vitro anti fungal activity were among the parameters that were assessed for the formulations (F1 to F5). Many herbal plants are used to stop hair loss and encourage hair growth. In the current work, jatamansi and guar gum are used to produce hairgel. Jatamansi has been demonstrated to have the ability to promote hair development, while guar gum moisturizes the hair by trapping in moisture. After that, the gel that was produced was combined with the jatamansi extract. Alkaloids, saponins, polysaccharides, and flavonoids are all present in the extract of jatamansi. Numerous physical characteristics of the formulation, including pH, viscosity, homogeneity, spreadability, stability studies, skin irritation, and washability, were assessed. The leaves of Hingna are abundant in mono- and sesquiterpenoids demonstrated antibacterial properties. *Azadirachta indica* is a tree in the Meliaceae family of mahogany, also known as neem, nimb tree, and Indian lilac.

Keywords: -Flaxseed, aloe vera, jatamansi, Anti-fungal activity.

Introduction

Hair is an outgrowth from follicles that were discovered in the scalp's dermis. It is made up of closely packed, keratinized, dead cells the tresses. The cuticle, cortex, and medulla make up the structure. Hair damage includes split ends and over processing stress, fungal infections, and hard water damage to hair, etc.

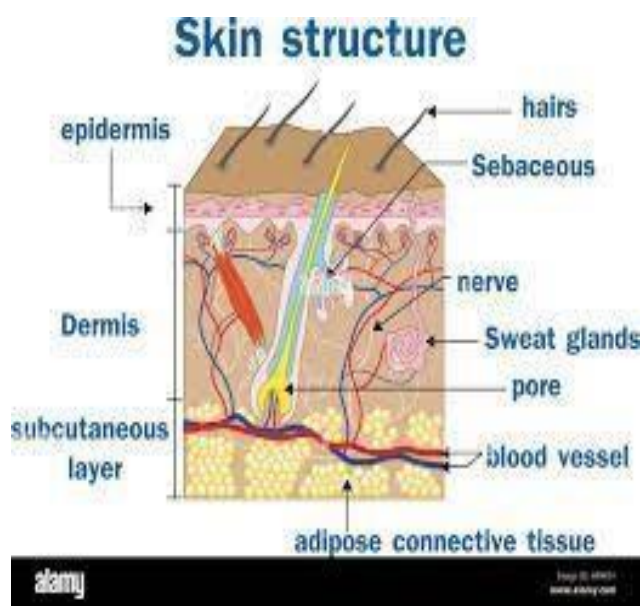


Fig No. 5 Skin Structure

| Type 1 Straight | | |
|-----------------|---------------------|---|
| 1a | Straight(fine/thin) | Hairs tends to be very soft, shiny, oily and poor at holding curls |
| 1b | Straight(Medium) | Hair characterized by Volume and body |
| 1c | Straight(Coarse) | Hairs tends to be bone straight and difficult to curl |
| Type 2 Wavy | | |
| 2a | Wavy(fine/thin) | Hair has definite “S” pattern and is usually receptive to a variety of styles |
| 2b | Wavy(Medium) | Can tend to be frizzy and little resistant to styling |
| 2c | Wavy(Coarse) | Very frizzy with thicker waves often more resistant to style |
| Type 3 Curly | | |

| 3a | Curly(Loose) | Curly hairs that usually present defiantly in “S” pattern |
|--------------|--------------|--|
| 3b | Curly(Tight) | 3aastighterlikeaspiral |
| Type 4 Kinky | | |
| 4a | Curly(soft) | Hairs tends to be very fragile tightly coiled and future curly pattern |
| 4b | Curly(wiry) | As4a with less visible (nocurly) pattern |
| 4c | Curly(wiry) | As4aand4bbutalmostdef inedcurlypattern |
| | | |

History

Men utilized petroleum jelly, macassar oil, and maize oil as hair gel before it was created. In 1928, a business named Chemical Works in Birmingham, England, made the decision to sell a product it had produced the year before, Brylcream. Chemico Works was well-known for producing potent cleaning products for the home and kitchen. Brillcream, sometimes known as Brylcream, was used to hold combed hair in position. It was the first hair gel available to the general public. Its appealing feature was that the user could arrange their hair anyway they wanted by simply rubbing a small amount of the cream between their palms.

Following its rise to fame in England and Europe, it made its way to North America where it soon became well-known as a stylish hair style tool for Both men and women.



Fig1:-Flaxseed

Flax seeds are rich in fatty acids and antioxidants, which aid in clearing the scalp of pollutants and dead cells. There are more omega 3 fatty acids in flax seed. Aloe Vera, which has minerals, amino acids, vitamins A, B12, C, and E, is particularly useful in treating dandruff. Dandruff will be eliminated and hair fall will be controlled using a hair style gel that contains flaxseed and aloe vera. One of the primary causes of hair loss is dandruff. However, dandruff is a relatively common hair issue that affects people of all ages and is not contagious. Pityriasis simplex capitis is the medical term for the shedding of dead scalp skin. It could be greasy or dry. Herbs are priceless gifts from nature, and lately, there has been an explosion of herbal cosmetics on the global market.



Fig2:-Morphology of Murraya koenigii

Add shine to hair, prevent the premature greying of the hair and provide nutrients. Curry leaves are packed with essential nutrients, vitamins, and proteins that help nourishes the scalp, and strengthen the hair follicles, and they also prevent the hair loss.



Fig3:-Hibiscus

Botanical name- *hibiscus rosa sinensis*.

family- malvaceae; synonym- *hibiscus mutabilis*, roselle. Stop hair loss. Keeps your hair healthy and shiny. Helps with abnormal graying. Add thicker hair volume. Treats dandruff. Avoid curling, blanking, and breakage. Help with split ends. Hibiscus contains amino acids that can help to stimulate blood circulation in the scalp, which can encourage hair growth. It can also help to strengthen the hairshaft and prevent breakage. Conditions the hair: Hibiscus can help to condition the hair, making it smoother and more manageable.



Fig.4:- Morphology of Neem

Azadirachta indica, a tree of the Meliaceae family of mahogany, is sometimes referred to as neem, neemtree, and Indian lilac. Since ancient times, the neem tree has been used extensively in both agricultural and Ayurvedic medicine. Neem actively cleanses and strengthens hair follicles. This has a lot of benefits of neem for hair. Increased blood circulation in your scalp gives you stronger and healthier roots, therefore lustrous, stronger, and healthier hair as well. Wash hair with neem water to reduce dandruff and hairfall problems. Apply a neem leaf pack on your scalp once every 15 days to reduce scalp dryness and itching. A neem oil massage is a great way to relax and improve blood circulation.

Advantages:-

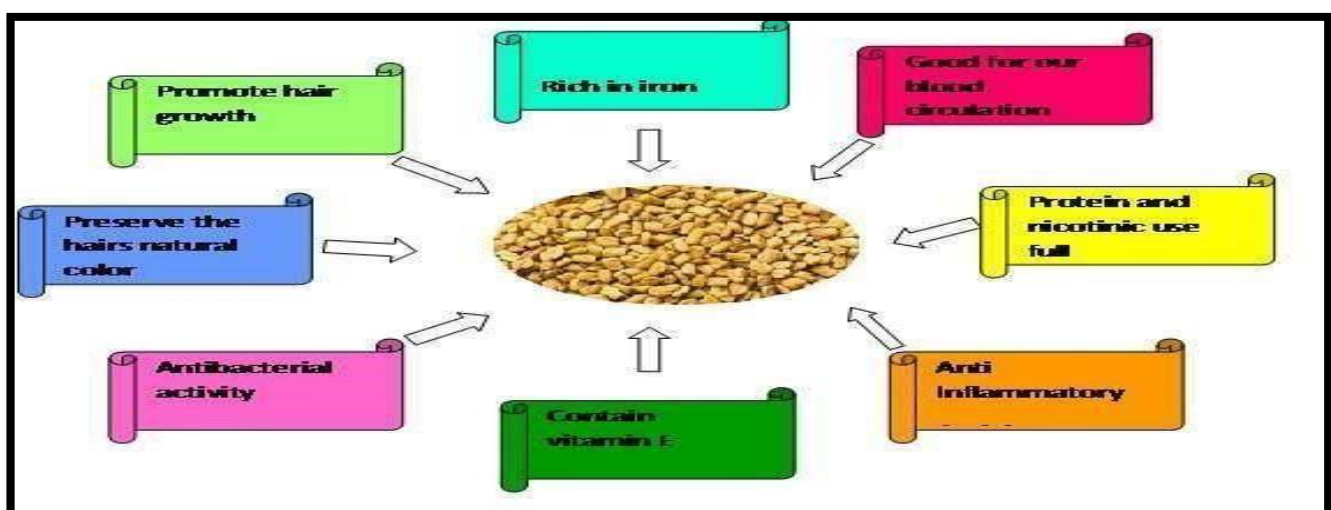
- Gels are utilized to attain the best possible cutaneous and percutaneous drug administration.
- They can also prevent gastro intestinal drug absorption issues brought on by acidity in the gastro intestinal tract.
- To get the best cutaneous and percutaneous medication delivery, gels are used.
- They can help stop problems with drug absorption in the gastro intestinal system caused by the stomach's acidity.

Disadvantages:-

- Reactions triggered by allergies are possible with gels.
- An enzyme found in the skin may denature the gel's medication.
- Drugs with bigger particles don't pass through the skin and absorb.
- Some medications are not well absorbed via their skin.

Topical drug delivery system:-

The body's largest organ for easy medication delivery is the skin. The skin serves as the primary drug administration channel for topical drug delivery systems. The primary idea behind topical drug delivery systems is that drugs permeate through the skin and are successfully delivered locally or at the right concentration as needed. Clinical evidence suggests that topical gel is a safe and effective treatment.



Excipients and Instrument

Types:

In the late 1930s, businesses began to sell various hair gels, catering to both men and women. Companies started producing hair gel in the 1980s and 1990s in a variety of forms, such as spray, thick wax, or gel or liquid consistency, based on the kind of "hold" customers desired for their hair. Many businesses focus their efforts on producing high quality hair products, but many more merely make hair gels on the side. Hair gels are available in a variety of colors, styles, and races. Today's most popular hair gels include gels, liquid sprays, pomades, wax, creams, and serums; all of these products use petrolatum, oil, or wax to give hair a sleek, easily styled look.

Functions:

Hair gel is used for men and women to create hair styles, from mild to extreme. Styles includes licking hair back, sticking hair straight up as in a Mohawk style, keeping curls in place or keeping hair straight, making hair have a "bed head" look (tousled but stylish, as if the person just rolled out of bed), side swept bangs, "preppy" styles, "punk" styles and many, many more. You can use as much product or as little as you like, since it depends on the Length and amount of hair that is being styled.

Hair disease:



Fig6:- Hair follicle

- Deformity of bubble hair.
- Hair loss(alopecia)
- Hair casts (remaining portions of the inner root sheath lost)
- Hirsutism(intense hair growth on body regions that typically have little hair)

- Hypertrichosis, or the over growth of hair
- Intruded hair
- Monilethrix, the hairstylist
- Hair that gays toosoon
- Pattern loss of hair
- Trichorrhaxis invaginata, an anomaly of the hair shaft
- Trichotillomania, or the disorder of hair pulling

Hair anatomy

The hair's macroscopic and microscopic structures The epidermis gives rise to hair. While hair is a component of individual live hair follicles inside the skin, it is thin, flexible tubes of dead, fully keratinized epithelial cells outside the skin.

From a macro structural perspective, hair differs between ethnic groups and between individual people in terms of length, diameter, color, and cross-sectional shape.⁹

The follicle in the epidermis and the hair shaft, which is visible on the exterior of the body, are the two distinct structures that make up hair.

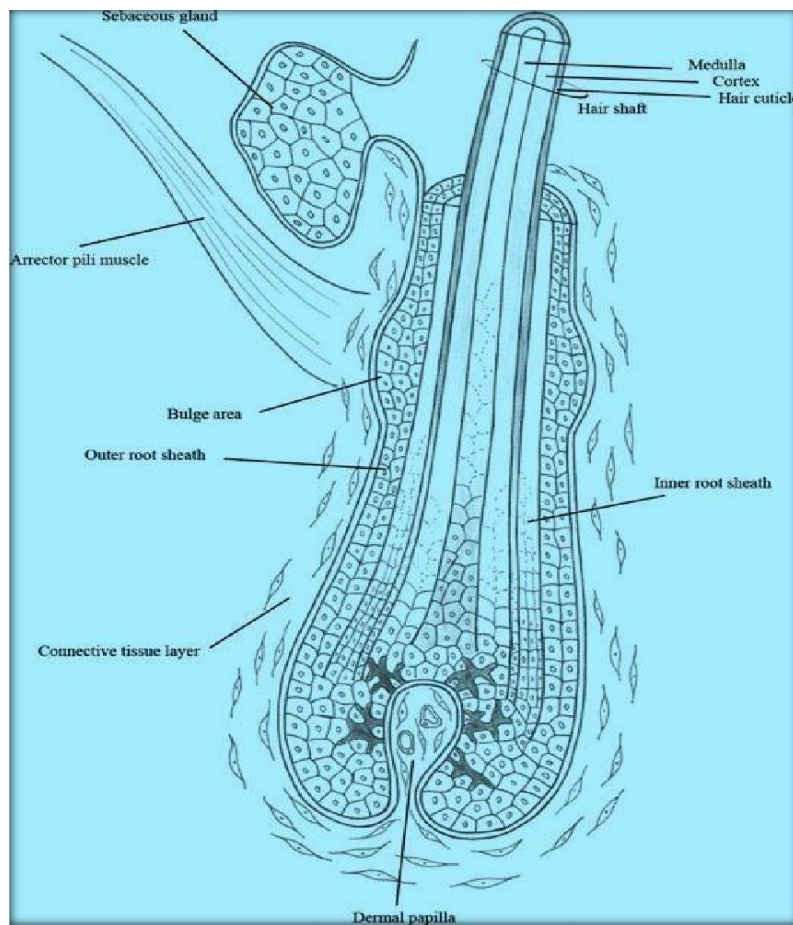


Fig:-7 Hair Anatomy

Classification of hair:

Humans have a variety of hair types that can be categorized based on the shape and position of their bodies. Additionally, factors that are considered when categorizing hair types include size, the angle at which the hair penetrates the skin, the time during development at which the hair first appears, and structural variations in the hair follicles, such as hair follicle density, follicular orifice size, hair shaft diameter, volume, and surface of the infundibula. Hair shaft diameters vary just slightly (16–42 μ m); the forehead (16 μ m) has the lowest shaft diameter and the sural (42 μ m) and thigh (29 μ m) the most. The forehead has the highest average density of hair follicles (292follicles/cm²).

Evaluation of heral hair gel:**1) HOMOGENEITY:-**

Visual inspection was used to verify the homogeneity of all the advanced formulations. Their image and occupancy of certain lumps, flocculates, or aggregates were demonstrated

2) PH: -

With a digital pH meter, the gel formulation's pH was ascertained. After dissolving one gram of gel in 100 milli litres of distilled water, the pH was measured three times, and the average was determined.

3) SPREADABILITY:-

The gel (2g) was placed between two glass slides and weighed out. On the slides, 500g of weight was applied. The weight was applied for a pre determined duration of five minutes.

4) VISCOSITY:-

Viscosity of herbal gels was determined by using Brookfield rotaonal viscometer at100 rpm

5) PHYSICAL APPEARANCE:-

Physical characteristics of the gel formulation, such as phase separation and color, odor, and rheological parameter changes, were assessed.

6) EXTRUDABILITY:-

Through the crimped end, a closed tube containing a squeezable gel was inserted tightly. The gel is compressed right before the pressure is applied when the cap is removed.

7) ANTI-FUNGAL:-

The herbal hair gel that was made exhibited almost the same zone of inhibition as regular fluconazole.

8) SKIN IRRITATION TEST:-

The prepared herbal hair gel was applied to the hand and left in the sun for four to five minutes.

Conclusion:-

Herbal hair gels help to over come the various damages caused by chemical agents in various marketed products. Natural gums can also be altered to create products specifically designed for drug delivery systems, making them competitive with commercially available synthetic excipients. Because of the enormous research potential of this study, guar gum is utilized as a natural gelling agent and combined with jatamansi extract to create herbal hair gel. Natural gums are competitive with commercially available

synthetic excipients when modified to generate products intended for medication delivery systems. Guar gum is used as a natural gelling ingredient and coupled with jatamansi extract to generate herbal hair gel because of the study's tremendous research potential.

References:-

1. Raagini TS, Chean HN, Samer AD. *Int. J. Med. Toxicol. Leg. Med.*, 2020; 23(2): 59-61.
2. Parikh M, Maddaford TG, Austria JA, Aliani M, Netticadan T, Pierce GN. *Nutrients*, 2019; 11(5): 1171.
3. Rajeswari R, Umadevi M, Rahale CS, Pushpa R, Selvavenkadesh S, Kumar KPS, Bhowmik D. *J. Pharm. Cognos. yand Phytochemistry*, 2012; 1(4): 119-25.
4. Regupathi, T., Chitra, K., Ruckmani, K., Lalitha, K. G., & Kumar, M. (2016). Formulation and evaluation of herbal hair gel for hair growth potential. *Journal of Pharmacology & Clinical Research*, 2(2), 1-8.
5. Eby, G., & Manju, M. M. (2014). Formulation and Evaluation of Topical Gel Containing Hair Growth Promoters for the Treatment of Androgenic Alopecia. *Bull Pharm Res*, 4(1), 1-8.
6. Sayare, A. S., Sinha, A. D., Sharma, N. O., Kulkarni, M. A., Yerpe, S. A., & Tarange, S. M. (2020). Formulation and Evaluation of Antidandruff Hair Gel containing Lawsonia. *J Pharm Sci & Res*, 12(1), 86-90.
7. Tridevi, R. V., Bansod, P. G., Taksande, J. B., Mahore, J. G., Tripurneni, S. R., Rai, K. R., & Umekar, M. J. (2019). Investigation of hair growth promoting ability of herbal gel containing *Zingiber officinale*. *Int J Res Pharm Sci*, 10(4), 3498-3507.
8. Manjula, D., Jenita, J. J. L., Premakumari, K. B., & Shanaz, B. (2018).
9. Mohan, R., Singh, S., Kumar, G., & Srivastava, M. (2020). Evaluation of Gelling Behavior of Natural Gums and their Formulation Prospects. *Indian Journal of Pharmaceutical Education and Research*, 54(4), 10161023.
10. Shivanand Nayak. Influence of ethanol extract of *Vincarosea* on wound healing in diabetic rats. *J Biol Sci*, 2006; 6(2): 51-55.
11. Kaur K, Aravind Kumar G, Sayyed Ahmad. Pharmacognostic studies on bark of *Murraya koenigii* Spreng. *Int J Res Pharma Biomed Sci*, 2011; 10(1): 1-4.
12. Harish KH, Anup P, Shruthi SD. A review on *Murraya koenigii*: Multipotential medicinal plant. *Asian J Pharm Clin Res*, 2012; 5(4): 514.
13. Baskaran C, Rathabai V, Kanimozhi D. Screening for antimicrobial activity and phytochemical analysis of various leaf extract of *Murraya koenigii*. *Int J Res Ayur Pharm*, 2011; 2(6): 1807-1810.
14. Malwal M, Sarin R. Antimicrobial efficacy of *Murraya koenigii* (Linn.) Spreng root extracts. *Ind J Nat Prod Resour*, 2011; 2(1): 48-51.
15. Baskaran C, Rathabai V, Kanimozhi D. Screening for antimicrobial activity and phytochemical analysis of various leaf extract of *Murraya koenigii*. *Int J Res Ayur Pharm*, 2011; 2(6): 1807-1810.
16. Malwal M, Sarin R. Antimicrobial efficacy of *Murraya koenigii* (Linn.) Spreng root extracts. *Ind J Nat Prod Resour*, 2011; 2(1): 48-51.
17. Deepak PA, Prashanth BS. Formulation and evaluation of herbal gel containing *Lanata camara* leaves extract. *Asian J Pharm Clin Res*, 2013; 6(3): 122-124.
18. Ajinkya MB, Manjusha ND. Formulation and evaluation of herbal antimicrobial gel containing *Musa acuminata* leaves extract. *J Pharm Cogn Phytochem*, 2016; 5(1): 1-3.

19. Vidya V, Aleykutty NA, Jayakar B, Subin MZ. Development and evaluation of antimicrobial herbal formulations containing the methanolic extract of *Samadera indica* for skin diseases. *J Adv Pharm Technol Res.*, 2012; 3(2): © 2023 IJRTI | Volume 8, Issue 11 | ISSN: 2456-3315 IJRTI2311055 International Journal for Research Trends and Innovation (www.ijrti.org) 397 106-111. T Regupathi^{1*}, K Chitra², K Ruckmani³, KG Lalitha⁴ and Mohan Kumar, Formulation and evaluation of herbal hair gel for hair growth potential. *J of Pharmacol & Clin Res*, 2017: 2-3.
20. Harrison JL, Davis KD. Cold-evoked pain varies with skin type and cooling rate: a psychophysical study in humans. *Pain* 1999; 83: 123–135.
21. Maderson PF. Mammalian skin evolution: a revaluations. *Exp Dermatol* 2003; 12: 233–236.
22. Randall VA, Botchkareva NV. The biology of hair growth. In: Ahluwalia GS, ed. *Cosmetic Application of Laser and Light-Based System*. Norwich, NY: William Andrew Inc., 2009: 3–35.
23. Olabiyi AO, Akpantah AO, Oyerinde OF, et al. The distribution of hair on the phalanges of a sample population of Nigerian Yorubas in relation to sex, age and job type. *Niger J Physiol Sci* 2008; 23: 101–104. 7 Ito S, Wakamatsu K. Human hair melanins: what we have learned and have not learned from mouse coat color pigmentation. *Pigment Cell Melanoma Res* 2011; 24: 63–74.
24. De la Mettrie R, Saint-Leger D, Loussouarn G, et al. Shape variability and classification of human hair: a worldwide approach. *Hum Biol* 2007; 79: 265–281.
25. Kelly RC, Mieczkowski T, Sweeney SA, et al. Hair analysis for drugs of abuse. Hair color and race differentials or systematic differences in drug preferences? *Forensic Sci Int* 2000; 107: 63–86.
26. Wolfram LJ. Human hair: a unique physicochemical composite. *J Am Acad Dermatol* 2003; 48: S106–S114.
27. Gurden SP, Monteiro VF, Longo E, et al. Quantitative analysis and classification of AFM images of human hair. *J Microsc* 2004; 215: 13–23.
28. Swift JA. Human hair cuticle: biologically conspired to the owners advantage. *J Cosmet Sci* 1999; 50: 23–47.
29. Oshima H, Rochat A, Kedzia C, et al. Morphogenesis and renewal of hair follicles from adult multipotent stem cells. *Cell* 2001; 104: 233–245.
30. Rogers GE. Electron microscope observations on the glassy layer of the hair follicle. *Exp Cell Res* 1957; 13: 521– 528.
31. Rogers GE. Hair follicle differentiation and regulation. *Int J Dev Biol* 2004; 48: 163–170.
32. Peus D, Pittelkow MR. Growth factors in hair organ development and the hair growth cycle. *Dermatol Clin* 1996; 14: 559–572.
33. Blume-Peytavi U, Vogt A. Human hair follicle: reservoir function and selective targeting. *Br J Dermatol* 2011; 165: 13–17.
34. Wosicka H, Cal K. Targeting to the hair follicles: current status and potential. *J Dermatol Sci* 2010; 57: 83–89.
35. Hordinsky MK, Ericson M. Hair innervation and vasculature. *Exp Dermatol* 1999; 8: 314. 20 .Winkelmann RK. The innervation of a hair follicle. *Ann N Y Acad Sci* 1959; 83: 400–407.