Revolutionizing Hair care : Creating Eco-friendly Protein Shampoo and Conditioner from Repurposed Cooking Oil to Combat Hair Fall and Enhance Smoothness

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Keywords

Repurposed cooking oil, formulation, protein based shampoo and conditioner

Introduction

Shampoo formulation and evaluation play crucial roles in the development of effective and sustainable hair care products. In recent years, there has been a growing emphasis on sustainability and environmental responsibility within the cosmetics industry. One area of focus has been the utilization of alternative and eco-friendly ingredients, such as refined and filtered waste cooking oil, in the formulation of hair care products like shampoo. The use of waste cooking oil as a raw material presents an opportunity to reduce environmental pollution and waste while also creating value from otherwise discarded resources. Refined and filtered waste cooking oil, obtained through appropriate processing methods, can provide beneficial properties for shampoo formulations, including moisturization, cleansing, and conditioning effects. The formulation of shampoo using refined and filtered waste cooking oil involves a careful balance of ingredients to achieve desired product characteristics such as cleansing efficacy, foam stability, viscosity, and sensory attributes like texture and fragrance. Various additives and functional ingredients may be incorporated into the formulation to enhance performance and appeal to consumer preferences. Evaluation of shampoo formulations is essential to ensure product efficacy, safety, and consumer satisfaction. This process typically involves a series of tests and assessments, including physicochemical analysis, stability testing, microbiological evaluation, and sensory evaluation through consumer panels. These evaluations help determine the overall quality, performance, and acceptability of the shampoo product.

Overall, the formulation and evaluation of shampoo using refined and filtered waste cooking oil represent a promising approach to sustainable innovation in the cosmetics industry, contributing to the advancement of green chemistry principles and the development of eco-friendly personal care products.

Objectives

The primary objective is to reduce waste and promote sustainability by repurposing used cooking oil that would otherwise end up in landfills or water bodies. By creating a product that utilizes this waste material, we can contribute to a cleaner

and greener environment. Another objective is to ensure that the shampoo effectively cleanses the hair and the conditioner provides nourishment and hydration. The products should be formulated with natural ingredients that are gentle on the scalp and hair while delivering the desired results. Consider sourcing ingredients from sustainable and ethical suppliers. Additionally, aim for responsible manufacturing practices that minimize water and energy consumption, reduce packaging waste, and prioritize fair labour practices.

Methodology:

Materials: Waste cooking oil, NaOH, Sodium lauryl sulphate ,salicylic acid, sodium EDTA , guar gum, Tween 80,urea ,xanthan gum, lanolin , thriethanolamine

Formulation. In the first step ,we were filtered the oil by using strainer and fixed the quantities of SLS, lanolin, sodium EDTA, Tween 80, urea, and salicylic acid in separate container,whilst we systematically studied the effect of xanthan gum, guar gum, and gelatin by adding at different proportions. The shampoo formulations were prepared by mixing the ingredients in distilled water using a magnetic stirrer operating at 500 RPM. The final pH of the shampoo was adjusted between 5 – 6 either by 0.4N NaOH solution or 2% triethanolamine solution. The preparedshampoo trials were evaluated for physical appearance, and the most stable formulation was selected for making the shampoo by adding filtered oil at various proportions, respectively

Result and Conclusion:

Here we have described a new shampoo formulation containing repurposed cooking oil. Initially, we have performed various trials to find a suitable shampoo by using waste cooking oil. Trial shampoos were formulated using different natural polymers such as xanthan gum, guar gum, and gelatin and we are working on the evaluation for their physical appearance, pH, and day-long stability, results are awaited expecting for promising results and then Further it will be compared with marketed shampoos, namely Vatika, Clear for Men, Head & Shoulder etc.

Future Work Scope:

- Waste Reduction: Utilizing waste cooking oil helps in reducing the disposal issues associated with this waste, which often clogs drains and pollutes water bodies.
- Resource Conservation: This approach repurposes waste material, reducing the need for virgin oils and minimizing the environmental footprint associated with their production.
- Eco-labeling and Certifications: Products can achieve certifications such as USDA Organic, Ecocert, or other eco-labels, enhancing credibility and marketability.
- Compliance with Environmental Standards: Ensuring compliance with environmental regulations can make these products attractive for consumers and investors focused on sustainability.
- Biodegradability: Ensuring that the end products are biodegradable can enhance their eco-friendly credentials.
- Conducting thorough testing to ensure the safety and efficacy of the products, which can differentiate them in a competitive market.