

# KeshNiga: A Hair Protectant Natural Based Spray

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**Abstract-** By causing moisture loss, cuticle disruption, and protein degradation, excessive use of heat styling products damages hair. This study attempts to solve this issue. This study focuses on the development and testing of a herbal hair heat protectant spray that blends plant-based compounds with thermal shielding, antioxidant, and conditioning qualities in response to the growing need for safe and natural hair care products. Since they have been demonstrated to fortify hair strands, nourish the scalp, and guard against heat stress, herbal substances such as aloe vera, hibiscus extract, onion oil, and shea butter were used into the formulation of the spray. For the hair spray formulation, several physicochemical characteristics were evaluated, including pH, viscosity, heat stability, and spray ability. The spray's structural integrity, which had a light purple color and a nice odor, was inspected under a microscope to assess its efficacy after it was applied to hair strands prior to heat exposure. The findings demonstrated that the herbal spray significantly decreased heat-induced damage while maintaining hair hydration and texture. This study shows how effectively herbal ingredients may be combined to produce a safe and sustainable alternative to conventional heat protectant treatments.

**Index Terms-** Hair Damage, Natural Ingredients, Sun Light Protectant, Almond Oil

## I. INTRODUCTION

It's true that hair sprays are frequently used to hold hair in place and shape it throughout the day. To assist keep the style in place, they mist the hair with a thin mixture of chemicals based on polymers. Maintaining volume, curls, or even sleek, straight haircuts is made much easier with this. [1] Traditional hair sprays usually contain a mixture of chemicals, including alcohols, silicones, and synthetic polymers, to provide hold and texture. Some people are concerned about the long-term effects of these artificial components on the environment and hair health, despite the fact that they effectively retain hair in place and maintain its structure. Because of this, a lot of customers are choosing more eco-friendly and natural substitutes. Plant-based ingredients like sugar, aloe vera, or essential oils are typically found in natural hair

sprays to provide hold and nourishment without the harsh chemicals. Some of these natural substances may even offer benefits like shine, hydration, or scalp care. [2,3,4]

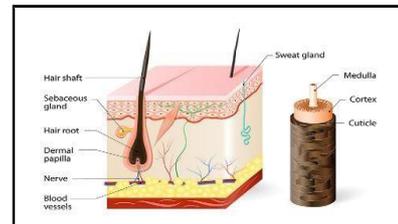


Fig 1- Structure of Hair

**Damaged Hairs by Heat:** Hair loses its natural moisture when styling tools like flat irons, curling wands, and blow dryers are used excessively, which causes dryness, brittleness, and breakage. We call this heat-damaged hair. Fortunately, with the right products and consistent care, you can bring your hair's health and vibrancy back. [5]

### Applications:

- **Protection against Heat Damage:** Herbal heat protectants help prevent heat damage by reducing moisture loss and preventing the cuticle from becoming dry and brittle in the presence of high temperatures. [6]
- **Enhances Shine and Smoothness:** Many herbal heat protectant sprays contain natural oils or plant extracts, such as aloe vera, coconut oil, or argan oil. These components help to reduce frizz and give hair a shiny, healthy appearance. [7]
- **Hydration and Moisture Lock:** Glycerin, aloe vera, and other oils are among the ingredients that hydrate hair and help keep moisture in. This prevents the hair from drying out and breaking easily after styling.
- **Enhances Hair Health:** Lavender, chamomile, and rosemary are herbal medicines that have nourishing and strengthening properties. They can gradually improve the overall health of your hair by providing antioxidants and other beneficial elements. [8]

*Advantages:*

- **Natural Protection Without Harsh Chemicals:** Since herbal heat protectants often don't contain sulfates, parabens, silicones, or alcohols, they're ideal for sensitive scalps and anybody searching for clean beauty products. For instance, some sprays have ingredients like flaxseed, aloe vera, and shea butter that naturally shield hair from heat damage.
- **Better Hair Health:** Vitamins and antioxidants found in many herbal sprays protect and nourish hair. Ingredients like apple cider vinegar, green tea, and aloe vera can reduce the likelihood of dryness and breakage by maintaining the hair's natural moisture balance.
- **Suitable for All Hair Types:** Whether you have thick, fine, curly, or straight hair, herbal heat protectant sprays are designed to work with a variety of hair textures. Products like Inner sense Organic Beauty's Hair Love Prep Spray, which is intended to strengthen hair, restore shine, and provide thermal care, are beneficial for all hair types.
- **Lightweight and non-greasy:** Unlike certain traditional heat protectants that can make hair feel heavy, herbal sprays usually have a lightweight consistency that doesn't leave a greasy residue. This ensures that your hair will remain voluminous and manageable after styling. [9,10,11]

*Disadvantages:*

- **Defense of Restricted High Temperature:** Herbal heat protectants might not provide adequate protection from really high temperatures. Some solutions only offer a maximum protection of 218°C, which might not be sufficient for those who frequently use styling equipment at higher temperatures.
- **Potential Residue and Greasiness:** Some herbal sprays have the potential to leave hair feeling oily after overuse. This might cause the hair to become limp and oily. For instance, after using products like the Herbal Essences Bio: Renew Argan Oil & Aloe Heat Protectant Spray, some customers have reported that their hair feels greasy and heavy.
- **Inconsistent Application:** Because of an unequal product distribution from the spray mechanism, some herbal protectants may have patchy coverage. Some areas of the hair might be more

protected than others as a result of this disparity, which could produce uneven styling results.

- **Dryness from Overuse:** Excessive use of heat protectant sprays might cause dryness. Similar to hairsprays, excessive use can trap moisture and oils in the hair, making it straw-like and more brittle. [12,13,14]

## II. AIM AND OBJECTIVE

*Aim:*

- Guard against heat damage caused by straighteners and blow dryers.
- To strengthen and nourish hair, use natural, herbal products.
- Retaining moisture reduces frizz and dryness.
- Increase shine and smoothness for a healthier appearance.

*Objective:*

- To prevent heat styling equipment from entering barrier.
- When utilizing heat styling, less damage is done to the hair shafts.
- Give your hair herbal nutrients to improve its health.
- Promote the retention of hair hydration while heated.

## III. MATERIALS AND METHODS

*Material:*

The ingredients like Hibiscus Oil, Almond oil, Coconut Oil, Sunflower Oil, Onion Oil, Curry Leaver, Neem Oil were obtained from extraction process of natural raw material in VNCOP lab. The Shea Butter, Castor Oil and Propolis were purchase from market. The Aloe vera and Honey were obtained from Natural Source and found around the Lakhewadi place.

*Methods:*

- The preparation method involves 4 Steps like measurement of ingredients, water base and oil base preparation and emulsification respectively.
- In first step, according to formula, all ingredients were measured accurately. In next step, water base prepared. In 250ml beaker honey and aloe vera mixed smoothly.

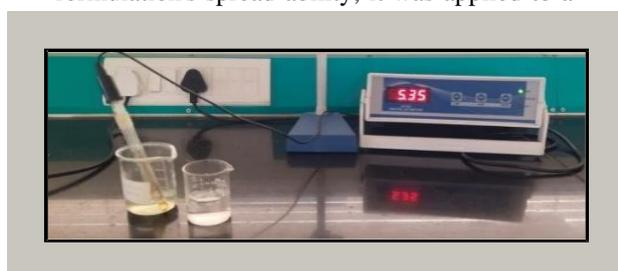
- After making smooth gel, transfer it in clean and airtight container and keep in the refrigerator. Then dissolve the propolis in it.
- Later on, during the oil base preparation, take another 250 ml beaker and place shea butter and give heat up to ~ 40°C using water bath.
- Add all oils in beaker containing shea butter and mix all ingredients (ingredients from both
- *Formula for spray:*

| Ingredients     | Quantity [%] | Ingredients | Quantity [%] |
|-----------------|--------------|-------------|--------------|
| Neemoil         | 2%           | Accaciagum  | 9%           |
| Sunfloweroil    | 8%           | Aloevera    | 12%          |
| Almondoil       | 8%           | Hibiscusoil | 5%           |
| Coconutoil      | 13%          | Honey       | 5%           |
| Castoroil       | 5%           | Propolis    | 5%           |
| Onion oil       | 5%           | Sheabutter  | 5%           |
| Carryleaves oil | 5%           | Vit.E       | 1%           |
| Sandlewood oil  | 2%           |             |              |

Table 1- Natural Hair Protectant Spray Formula

#### IV.EVALUATION TEST

- *pH test:* The herbal spray's pH was determined using a pH meter and pH paper. The findings indicated a pH range of 4.5 to 5.5.
- *Skin irritation test:* Two to three milliliters of the formulation were applied to the left hand, and the hand was observed for two hours to look for signs of inflammation, redness, or irritation.
- *Stability Test at Room Temperature:* For three months, the product was left in an ambient setting while its consistency, appearance, and efficacy were monitored to determine its stability at room temperature. [15,16]
- *Homogeneity test:* To determine if the formulation was homogeneous, a sample was put on an object glass. There should be no non-dispersed particles in a homogenous preparation.
- *Test for spread ability:* To determine the formulation's spread ability, it was applied to a



beaker) with stirring to make sure equal distribution.

- Check the pH, having a range about 4.5-5.5. using the citric acid it can be adjusted.
- If needed, add coloring agent to make emulsion colorful.
- Transfer preparation in spray bottle and shake it for better dispersion.



Fig 2- Natural Hair Protectant Spray

transparent micaplastic surface. A minute later, the circumference of the spread area was measured to assess the level of dispersal. [24, 25, 26].

#### V.RESULT AND DISCUSSION

- The prepared Natural Hair Protectant Spray color was found light Purple and the odor was Pleasant.
- *pH Test:*  
Normal pH Range: Hair care products, especially leave-in treatments like heat protectant sprays, often have a pH between 4.5 and 5.5 to preserve cuticle integrity and match the natural pH of the hair and scalp. The herbal hair heat protectant spray's pH value ranged from 4 to 5 on pH paper, and a pH meter provided an accurate reading of 5.35. This proves that the product falls within the range that is advised for use in hair care. [17]

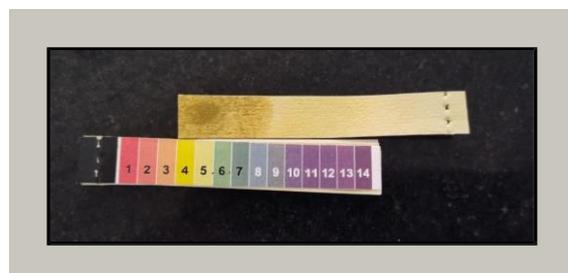


Fig 3- pH of Natural Hair Protectant Spray

- *Homogeneity Test:*

The sample on a glass slide seemed uniform when seen under a microscope. No non-dispersed particles or clusters were visible. It is believed that the formulation is homogeneous and dispersed equally.



Fig 4- Homogeneity of Natural Hair Protectant Spray

- *Skin Irritation Test:*

The left hand received 1-2 milliliters of the herbal hair heat protectant spray, and the results were observed for two hours to determine whether the skin was irritated. There were no signs of inflammation, redness, or itching during the observation period. The outcome shows that the product is safe to apply topically and is kind to the skin. [18]



Fig 5 - Skin Irritation Test

- *Test of Spread Ability:*

When applied to a transparent micaplastic surface, the heat protectant spray showed good spreadability. The formulation produced a circular region with an average diameter of 10 cm after spreading uniformly for one minute. This indicates effective distribution and good covering when applied to hair surfaces.



Fig 6- Spread Ability Test

## VI.CONCLUSION

The current research concluded that, A herbal heat protectant spray was developed using natural ingredients to help protect hair from damage caused by heat styling tools. The smoothness of the hair was preserved, damage was reduced, and managing the hair was made easier by the spray. Ingredients like hibiscus, shea butter, onion oil, and aloe vera were essential for preserving the health and protection of the hair. The spray didn't bother skin, felt good, and was safe to use. This proves that herbal products can be a good, natural alternative to chemical-based heat protectants. Future research can evaluate the product for long-term use and compare it to other products available on the market.

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