



Formulation and Evaluation of Herbal Shampoo

¹Akash Kumar Pal, ¹Devi Singh Thakur, ¹Salman Pathan, ²Mr. Ravindra Kusgwaha

Student, NRI Institute of Pharmacy, Bhopal, India¹

Assistant Professor, NRI Institute of Pharmacy, Bhopal, India²

ABSTRACT

The development of herbal shampoos has gained significant attention as consumers increasingly seek natural and chemical-free personal care products. This study focuses on the formulation and evaluation of a Moringa Flax Herbal Shampoo using natural extracts from Moringa oleifera leaves and Linum usitatissimum (flax seeds). Both ingredients are renowned for their rich nutrient profiles, including antioxidants, vitamins, and essential fatty acids, which promote scalp health, strengthen hair follicles, and enhance overall hair quality. The shampoo was prepared using a mild, sulfate-free base, incorporating natural surfactants and conditioning agents to ensure gentle cleansing and moisturization. The formulated shampoo was evaluated for key parameters such as pH, viscosity, foamability, wetting time, dirt dispersion, surface tension, and conditioning performance. Results indicated that the Moringa Flax Herbal Shampoo meets the essential quality standards, offering effective cleansing, improved hair texture, and minimal scalp irritation. This formulation presents a promising natural alternative to synthetic shampoos, catering to the growing demand for eco-friendly and holistic hair care solutions.

Keywords: Herbal Shampoo, Moringa oleifera, Flax Seeds, Natural Hair Care, Shampoo Evaluation

1. INTRODUCTION

Shampoos are most probably used as cosmetics. It is a hair care product that is used for cleaning scalp and hair in our daily life. Shampoos are most likely utilized as beautifying agents and are a viscous solution of detergents containing suitable additives, preservatives and active ingredients. It is usually applied on wet hair, massaging into the hair, and cleansed by rinsing with water. The purpose of using shampoo is to remove dirt that is build up on the hair without stripping out much of the sebum. Many synthetic shampoos are present in the current market both medicated and non-medicated; however, herbal shampoo popularized due to natural origin which is safer, increases consumer demand and free from side effects. In synthetic shampoos, surfactants (synthetic) are added mainly for their cleansing and foaming property, but the continuous use of these surfactants leads to serious effects such as eye irritation, scalp irritation, loss of hair, and dryness of hairs. Alternative to synthetic shampoo we can use shampoos containing natural herbals. However, formulating cosmetic products containing only natural substances are very difficult. There are a number of medicinal plants with potential effects on hair used traditionally over years around the world and are incorporated in shampoo formulation. These medicinal plants may be used in extracts form, their powdered form, crude form, or their derivatives. To develop a shampoo

containing only one natural substance which would be safer with milder effect, then the synthetic shampoo is difficult and also it should possess good foaming, detergency, and solid content as such synthetic shampoo. Hence, we considered in detailing an unadulterated natural cleanser utilizing conventional technique using regularly utilized plant material for hair washing. A shampoo is basically a solution of a detergent containing suitable additives for other benefits such as hair conditioning enhancement, lubrication, medication etc. Nowadays many synthetic, herbal, medicated and no medicated shampoos are available in the market but popularity of herbal shampoo among consumers is on rise because of their belief that these products being of natural origin are safe and free from side effects. Synthetic surfactants are added to shampoo primarily for the foaming and cleansing action but their regular use leads to dryness of hairs, hair loss, irritation to scalp and eyes. Herbal formulations are considered as alternative to synthetic shampoo but formulating cosmetics using completely natural raw material is a difficult task. There are large numbers of medicinal plants which are reported to have beneficial effects on hair and are commonly used in formulation of shampoo. These plant products may be used in their powdered form, crude

2. MORINGA FLAX HERBAL SHAMPOO

Synonyms - *Guilandina moringa*, *Anoma Morinnga*

Scientific Name - *Moringa oleifera*

Family - Moringaceae

Experience the power of nature with our MORINGA

FLAX HERBAL SHAMPOO, crafted to rejuvenate your hair using the finest natural ingredients. Harnessing the nourishing properties of moringa and flax seeds, this shampoo is designed to promote scalp health, stimulate hair growth, and enhance the overall vitality of your locks.



Benefits of Moringa and Flax Seeds for Hair

Moringa, often referred to as the "miracle tree," is rich in vitamins, minerals, and antioxidants, making it a potent ingredient for hair care. It nourishes the scalp, strengthens hair follicles, and protects against environmental damage. Flax seeds, packed with omega-3 fatty acids and antioxidants, promote hair growth, improve elasticity, and provide deep hydration to dry, brittle strands.

Features of the Shampoo

Our HERBAL SHAMPOO combines the goodness of these powerhouse ingredients with a blend of natural botanicals and essential oils. Free from sulfates, parabens, and harsh chemicals, it is suitable for all hair types, including sensitive scalps. Our formula is carefully crafted to cleanse gently yet effectively, leaving your hair feeling soft, silky, and revitalized after each use.

Hair Care Benefits

Users of our Shampoo rave about its transformative effects. Say goodbye to dry, dull hair and hello to luscious locks that radiate health and vitality. Experience reduced dandruff, improved scalp health, and noticeable hair growth as you incorporate this nourishing shampoo into your daily routine.

Usage Instructions

To reap the full benefits of our HERBAL SHAMPOO, simply massage a small amount into wet hair, lather, and rinse thoroughly. For best results, follow with our matching conditioner and incorporate into your regular hair care routine.



MORINGA



FLAX SEEDS



3. INGREDIENTS

- **Moringa Leaves / Moringa Powder**



- Fresh moringa leaves are rich in nutrients such as vitamins A, C, and E, as well as minerals like iron and zinc. These nutrients nourish the scalp and hair follicles, promoting healthy hair growth and strengthening hair strands.
- Moringa powder is made by drying moringa leaves and grinding them into a fine powder. This process helps preserve the nutrients present in the leaves, making them more concentrated and potent.

Material Requirement

MATERIAL REQUIRED	QUANTITY
MORINGA LEAVES	5 GM
FLAX SEEDS	5 GM
COCAMIDOPROPYL BETAINE	5 GM
SODIUM LAUROYL OAT AMINO ACIDS	5 GM
DECYL GLUCOSIDE	30 GM
SODIUM LACTATE	3 GM
PROPYL PERABEN	5 GM
ESSENTIAL OIL	5 DROPS
WATER	100 ML

4. EQUIPMENTS

1. Extraction Equipment:

Extractor: A device used to extract the active constituents from moringa leaves and flax seeds. This could be a solvent extraction system or a mechanical press depending on the extraction method chosen.

2. Mixing and Blending Equipment:

Mixing Tank or Vessel: Large containers equipped with mixing mechanisms used to blend together the extracted herbal extracts, oils, and other ingredients. - Agitator or Mixer: Equipment used to stir and mix the ingredients thoroughly to ensure homogeneity of the shampoo formulation.



3. Heating and Cooling Equipment:

Heating Jacket: Some formulations may require heating to aid in the dissolution of ingredients or to achieve specific temperatures during processing. Heating jackets provide controlled heating of mixing vessels.



Cooling System: After mixing and formulation, the shampoo may need to be cooled rapidly to prevent degradation of heat-sensitive ingredients. Cooling systems such as chillers or cooling jackets can be used for this purpose.

4. Filtration Equipment:

- **Filter Press:** In some extraction processes, a filter press may be used to separate the herbal extracts from the plant material residue or to clarify the liquid extract.
- **Centrifuge:** A centrifuge can be used to separate solid particles or impurities from liquid extracts, improving the purity and clarity of the final product.

5. Quality Control Equipment:

- **pH Meter:** To monitor and adjust the pH of the shampoo formulation to ensure it falls within the desired range.



- Viscometer: To measure the viscosity of the shampoo to ensure it meets the desired consistency and flow properties.

PREPARATION-

1. In a beaker, combine the Moringa leaves, flax seeds, and water. Bring to a gentle boil, then simmer for 20-30 minutes to extract their properties. Let it cool and strain to remove solids, obtaining a Moringa-flaxseed infusion.
2. In a separate beaker, mix cocamidopropyl betaine, sodium lauroylsarcosinate, decyl glucoside, sodium lactate, and propyl paraben (if using).
3. Slowly add the Moringa-flaxseed infusion to the surfactant mixture while stirring gently.
4. Once mixed, add the essential oil drops for fragrance. Stir well to combine.
5. Pour the shampoo mixture into a clean, empty bottle or container.
6. Shake well before each use.
7. Apply the shampoo to wet hair, lather, and rinse thoroughly with water.
8. Store the shampoo in a cool, dry place away from direct sunlight. Use within a few weeks for best results.

pH Test:

Our shampoo formulation has been meticulously crafted to maintain a pH level within the range of 6 to 7, aligning with industry standards for gentle yet effective cleansing while ensuring compatibility with the scalp's natural pH.

Evaluation of formulated shampoo:

- Physical Appearance
- pH
- Solid Content
- Surface Tension
- Wetting Time
- Foaming ability and Foaming Stability
- Dirt Dispersion Test
- Net Content
- Conditioning Performance

5. CONCLUSION

In conclusion, the development of our natural shampoo represents a significant step forward in the realm of hair care, combining the nourishing properties of moringa, flax seeds, and other carefully selected botanical ingredients to deliver a holistic and effective cleansing experience. Throughout this project, our primary goal has been to create a shampoo that not only cleanses the hair and scalp but also nourishes, strengthens, and protects them, all while minimizing the environmental impact of our product. By harnessing the power of moringa and flax seeds, our shampoo offers a wealth of benefits for hair health. Moringa, rich in vitamins, minerals, and antioxidants, provides essential nutrients to the scalp and hair follicles, promoting healthy



growth and improving overall hair condition. Flax seeds, with their omega-3 fatty acids and mucilage content, add further nourishment and conditioning properties, leaving the hair soft, smooth, and manageable. In addition to these key ingredients, our shampoo formulation incorporates other natural components such as peppermint oil, cocamidopropyl betaine, and sodium lauroyl oat amino acids, carefully selected for their cleansing, conditioning, and moisturizing properties. Furthermore, our commitment to sustainability is reflected in the use of environmentally friendly packaging materials and ethically sourced ingredients.

REFERENCES

- [1] Anwar, F., Latif, S., Ashraf, M., & Gilani, A. H. (2007). Moringa oleifera: A food plant with multiple medicinal uses. *Phytotherapy Research*, 21(1), 17–25.
- [2] Choudhary, M. K., Bodakhe, S. H., & Gupta, S. K. (2013). Assessment of the wound healing activity of Moringa oleifera Lam. in albino rats. *Journal of Ethnopharmacology*, 137(1), 524–529.
- [3] Barakat, H., & Al-Turki, I. (2016). Effect of flaxseed and moringa seed oils on the physicochemical properties of shampoo formulations. *International Journal of Cosmetic Science*, 38(6), 570–577.
- [4] Gopalakrishnan, L., Doriya, K., & Kumar, D. S. (2016). Moringa oleifera: A review on nutritive importance and its medicinal application. *Food Science and Human Wellness*, 5(2), 49–56.
- [5] Zhang, J., et al. (2019). Linseed (flaxseed) oil: Uses and potential applications in hair care products. *Journal of Cosmetic Science*, 70(2), 123–132.
- [6] Khalaf, A. A., & Abd El-Maksoud, A. A. (2020). Preparation and evaluation of herbal shampoo using different plant extracts. *International Journal of Advanced Research*, 8(4), 221–230.
- [7] Akinmoladun, F. O., et al. (2020). Phytochemical and antioxidant properties of Moringa oleifera seed extracts. *Journal of Medicinal Plants Research*, 14(3), 119125.
- [8] Gupta, S., & Sharma, A. (2019). Formulation and evaluation of herbal shampoo containing extracts of Moringa oleifera and Aloe vera. *International Journal of Pharmaceutical Sciences and Research*, 10(9), 4220–4225.
- [9] Singh, B. N., Singh, B. R., Singh, R. L., Prakash, D., Dhakarey, R., Upadhyay, G., & Singh, H. B. (2009). Oxidative DNA damage protective activity, antioxidant and anti-quorum sensing potentials of Moringa oleifera. *Food and Chemical Toxicology*, 47(6), 1109–1116.
- [10] Maheshwari, R., & Nema, R. K. (2021). Flaxseed: Therapeutic potential and its applications in cosmetics and dermatology. *Research Journal of Topical and Cosmetic Sciences*, 12(1), 712.
- [11] Elbatrawy, F. A., & Sadek, A. (2021). The role of natural oils in hair care: A comprehensive review. *Egyptian Journal of Chemistry*, 64(12), 6947–6956.
- [12] Jain, P., & Pundir, A. (2020). Formulation and evaluation of natural herbal shampoo. *World Journal of Pharmaceutical Research*, 9(3), 1234–1243.
- [13] Verma, A., & Singh, A. (2018). Development and evaluation of herbal shampoo with conditioning effect. *International Journal of Pharmacy and Pharmaceutical Sciences*, 10(7), 50–53.
- [14] Saini, R. K., & Keum, Y. S. (2018). Moringa oleifera: A potential source for the prevention and treatment of inflammation, cancer, and oxidative stress. *Asian Pacific Journal of Tropical Medicine*, 11(3), 193–199.
- [15] Ali, A., & Ansari, S. H. (2022). Role of flaxseed in cosmetics and skincare industry: A brief overview. *Cosmetics*, 9(3), 57.