



Formulation and Evaluation of Herbal Shampoo

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ABSTRACT

The study aimed to formulate a pure herbal shampoo and to evaluate its physicochemical properties of herbal shampoos. The study emphasizes safety, efficacy, removal of harmful synthetic ingredients, and substitution with safe natural ingredients. The herbal shampoo was formulated by adding the extracts of Amla, Ritha, shikakai, Neem, Methi, Aloe vera, lemon oil, in several proportions. The least amount of methyl paraben was added as a good preservative. Several analytical tests like visual inspection, pH, wetting time, then % of solid contents, foam volume and stability, surface tension, detergency, dirt dispersion etc. were performed to evaluate the physicochemical properties of pure herbal shampoo. The formulated pure herbal shampoo was clear and had a great appeal. It showed very great cleansing and detergency, low surface tension, small bubble size and good foam stability after 5 to 6 min. The results indicated that the formulated shampoo has excellent conditioning performance.

Keywords: Herbal shampoo, Evaluation of shampoo, Hair Health, Cosmetic.

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INTRODUCTION

Herbal medicines were in use since the beginning of centuries to maintain good health and to treat diseases i.e. alopecia, inflammation, Scalp radiation, Dandruff [1]. Herbal cosmetics are the products in which herbs of medicinal importance are used in or extract or crude form. At present, the knowledge and experience of herbs usage are being blended with advanced cosmetic technology to develop a safe and elegant cosmetic product, which has a good range of people acceptability. Herbs with medicinal properties have the advantage of having no or least adverse effect and have a wide spectrum of consumer compliance. Shampoos formulation are most probably used as cosmetics. It is a hair care product that is used for cleaning hair and scalp in our daily life. Shampoos are most likely used as beautifying agents and are a viscous solution of detergents containing suitable additives, preservatives, and active ingredients. It is commonly applied on wet hair, massaged into the hair, and cleansed by rinsing with normal water. The aim of using shampoo is to remove dirt that is built 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 is popularized due to its natural origin, which is much safer, increases consumer demand, and is free from harmful side effects. [2-3] In commercial shampoos, surfactants (synthetic) are added mainly for their cleansing and foaming properties, but the continuous use of these surfactants (synthetic) leads to very serious effects such as eye irritation, scalp irritation, loss of hair, and dryness of hair [4]. Alternative to synthetic shampoo, we can use shampoos containing natural herbs. However, formulating cosmetic products containing only natural substances is very difficult [5]. There are a number of medicinal plants with potential effects on hair used traditionally over years around the world and are incorporated in shampoo preparation [6]. These medicinal plants may be used in extract form, their powdered form, crude form, or their derivatives [7]. To develop a shampoo containing only one natural substance, which would be safer with a milder effect, than the synthetic shampoo is difficult and also it should possess good foaming, detergency, and solid content as such synthetic shampoo. Hence, we considered in detail an unadulterated natural cleanser utilizing conventional techniques using regularly utilized plant material for hair washing. This study was designed to formulate a herbal shampoo and to evaluate its physicochemical properties in search of a safe and effective cosmetic product.

MATERIAL AND METHODS

Collection of Herbs:

The Herbs to be used for this research study was collected from the local herbal shop at pune. The Collected Herbs are dried and sieved using sieve Number 30 and stored from in a air tight containers.

Master manufacturing Formula

Formulation 1:

About 100 g of each powdered plant materials, namely Alma, Ritha, Shikakai, Neem, Methi was homogenized. The powdered material was extracted with distilled water by boiling for 4 hours. The extract of each plant material was separated and evaporated under proper condition, then dropwise addition of lemon oil, ,Alovera gel, was prepared in one part of water, Filter it, by using muslin cloth, Collect filtrate Collect filtrate Mixed to each other of above filtrate with constant stirring. Mixed gum tragacanth as a thickening agent for maintenance of consistency of herbal shampoo as like semisolid nature. Preservatives and perfume were added lastly

Table 1: Ingredients of hair formulation 1

1.	Alma	1.7g
2.	Ritha	1.5g
3.	shikakai	1.5g
4.	Neem	0.5g
5.	Methi	1.7g
6.	Aloe vera	1.7
7.	Lemon oil	qs
8.	Methyl paraben	1g
9.	Gum tragacanth	qs
10.	Distilled water	50ml

Formulation 2:

About 100 g of each powdered plant materials, namely Alma, Ritha, Shikakai, Neem, Methi was homogenized. The powdered material was extracted with distilled water by boiling for 4 hours. The extract of each plant material was separated and evaporated under proper condition, then dropwise addition of citral oil, with continuous stirring Alovera gel, was prepared in one part of water, Filter it, by using muslin cloth, Collect filtrate Collect filtrate Mixed to each other of above filtrate with constant stirring. Mixed gum tragacanth as a thickening agent for maintenance of consistency of herbal shampoo as like semisolid nature. Preservatives and perfume were added lastly.

Table 2: Ingredients of hair formulation 2

SR NO	Ingredients	quantity
1.	Alma	1.7g
2.	Ritha	1.5g
3.	shikakai	1.5g
4.	Neem	0.5g
5.	Methi	1.7g
6.	Aloe vera	1.7
7.	Citral oil	qs
8.	Sodium Benzoate	0.1g
9.	Distilled water	50ml

Formulation 3:

About 100 g of each powdered plant materials, namely Alma, Ritha, Shikakai, Neem, Methi was homogenized. The powdered material was extracted with distilled water by boiling for 4 hours. The extract of each plant material was separated and evaporated under proper condition, then dropwise addition of citral oil, with continuous stirring Alovera gel, was prepared in one part of water, Filter it, by using muslin cloth, Collect filtrate Collect filtrate Mixed to each other of above filtrate with constant stirring. Mixed gum tragacanth as a thickening agent for maintenance of consistency of herbal shampoo as like semisolid nature. Preservatives propyl paraben added and perfume were added lastly .

Table no 3: Ingredients of hair formulation 3

Sr no	Ingredients	quantity
1.	Alma	1.7g
2.	Ritha	1.5g
3.	shikakai	1.5g
4.	Neem	0.5g
5.	Methi	1.7g
6.	Aloe vera	1.7
7.	Propyl paraben (0.2%)	0.1 ml
8.	Distilled water	50ml

EVALUATION OF HERBAL SHAMPOO:

To evaluate the quality of prepared formulations, several quality control tests including visual assessment, physicochemical controls conditioning performance tests were performed.

Determination of pH:

The pH of 10% v/v shampoo solution in distilled water was measured by using pH meter at room temperature [8].

Physical appearance/visual inspection:

The formulation prepared were evaluated for the clarity, color, odor, spreadability and foam producing ability was found to be good [8].

Determination of % of solid contents:

5 grams of shampoo were placed in a previously clean, dry and weighed evaporating dish. The dish and shampoo was weighed again to confirm the exact weight of the shampoo. The liquid portion of the shampoo was evaporated by placing the evaporating dish on the hot plate. The weight and thus % the solid contents of shampoo left after complete drying was calculated [9]

Surface tension measurement:

The surface tension of 10% w/v shampoo in distilled water was measured using instrument stalagmometer at room temperature [10]

Wetting time:

A canvas paper was cut into 1-inch diameter discs having an average weight of 0.44 g. The smooth surface of disc was placed on the surface of 1% v/v shampoo solution and the stopwatch started. The time required for the disc to begin to was noted down as the wetting time [11].

RESULTS AND DISCUSSION:

Hair shampoo formulation labelled as 1, 2 and 3 were evaluated and checked for the preliminary parameters and the observations were listed found all three formulations 1,2 and 3 were found intact and respond to all the parameters similar except the PH of the formulation 3 was 5.4 slightly higher than the formulations 1 and 2.

Table no 4: Evaluation results of cream formulations

Sr no	parameter	Formulation 1:	Formulation2:	Formulation 3:
1.	pH	5.00	5.2	5.4
2.	Physical appearance/visual inspection	Good	Good	Good
3.	Determination of % of solid contents	21.75	22.72	21.43
4.	Surface tension	36.71 ± 1.77	37.73 ± 1.77	38.75 ± 1.77
5.	Wetting time:	186 ± 4	184 ± 4	182 ± 2

pH

Most shampoos are formulated as either neutral or slightly alkaline to minimize the damage to hair. The pH of shampoo also helps in minimizing irritation to the eyes, enhances the qualities of hair and maintain the ecological balance of the scalp [13]. the pH of formulated shampoo was found to be nearly neutral [8].

Physical appearance/visual inspection

A shampoo like any other cosmetic preparation should have good appealing physical appearance. The formulated shampoos were evaluated for physical characteristics such as color, odor and transparency Our prepared shampoo was transparent, light black and had good odor [8].

% of solid contents

Good shampoos usually have 20%e30% solid content as it is easy to be applied and rinse out from the hair. If it doesn't have enough solid it will be too watery and wash away quickly, similarly too many solids will

be hard to work into the hair or too hard to wash out. The percent solid contents of the tested shampoo was found within the range of 22-25% and are expected to wash out easily [9].

Surface tension

The term indicates the amount of surfactant present in shampoo to reduce the surface tension. Lesser the surface tension stronger is the cleaning ability of the shampoo. A shampoo is considered of good quality if it decreases the surface tension of pure water from 72.28 dyn/cm to about 40 dyn/cm. The formulated shampoo reduced the surface tension to 38.72 dyn/cm [14].

Wetting time

The wetting ability of a surfactant is dependant on its concentration and is commonly used to test its efficacy. our formulated shampoo exhibited maximum wetting time so, it contains minimum concentration of detergents [15].

CONCLUSION

Herbal shampoo with great cleansing and foaming ability was formulated using natural herbal ingredients and Aloe vera leaf as a conditioner. These shampoos contain high polyphenolic and flavonoid as a chemical constituent due to which antioxidant and antibacterial activity have enhanced which resulted into cleaning ability with healthy hair and nourish hair. Thus, quality increased herbal shampoo was formulated with a unique aroma, colour and great potential for cleaning and foaming ability. This formulation is rich in polyphenols that have good antioxidant, antimicrobial and anti-inflammatory property. A need for this age is to prepare herbal cosmetics which will prove beneficial and have less side effects. This will boost the use of natural medicines in the coming era, but further research and development is required to improve it's overall quality.

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