iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 12 **Issue:** VI **Month of publication:** June 2024

DOI: https://doi.org/10.22214/ijraset.2024.63466

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue VI June 2024- Available at www.ijraset.com

Formulation and Evaluation of Herbal Hair Serum

Gayatri J. Avhale[1], Rahul S. Mohan[2], Dr. Rajendra M. Kawade[3]
[1]*Student of Pharmacy, Nandkumar Shinde college of pharmacy, Vaijapur- 423701*
[2]*Assistant Professor, Dept. of Quality Assurance, Nandkumar Shinde college of pharmacy Vaijapur*
[3]*Dr. Rajendra M. Kawade principal of Nandkumar Shinde College of Pharmacy, Vaijapur*

Abstract: ***Nowadays, cosmetics are in high demand in everyday life, and many people use them frequently every year. Humanity uses various products to enhance beauty and elegance to look young and attractive. That is why cosmetics play an important role in a person's life. Today, herbal cosmetics are widely used because they are believed to have fewer side effects and have better safety. Hair is one of the most important parts of the body that acts as a protective appendage. The main objective of this work is to formulate herbal hair serum for general use (daily use) using different herbs and evaluate the properties of Cosmetic serum and find out the best composition of cosmetic serum. Three Cosmetic serum preparations (H1, H2 and H3) with different concentrations of excipients were developed. They were evaluated based on its physical appearance, pH, homogeneity test, viscosity, spreadability test and stability test. All parameters found to be good and conform to standards. Current research has shown that herbal products not effective in improving hair texture.***
Keywords: Cosmetic , hair , formulation , effective , attractive

I. INTRODUCTION

The cost increase in worldwide living standard has Created a rise in demand for cosmetic products. The Importance of cosmetics has increased as many People want to stay young and attractive. Cosmeceuticals Refers to the combination of the cosmetics industry with The pharmaceutical industry. Cosmetics companies Produce cosmetics and pharmaceutical ones produce Medicines.
Cosmeceuticals are skincare products that Combine cosmetics and medicines. Serum is one of the cosmetic products with very high Concentration of active ingredient in their formula for Providing intensive nutrition to the deeper skin layer and Non-greasy finish product which suitable for skin Hair growth is based on a dynamic and precisely Regulated mechanism that is not fully understood. It is a Cyclical mechanism involving hair shaft synthesis, Elongation, and ultimately shedding. Human hair usually Comprises follicles of anagen, catagen, and telogen phases.
The hair follicle in the anagen phaseactively accumulates Cytochrome and easily develops the hair shaft. When the hair Follicle matures into the anagen hair follicle, the telogen hair Follicle is not able to develop neonatal hair shafts . Alopecia Areata (AA) is a recurrent immune-mediatedskin disorder With a non-scarring loss of hair

A. Advantages of Hair Serum

1) Hair serum can effectively smoothen, soften and Make your hair silky.
2) It protects the hair from environmental aggressors. act as pre styling treatment
3) It can be used before or after using heat styling.
4) Controls frizz. If your hair is weak and damaged, it May look frizzy or dry.
5) Boosts smoothness.
6) The anti-frizz effect of hair serum also helps Improve the smoothness of hair serum.
7) Hair serum is also reduces the tangles and promote The shine.
8) To enhances the straightness and curls.
9) It protects against the damage

B. Side Effects of Using Hair Serum

Regular use and over application

1) Applying the serum on the scalp can lead to Inflammation.
2) Silicones present in the hair serum can be harmful For the hair in the long hair.
3) Scalp application should be avoided as it migh Make it oily or can lead toinflammation

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 12 Issue VI June 2024- Available at www.ijraset.com

C. Benefits of Using Hair Serum

1) It is important to know hair serum benefits before You finalize the product. A hair serum predominantly has the following benefits.

2) Multi-Purpose A hair serum solves a lot of hair Issues and not just one problem. There is a reason it Is called a one stop solution for all your hair woes.Hair serum transforms a bad hair day into a good Hair day. With just afew drops, your hair will feel and look different.

3) Protects Hair Hair serum forms a layer on hair strands. It thus acts as an excellent protect against heat, sun damage, dirt, dust and pollution. It Prevents your hair from getting damaged. This is why it is advised to use a heat protecting serum before using hot styling tools.

4) Gives Shine to the Hair The layer formed by hair Serum acts as a reflector oflight thus making your hair look shiny and lustrous. Hair serums consist of amino acids which protect colored and chemically treated hair.

5) Prevents Hair fall From Breakage When our hair becomes a tangled mess, wetend to lose a lot of hair strands because of the wear and tear that goes into detangling. Hair serum acts as a lubricant for such hair and makes detanglingeasy. And the result isless hair fall.

6) Best for Dry Hair The most to benefit from hair Serums are those who have dry and frizzy hair. Hair Serums lock in the moisture and makes hair smooth and shiny.

7) Nourishes Hair and Makes Them Manageable Hair serums fill the follicularcracks and revive brittle and damaged hair. Hair serum makes hair more

8) Manageable which further makes it easy to style them. Time, energy, patience. Everything is saved.

II. MATERIAL AND METHODS

A. Ingredients of Hair Serum

1) Aloe Vera

Two substances from Aloe vera – a clear gel and its Yellow latex – are used to manufacture commercial products. aloe gel typically is used to make topical medications for Skin conditions, such as burns, wounds, frostbite, rashes, psoriasis, cold sores, or dry skin. Aloe latex is used Individually or manufactured as a product with other Ingredients to be ingested for relief of constipation. Aloe Latex may be obtained in a dried form called resin or as “aloe Dried juice”. There is conflicting evidence regarding whether Aloe vera is effectiveas a treatment for wounds or burns. There is some evidence that topical use of aloe products might Relieve symptoms of certain skin disorders, such as psoriasis, Acne, or rashes, but topical application may cause an allergic reaction in some people. Aloe Vera gel is used commercially as an ingredient in yogurts, beverages, and some desserts, but at high or prolonged doses, ingesting aloe latex or whole leaf extract can be toxic. Use of topical aloe vera in small amounts Is likely to be safe. Aloe vera has long been used for treating hair loss. it also soothes the scalp and conditions hair. It can reduce dandruff and unblock hair follicles that may be bocked by excess oil. You can apply pure aloe vera gel to your scalp and hair a few times per week.



©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

2) Vitamin E

Vitamin E may have various roles as a vitamin. Many biological functions have been postulated, including a Role as a fat- soluble antioxidant. In this role, vitamin E acts As a radical scavenger, delivering a hydrogen (H) atom to free radicals. At 323 kJ/mol, the O-H bondin tocopherols is about 10% weaker than in most other phenols. This weak bond allows the vitamin to donate a hydrogen atomto the peroxyl radical and other free radicals, minimizing their damaging effect. The thus-generated tocopheryl radical is recycled to Tocopherol by a redox reaction with a hydrogen donor, such As vitamin C. Vitamin E affects gene expression and is an Enzyme activity regulator, such as for protein kinase C (PKC) _Which plays a role in smooth muscle growth – with vitamin E participating in deactivation of PKC to inhibit smooth Muscle growth. Vitamin E-rich oil can help replace that Protective layer and bring back shine. Oil in general also helps seal out moisture, reduce breakage, and protect the hair From damage.



3) Rose Water

Rose water has a slight astringent quality that could aid in lowering greasy and balding. It possesses anti-inflammatory qualities. This could make it advantageous for specific scalp issues, similar to eczema and psoriasis.

A lot many curly-haired women I vouch for the power of rose water to reduce frizz and enhance shine.



During feasts, rose water was used at the dinner table to wash hands in medieval Europe. A typical component of scent is rose water. Rose water is occasionally used in cosmetics including cold creams, toners, and face washes, and rosewater ointment is occasionally used as an emollient. Particularly in the winter, some people use rose water sprayed directly on their faces as a moisturizer and scent. In order to greet guests, it is also frequently sprinkled at Indian weddings. As a moderate astringent, rose water may help lessen oiliness and dandruff. Due to its anti- inflammatory qualities, it might be helpful for psoriasis and eczema, two disorders that affect the scalp. Rose water is a hair oil that many curly-haired women swear by for taming frizz and shine.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

4) Almond Oil



Almond oil is packed with nutrients that are good for hair, including magnesium, phospholipids, vitamin E, and omega-3 fatty acids. Almond oil is the best treatment for damaged and hair loss since it strengthens and nourishes hair. To impart luster and silkiness as well as nurture the scalp, a few drops go a long way. Use pure almond oil; the majority of shop products have a high percentage of petroleum paraffins and a very little amount of almond oil. Your hair might get stronger and softer with the nourishing oil. Almond oil helps maintain strong, healthy hair and nails because it is high in vitamin B-7, sometimes known as biotin. Its natural SPF can also aid in shielding your hair from the sun's rays. Almond oil is a therapy for the scal

B. Procedure

Method for Formulating Herbal Hair Serum:

1) As per SOP, thoroughly clean and dry all glassware.
2) Accurately measure out the aloe vera and transfer it to a beaker.
3) Add the necessary amount of vitamin E to the aloe vera.
4) Add rose water to the aloe vera and vitamin E mixture mentioned previously.
5) Heat the prepared solution for a few minutes after a few minutes of stirring.
6) Include a couple almond oil drops.
7) After that, use a magnetic stirrer to agitate the mixture.
8) Pour the mixture into a measuring cylinder and set the end volume at 30 milliliters.
9) Place the completed solution inside the container.

C. Formulation Table

Sr.no	Ingredients	Batch H2	Role of Ingredient
1	Aloe vera	3gm	Conditioner
2	Vitamin E	1ml	Hair growth
3	Rose water	17ml	Aroma
4	Distilled water	8ml	Vehicle
5	Almond oil		Nourishment

III. EVALUATION OF HERBAL HAIR SERUM

A. Prepared Herbal Hair Serum

1) Physical Appearance: Physical appearance was evaluated by observing the texture, color and smell of the manufactured cosmetic serum.

2) pH: The pH test is determined using a digital pH meter. The digital pH meter is deep in the serum composition sample and the pH value is recorded. The pH of the formulation should be an acidic pH because the acidic pH of the skin is around 4-6..

3) *Homogeneity Test:* A clean and dry glass slide was smeared with hair serum and the coverslip was sealed. The appearance In light/homogeneity of coarse particles was investigated. The herbal hair serum was tested by visual Homogeneity examination and tested for any knots, Flocculates or aggregates.
4) *Determination of Emolliency:* Emolliency ,slipperiness and amount of resdue left after the application offixed amount of serum was checked.

IV. RESULTS AND DISCUSSION

A. *Physical Appearance*

The physical appearance, color, odour and texture of the prepared herbal hair serum are visually tested. Of the following table:

Sr No	Parameters	Sample
1	Colour	Milky
2	Odour	Rose type
3	Texture	Smooth

B. *pH, Viscosity, Homogeneity and Spread ability Test*

The pH scale is used to specify the acidity or Basicity of a product inorder to ensure that it is safe to use. Brookfield viscometer is used to determine the viscosity of The formulation the value obtained in following table.

Sr no.	Parameters	Sample
1	PH	5.2
2	Homogeneity Test	Good
3	Viscosity	221
4	Spread abilityTest	Easily spreadable

C. *How to Apply Hair Serum*

1) *Shampoo Your Hair:* To remove the oil from your hair, use shampoo. Your hair will appear oily if you rinse without shampooing. Use a single shampoo application to your scalp, following the same method as the oil application. Massage from the nape area up to the crown, starting at the front of your head and working your way towards the top.
2) *Rinse and Dry Your Hair:* Rinse out the shampoo and pat your hair with a towel. Once itdries, your hair will look silky and shiny.
3) *Rub a few Drops of Serum into Your Palms:* Just a few drops, less than half a teaspoon Serum is enough to cover the hair. You don't want to go over or your hair will look greasy for the rest of the day.
4) *Rub the Serum into your Scalp:* Put a small amount of serum on your palm and apply to the scalp around the root region. Using your fingers, gently start massaging at the Front of your head, working your way back to the crown of your head and then massage at the nape, working up towards the crown. This helps to strengthen the roots and protect your hair. It may also help prevent dandruff if you're massaging the roots.
5) *Comb your Hair:* Comb your dry hair until it's tangle-free. Start at the ends of your hair andwork your way up to prevent painful snagging and breakage.
6) *Repeat Once a Week for Best Results:* In order to promote new hair growth over time, regular serum treatment is recommended. By sealing in moisture, it's going to give your hair strength, comfort and smoothness

V. CONCLUSION

All parameters were within limits and since all the added ingredients have many benefits, this hair serum helps to maintain good Hair growth, blackening gray hair, Essential nutrients that must be preserved. . proper functioning of sebaceous glands and supports natural hair growth. In the personal hygiene and health system, the use of herbal cosmetics has changed many times. Therefore, the herbal Individual or personal health care Industry, which really focuses on producing herbal cosmetics and paying extra care for it, has considerable glamor.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

VI. LITERATURE REVIEW

*1) Ajay Kumar Meena *, Ajay Yadav, M M Rao., 2011.*

Herbalmedicines have been used from the earliest times to the present day. The ethnobotanical pharmacology is as old as man himself. Herbal medicines exhibit a remarkable therapeutic diversity. Aloe vera. Is an Ayurvedic plant which is used inseveral traditional medicines to treat a variety of diseases.

2) Westgate, G.E., et al., 1993.

Reported the prolonged in vitro Growth of isolated human hair follicles for at least 9 days. It is also shown that the patterns of keratin synthesis, as determined by [35S] methionine labelling, do not alter with maintenance.

3) Takahashi T et al., 1998

Studied the profile of the active fraction of the proanthocyanidins was elucidated by thiolytic degradation and tannase hydrolysis. We found that the Constitutive monomers were epicatechin and catechin; and that the degree of polymerization was 3.5. It was demonstrated the possibility ofusing the proanthocyanidins extracted from grape seeds as agents inducing hair growth.

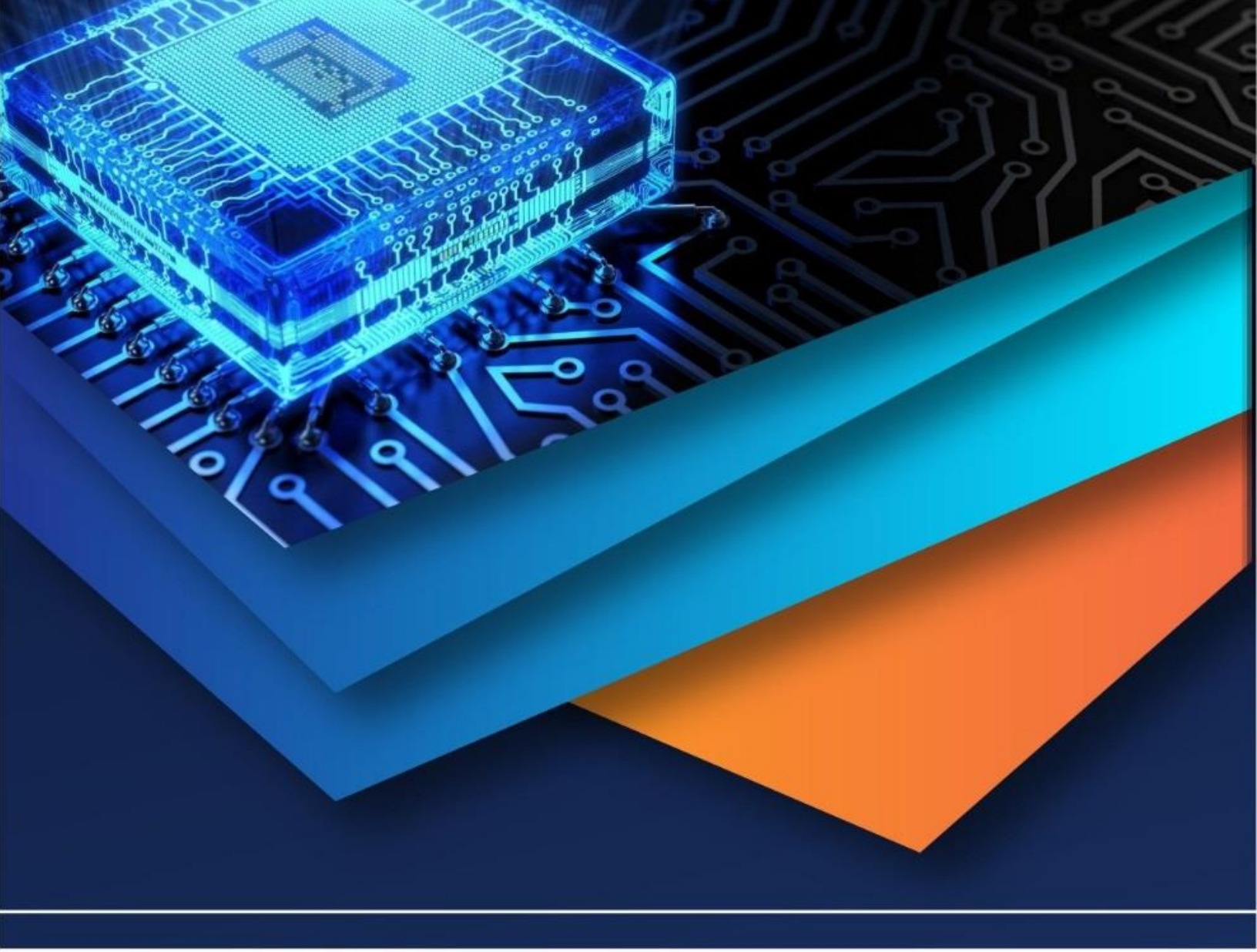
4) R.K. Roy et al., 2007,

Concluded from the study that hair growth initiation time was significantly reduced to half on Treatment with the petroleum ether extracts. The time Required for complete hair growth was also considerably Reduced.

REFERENCES

[1] S. Budiasih, I. Masyitah, K. Jiyauddin, M.Kaleemullah, A. D.Samer, A. Mohd Fadli and EddyY., Formulation and Characterization of Cosmetic Serum Containing Argan Oil as Moisturizing Agent, Science and Technology Publications, 2018;297-304.
[2] Kirsten Nunez, November 2020, Hair Serum Benefits and How To Use, https://www.healthline.com/health/how-to-use- Serum-for-hair.
[3] Medically reviewed by Cynthia Cobb, DNP, APRN, WHNP-BC, FAANP — By Kirsten Nunez on November 3, 2020
[4] Amar Surjushe From the Department of Dermatology, Venereology and Leprosy,
[5] Grant Medical College and Sir J J Group of Hospitals, Mumbai – 400 008 Maharashtra, India Find articles by Amar S
[6] Elea Carey, February 2019, How to Use Olive Oil For Hair Care, https://www.healthline.com/health/beauty-skin- Care/oliveoil-hair-care.
[7] Rohan R. Vakhariya, Rutuja R. Shaha, Archana R. Dhole, Dr. C.S Magdum, Preparation of Novel Biocompatible Honey Hydrogel with Turmeric and Aloe vera, Research Journal of Pharmacologyand Pharmacodynamics, 2017;9(2):77-80.
[8] La Torre C, Bhushan B. Nanotribological effects of silicone type, silicone deposition level, and surfactant type on human hair using atomic force microscopy. J Cosmet
[9] Sci. 2006;57:37–56. [PubMed] [Google Scholar]
[10] Villa AL, Aragão MR, Dos Santos EP, Mazotto AM, Zingali RB, de Souza EP, et al. Feather keratin hydrolysates obtained from microbial keratinases: Effect on hair fiber.
[11] BMC Biotechnol. 2013;13:15. [PMC free article] [PubMed] [Google Scholar]
[12] Wilkinson JB, Moore RJ. Cosmetologia de Harry. Madrid, Spain: Diaz de Santos; 1990. P. 1039. [Google Scholar]
[13] Gode V, Bhalla N, Shirhatti V, Mhaskar S, Kamath Y. Quantitative measurement of the penetration of coconut oil into human hair using radiolabeled coconut oil. J Cosmet
[14] Sci. 2012;63:27–31. [PubMed] [Google Scholar]
[15] Nikita R. Nikam, Priyanka R. Patil, Rahul P.Jadhav, Rohan R. Vakhariya, Dr. C. S. Magdum, Formulation and Evaluation ofHerbal Shampoo: A Comparative Study, Research Journal of Topical and Cosmetic Sciences, 2019;10(2):61-64.
[16] Gautam S, Dwivedi S, Dubey K, Joshi H. Formulation and evaluation of herbal hair oil. Int J Chem Sci., 2012; 10(1): 349-53.
[17] Shivani J. Patil*, Snehal S. Patil, Rohan R. Vakhariya, Dr. A. R.Chopade, Dr. C. S. Magdum, Formulation and Evaluation of Medicated Herbal Hair Oil- An Effectual and Economical Cosmetic, Pensee International Journal, 2021;51(5):398-405.
[18] Shankar B. Pawar, Pallavi M. Shinde, Sachin V. Datkhile. “Review on Formulation and Evaluation of Herbal Hair Serum.” International Journal of Advanced Research in Science, Communication and Technology, Volume 2, Issue 1, November 2022. DOI:
[19] 10.48175/568
[20] Gayatri M. Penkar, Maithilee R. Salkar, Prachi S. Chavan, Maitrey S. Ambade, Sanchit A. Parab, Manasvi M. Sawant, Dr. Vijay A. Japgap. “Formulation and Evaluation of Herbal Hair Serum in Treatment of Various Hair-Related Problems.” Research Journal of Pharmacognosy and Phytochemistry, Vol. 15, Issue-02, April – June 2023.
[21] Shankar B. Pawar, Pallavi M. Shinde, and Sachin V. Datkhile conducted a study on the
[22] “Formulation and Evaluation of Herbal Hair Serum” as published in the International Journal of Advanced Research in Science, Communication, and Technology
[23] S. Budiasih, I. Masyitah, K. Jiyauddin, M. Kaleemullah, A. D. Samer, A. Mohd Fadli, and Eddy Y. “Formulation and Characterization of Cosmetic Serum Containing Argan Oil as Moisturizing Agent.” Science and Technology Publications, 2018;297-304 18. Kirsten Nunez, November 2020, “Hair Serum Benefits and How to Use.” Available at:
[24] Elea Carey, February 2019, “How to Use Olive Oil for Hair Care.” Available at:

[25] Sneha Kalra, March 2020, "Hair care: Advantages, disadvantages and everything you need to know about Hair Serums."
[26] Rohan R. Vakhariya, Rutuja R. Shaha, Archana R. Dhole, Dr. C.S Magdum.
[27] "Preparation of Novel Biocompatible Honey Hydrogel with Turmeric and Aloe vera." Research Journal of Pharmacology and Pharmacodynamics, 2017;9(2):77-80
[28] Rohan R. Vakhariya, Swati Talokar, Archana R. Dhole, Dr. S.K. Mohite, Dr. C.S.
[29] Magdum. "Comparative Standardization Study of Two Marketed Shatavari Churna Formulation." Asian Journal of Pharmaceutical Analysis, 2019;6(1):1-6
[30] Nikita R. Nikam, Priyanka R. Patil, Rahul P. Jadhav, Rohan R. Vakhariya, Dr. C. S.
[31] Magdum. "Formulation and Evaluation of Herbal Shampoo: A Comparative Study."
[32] Research Journal of Topical and Cosmetic Sciences, 2019;10(2):61-64
[33] Aruna V, Amruthavalli GV, Gayathri R. "Hair root activation by anagen grow-a herbal hair growth serum"



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)