

A STUDY ON THE FORMULATION AND EVALUATION OF HERBAL HAIR OILS

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Abstract

The traditional medicine of India, Ayurveda, discusses the use of herbals for beauty, which is based on conventional wisdom. An effective and powerful technology in the cosmetics field is herbal cosmetics. There is nothing more ancient than humanity and civilization than the concept of beauty and cosmetics. Therefore, many of them use beauty products which contain herb that order to keep their beauty and youth. Nowadays, organic cosmetics are becoming more accessible to the common people since they are expected to have fewer side effects, as well as an increased level of safety and security. We aim in this study to develop a general-use herbal oil in which a variety of herbs that are readily available to us are utilized and evaluation of the herbal oil formulation was conducted by determining various parameters, such as viscosity, saponification value, pH, etc.

Keywords: Ayurveda, Herbal hair oil, Organic Cosmetic, Viscosity, Saponification value.

1. INTRODUCTION

There are different types of cosmetics. The most common ones are made of substances that have been an application, a rubdown, a pouring, a sprinkling, or a pouring to a part of the human body in order to cleanse, beautify, or improve its appearance in order to improve its appearance. Formulation of herbal medicines is a method of healing that has been around for centuries because it was originally found in the Vedas and in the Unani texts.¹ The use of chemical medicine may not always bring the desired results because it may have negative side effects. Nowadays, we are moving towards using herbal products in cosmetic industries and also in beauty salons on a regular basis throughout the world. In herbal cosmetics, pharmaceuticals and bioactive ingredients work together to achieve the desired results.² In addition to their phytochemicals and botanicals, herbal products also contain vitamins and minerals. Cosmetics are used to care for the body in two ways. Phytochemicals are used to improve the biological functions of the body naturally.³ A healthy body leads to a healthy hair. Plants are added to herbal cosmetics in three different ways: as total extracts or as single molecules that have been obtained after extraction (for example: aloe vera gel, teas, plants), or as selective extracts (for example: wheat germ, ginkgo), or as natural molecules (for example: vitamins, coenzyme Q10).⁴ In addition to being an important part of the body, a person's hair also influences how they appear.⁵ Currently, there are many types of hair care products available on the market, and they are mostly designed to clean, modify, change, rejuvenate, nourish, and provide nourishment to the hair.⁶ An increasing percentage of the global market is devoted to herbal cosmetics and they are considered an invaluable gift from nature. It is now easy to find herbal cosmetic products in a variety of scents and colors that are suitable for all types of beauty routines.⁴ Herbal extracts can be used in cosmetics without

harming the skin when used in small amounts. The popularity of herbal hair oils for hair treatments is based on many factors. The conditioner also restores healthy hair by moisturizing the scalp and reversing dry scalp conditions. The sebaceous gland is provided with a variety of essential nutrients by maintaining the proper function of the gland. As a result of these factors, the present study was designed in a way that took into account them.⁵

2. FORMULATION OF HERBAL HAIR OIL ASSESSMENT OF MATERIALS

We used the following botanical materials to prepare the herbal hair oil: Amla, Shankpushpi, Brahmi, Bhringaraj, Jatamansi, Nirgundi, Shatavari, Kapur, Methi, Til oil, and Coconut oil, all of which were obtained from the local market in Rayagada, Amazon.in, and Herbal Plant Garden at the School of Pharmacy, CUTM, Rayagada, India, which were authenticated by the Pharmacy Department at the University.

2.1 Formulation of herbal oil

This article will explain how to prepare herbal oils from a number of ingredients, including: Amla, Nirgundi, Bhringaraj, Jatamansi, Neem, Shatavari, Methi, Shankpusphi, Brahmi and Kapur. It is important to note that the desired amount of each herb powder is to be collected from ayurvedic stores: Amla, Nirgundi, Bhringaraj, Jatamansi, Neem were mixed in 63% oil.⁶ Using muslin cloth, it was filtered after being heated for about 15 minutes and it was heated for about 15 minutes. As soon as the filtrate had been obtained up to 100 ml, coconut oil was added.⁷



2.2 Formulants and ingredients in herbal oil

TABLE 1: Ingredients in herbal oil

Sl no:	Ingredients:	Quantity (%)
1	Amla	85
2	Nirgundi	2
3	Bhringraj	10
4	Jatamansi	3
5	Neem	2.5
6	Shatavari	2.5
7	Methi	5
8	Shankpusphi	3.5
9	Brahmi	7
10	Kapur	1
11	Til oil	63
12	Coconut oil	37

3. EVALUATION OF HERBAL OIL

Physical and biological tests were performed on the formulated herbal hair oil.⁸

3.1 Sensitivity test

For preparation, sun light was used for 4-5 minutes on a 1cm patch of skin on one hand.⁹

3.2 Value of acid

Solution of 0.1 Molar Potassium Hydroxide

0.1M Potassium Hydroxide solution was prepared by weighing 0.56 grams of KOH pellets and dissolving them in 100ml distilled water. The burette is filled with the prepared KOH solution of 0.1 Molar.¹⁰

Preparation of sample

Combining 25ml ethanol, 25ml ether, and 10ml oil and shaking thoroughly, a sample of 10ml of oil can be determined. Then titrated with 0.1 molar KOH solution by adding 1 ml of phenolphthalein solution.¹¹

$$\text{Acid value} = \frac{(M \cdot W \cdot \text{Normality} \cdot \text{Vol} \cdot \text{of KoH})}{(\text{Mass of Sample})}$$

Where, Normality = 0.1

Molecular Weight = 56.11 Mass of sample = 10gm

Volume of KOH = IBR – FBR

(Final burette reading – initial burette reading FBR= 6.3, IBR= 0)

$$\text{Acid Value} = (56.11 * 0.1 * 63) / 10 = 3.53$$

3.3 pH

A pH meter was used to determine the pH of Ayurvedic herbal oil. An accurate pH measurement can be achieved by using a pH meter or a probe and meter.¹² A small voltage is passed through the glass electrode of the probe. Voltmeters display pH units instead of volts when they measure the impedance of the glass electrode. In order to take measurements, the probe must be submerged in liquid until the meter registers a reading.¹³

3.4 Skin irritation test

We shaved rats' backs with an electric shaver and then used hair removal cream. After denuding the area, a 24-hour observation period was conducted, and a 48-hour observation period was conducted after applying test samples.¹⁴

3.5 Density

Oil has a specific gravity of 0.9gm/ml and distilled water has a density of 0.997gm/ml at room temperature.¹⁵

$$\text{Specific gravity of oil} = \frac{\text{Density of oil}}{\text{Density of Distilled water}}$$

So,

$$\begin{aligned} \text{Density of Oil} &= \text{Specific gravity of oil} \times \text{Density of Distilled Water} \\ &= 0.9\text{gm/ml} \times 0.997\text{gm/ml} \\ &= 0.8973\text{gm/ml} \end{aligned}$$

3.6 Specific gravity

After rinsing the specific gravity bottle with distilled water, there are a few steps to follow. Afterward, the bottle is dried in the oven for 15 minutes, cooled, and capped, followed by weighing (a).¹⁶

You can now weigh the sample again (b) by filling a new specific gravity bottle with the sample, capping it, and repeating the process.

Subtract b from a to calculate the weight (b-a).¹⁷

Calculation of specific gravity

Empty specific gravity bottle = 23.5g (W_1)

With distilled water = 47.7g (W₂)

With oil (Sample) = 45.3 (W₃)

Density of Distilled water = 1gm/ml Specific gravity of Oil

$$\begin{aligned}\text{Mass of oil} &= W_3 - W_1 \\ &= 45.5 - 23.5 \\ &= 21.8\end{aligned}$$

$$\begin{aligned}\text{Mass of distilled water} &= W_2 - W_1 \\ &= 47.7 - 23.5 = 24.2\end{aligned}$$

Specific gravity of oil = 21.8/24.2 = 0.9gm/ml

3.7 Viscosity

Using a given rate as a measure, the viscosity of a fluid indicates its resistance to deformation. Liquids have viscosity, which corresponds to the informal concept of "thickness." For example, syrup has a greater viscosity than water, and water has a lower viscosity than syrup.¹⁸

The viscosity of a fluid measures the frictional force between adjacent layers of fluid. A viscous fluid flows more quickly near its axis than near its walls when forced through a tube.¹⁹

Flow can be sustained by some stress (such as a pressure difference between the two ends of the tube). As a result, there is friction between the layers of fluid that are moving relative to each other.²⁰ When a tube flows at a constant rate, the compensating force depends on the viscosity of the fluid.²⁰

Viscosity formula

$$N_2 = \frac{N_1 \times P_2 T_2}{P_1 \times T_1}$$

A₁ = Absolute water viscosity

Water flow time is T₁

In the equation P₁ = Water Density

Liquid viscosity = N₂

Time T₂ = Liquid flow time

P₂ = Liquid density

$$N_2 = \frac{1.0016 \times 0.8973 \times 24.54}{0.997 \times 53.84}$$

$$= \frac{22.05}{53.67} = 0.41$$

4. RESULT

The evaluation parameters and the values determined were found to be under limit, which indicates fit for using.²¹

Table 2: Evaluation parameters and values

Sl. No:	Parameter	Inference
01	Specific Gravity	0.9
02	Viscosity	0.410
03	Acid value	3.53
04	Ph	8.08
05	Sensitivity Test	No Irritation
06	Skin Irritation Test	No Irritation
07	Grittiness	Smooth
08	Density	0.8973

5. CONCLUSION

There are many hair treatments on the market today that contain herbal hair oils. In addition to moisturizing the scalp, herbal hair oils are also beneficial to reversing dry scalp and dry hair conditions.²² In addition to promoting natural hair growth, the product is packed with numerous essential nutrients.²³ Herbal hair oil is made using several herbs (see Table 1), which have been discussed above as ingredients. This article offers an evaluation of the different parameters of herbal hair oil such as its sensitivity, viscosity, pH, irritation, grittiness and acid value (Table 2).²⁴ Herbal hair oil formulated with standardized ingredients must undergo further standardization and biological testing to determine its effectiveness²⁵. To determine its efficacy, further standardization and biological testing are required for the formulated herbal hair oil, according to the current investigation.²⁶

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