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Herbal Shampoo: A Review

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ABSTRACT

The most typical hair treatment is cleaning. Shampoos are products that are generally used to clean the hair and scalp. Shampooing is an art by which sebum or grease produced by sebaceous glands are rinsed off from hairs making them dirt/oil free. The main goal of this study was to replace risky ingredients in shampoo formulations with a secure natural product. The study's objectives included developing a pure herbal shampoo and assessing and contrasting its physicochemical properties with those of commercially available synthetic and herbal shampoos. The herbal shampoo was formulated by adding the extracts of Acacia concinna, Sapindus mukorossi, Phyllanthus emblica, Ziziphus spina-christi, and Citrus aurantifolia in different proportions to a 10% aqueous gelatin solution. A small amount of methylparaben was added as a preservative and pH was adjusted with citric acid. Several tests such as visual inspection, pH, wetting time, % of solid contents, foam volume and stability, surface tension, detergency, dirt dispersion, etc, were performed to determine the physicochemical properties of both prepared and marketed shampoos. The results clearly indicate that the formulated shampoo is having a satisfactory conditioning performance level. All the ingredients used to formulate shampoo are safer and the physicochemical evaluation showed ideal results, but further research is required to improve its quality and identify the constituents that are responsible for the performance.

KEYWORDS: Herbal shampoo, physicochemical properties, synthetic, Chemical free.

INTRODUCTION

Cosmetics are items designed to be applied to the body in order to cleanse, enhance attractive traits, and beautify or change the look. They are articles with mild action on the human body, which are intended to be applied through rubbing, sprinkling, or other methods, aiming to clean, beautify and increase attractiveness, alter the appearance, or keep the skin or hair in good condition [1]. The herbal shampoo is a cosmetic preparation that uses herbs from plants and it is meant for washing hair and scalp just like a regular shampoo. It serves as an alternative to commercially available synthetic shampoo. Herbal lists today, believe in helping people build their good health with the help of natural sources (2). In the early days, a shampoo could be defined as an effective cleansing agent for hair and scalp, but in the present scenario, the shampoo must do much more functions. It must leave the hair easy to comb, lustrous, radiant, and controllable whilst being convenient and easy to use (3). Shampoo is a mixture of a surfactant (surface active ingredient) in an appropriate liquid, solid, or powder form that, when used as directed, will remove surface grease, grime, and skin debris from the hair shaft and scalp without negatively affecting the user's hair, scalp, or health. Shampoo is a hair care treatment used to get rid of contaminants including dandruff, oils, grime, skin fragments, and other contaminants that slowly accumulate in hair. The objective is to

get rid of the undesirable build-up without removing so much sebum that the hair becomes unmanageable. [4]. Evaluation of shampoos comprises quality control tests including visual assessment and physiochemical controls such as pH, density, and viscosity. The difference is more likely to be a reduced amount of oil or conditioning agent in shampoo for oily hair or the difference may even just be the packaging [5]. Today's market is full of various chemically composed products. There are several herbal shampoos also available with chemical composition in the market today. Those are effective for hair problems but are also indebted for hair loss. Some research (national & international both) says the chemicals in Herbal shampoo are also indebted for these, for example – scalp cancer. The preparation of HS can be defined as a surfactant which can be a liquid, solid, or powder prepared in a suitable form which, when used under certain conditions removes grease, dirt, and debris from the scalp, which cleanses adverse effects on hair or scalp health [6]. Herbal shampoo is a type of cosmetic preparation that uses herbs from plants as an alternative to the synthetic shampoo available in the market. There are large numbers of medicinal plants that are reported to have beneficial effects on hair and are commonly used in the formulation of shampoo. The evaluation of such formulations is also very important to know their performance, quality, and effectiveness. It is also necessary to check whether the products have any sensitive toxic effects on the human body [7]. In order to find a cosmetic product that is both safe and effective, this study was created to analyse several synthetic and herbal shampoo formulas that have been commercialized. The evaluation comprises quality control tests including visual assessment and physiochemical controls such as pH, dirt dispersion, solid content, wetting time, surface tension, and rheological evaluations besides foaming ability and foam stability.

Role of Ingredients [8,9,10]

Sr. No.	Plant Name	Medicinal Use	Figure
1.	**Reetha extract**	Reetha has a natural cleanser Antimicrobial properties help to remove microorganisms.	
2.	**Amla**	They penetrate the scalp to eliminate dryness. It helps in preventing hair fall.	
3.	**Shikakai**	It nourishes the scalp and hair roots. It acts as an antidandruff agent	

4.	**Sidr**	It acts as a conditioner. It has a de-inflammatory effect. Provide strength.	
5.	**Lemon**	It reduces oil and dandruff. naturally lighten hair, especially lighter hair colors.	

Table no. 1

Review of literature:

Sachin Dubey *et.al.* (2004): Two preparations of herbal shampoo powder were formulated using some common traditional drugs used by folk and traditional people, for hair care. The preparations were formulated using Behera, amla, neem Tulsi, shikakai henna & Brahmi evaluated for organoleptic, powder characteristics, foam test, and physical evaluation. As the selected drugs are being used for a long time as a single drug or in combination, present investigations will further help to establish standard formulation and evaluation parameters, which will certainly help in the standardization of the quality and purity of such types of herbal powder shampoos [(11)].

Ashok Kumar *et.al.* (2010): The formulated shampoos were not only safer than the chemical conditioning agents but also greatly reduce protein loss during combing. The pH of the shampoos was adjusted to 5.5, to retain the acidic mantle of the scalp. Synthetic preservatives have sometimes been the cause of adverse effects among consumers. We have used the physicochemical approach to preservation and by formulating a self-preserving shampoo has avoided this risk posed by chemical preservatives. Even while herbal shampoo performs better and is safer than synthetic ones, it seems unlikely in the current situation that it will be widely used by customers [(12)].

Richa Madhu Sharma *et.al.* (2011): Shampooing is the most typical method of hair care. Shampoos are products that are primarily used to clean the hair and scalp**.** A more radical approach to popularizing herbal shampoo would be to change the consumer expectations of shampoo, with an emphasis on safety and efficacy. In rare cases, synthetic preservatives have caused negative consumer reactions. We have used the physicochemical approach to preservation and by formulating a self-preserving shampoo, have avoided using chemical preservatives in herbal shampoo [(13)].

Sarath Chandran *et.al.* (2013): Shampoo is a hair care product used for the removal of oils, dirt, skin particles, dandruff, environmental pollutants, and other contaminant particles that gradually build up in hair. It is a cosmetic product, and its main use is to clean the hair of accumulated sebum, scalp impurities, and hair-grooming product residue. The main objective of this study was to eliminate the harmful synthetic ingredient from anti-dandruff shampoo formulations and substitute them with a safe natural ingredient [(14)].

Shah A. Khan *et.al.* (2014): The study aimed to formulate a pure herbal shampoo and to evaluate and compare its physicochemical properties with the marketed synthetic and herbal shampoos. The herbal shampoo was formulated by adding herbal ingredients. The pH was corrected with citric acid, and a little amount of methylparaben was added as a preservative. To ascertain the physicochemical qualities, a number of tests were carried out, including visual inspection, pH, wetting time, percentage of solid contents, foam volume and stability, surface tension, detergency, dirt dispersion, etc. of both prepared and marketed shampoos. Our prepared shampoo showed comparable results with that of marketed shampoo for quality control tests but further research and development are required to improve its overall quality [(15)].

Rhimjhim arrora (2019): The aim of the present investigation was to formulate and evaluate herbal shampoo containing natural ingredients with an emphasis on safety and efficacy, which will avoid the risk posed by chemical ingredients. The main objective of this study was to eliminate the harmful synthetic ingredients from shampoo formulation and substitute them with safe natural ingredients an attempt has been made to incorporate cutting-edge formulation technology into a recipe using natural ingredients. It clears sebum, dirt, and dandruff, promotes hair growth, strengthens, and darkens the hair [(16)].

Vijayalakshmi A *et.al* (2018): The present study was carried out with the aim of preparing an herbal shampoo that reduces hair loss during combing, is safer than chemical conditioning agents as well as strengthens hair growth. The main purpose behind this investigation was to develop a stable and functionally effective shampoo by excluding all types of synthetic additives, which are normally incorporated in such formulations. To evaluate for good product performance of the prepared shampoo, many tests were performed. The results of the evaluation study of the developed shampoo revealed a comparable result for the quality control test, but further scientific validation is needed for its overall quality [(16)].

Material and method

Sample collection: All plant materials except Ziziphus Spina-Christi were obtained from Sri Sai college of pharmacy Badhani, Pathankot. Two commercially available shampoos namely Dove Shampoo and Herbal Essences shampoo were purchased from the local supermarket.

Preparation of plant extracts: 100 g of Ziziphus Spina-Christi leaves were washed under running water to remove foreign substances, homogenized, and boiled in hot water for 4 h. The aqueous extract was filtered and concentrated to obtain semi-solid mass (yield: 11% w/w). Aqueous extracts of Sheekakai and Amla were also prepared by a similar method (yield: 8.3% w/w and 8% w/w respectively). However, to get 11.2 g of solvent-free semi-solid mass (yield: 11.2% w/w), Reetha pericarps were extracted using the cold maceration process with 70% ethyl alcohol.

Herbal shampoo preparation: To create a shampoo, various plant extracts were combined. A 10% gelatin solution was mixed with herbal extracts after being added, and the process took 20 minutes. Lemon juice (1 mL) and Methylparaben were also added with stirring. To end, the pH of the solution was adjusted by adding a sufficient quantity of 1% citric acid solution. The prepared shampoo also received a few drops of rose essential oil to add flavour, and the final volume was increased to 100 mL using gelatin solution.

Composition of Formulated Herbal Shampoo:

Sr.No.	Material	Quantity
1.	Reetha extract	2.5gm
2.	Amal extract	2.5gm
3.	Sheekakai extract	2.5gm
4.	Sidr extract	2gm
5.	Lemon Juice	1ml
6.	Methyl Paraben	1ml of 0.05% soln.
7.	Gelatin Solution	Q.s.
8.	Citric Acid	Q.s.
9.	Essential oil	0.1ml

Table no. 2

Evaluation of formulated and commercial shampoo:

Many quality control tests, including visual assessment and physicochemical controls conditioning performance testing, were carried out to determine the caliber of commercial and created formulations.

Physical appearance/visual inspection: The formulation prepared was evaluated for clarity, color, odor, and foam-producing ability.

pH determination: At room temperature, pH paper was used to determine the pH of a 10% v/v shampoo solution in distilled water.

Determination of solid content percentage: The percentage of solid content was determined by weighing about 4 grams of shampoo placed in a previously clean, dry, and weighed evaporating dish. To check the precise weight of the shampoo, the dish and shampoo were weighed once more. By setting the evaporating dish on the hot plate, the liquid portion of the shampoo was able to evaporate. After the shampoo had completely dried, the weight and consequently the percentage of its solid constituents were calculated.

Surface tension: A stalagmometer was used to test the surface tension of 10% w/v shampoo in distilled water at room temperature.

Dirt dispersion: Two drops of shampoo were added to a large test tube containing 10 mL of distilled water. The test tube was stopped, a drop of Indian ink was added, and it was shook ten times. The rubric, which included options like None, Mild, Moderate, and Heavy, showed how much ink was present in the foam.

Foaming ability and foam stability: The cylinder shake method was used for determining foaming ability. 50ml of 1% shampoo was put into a 250ml graduated cylinder and cover the cylinder with a hand and shaken 10 times. The total volumes of foam content after 1 minute of shaking were recorded. Only the foam volume was computed. The amount of foam was measured immediately after shaking and at 1-minute intervals for 4 minutes.

Wetting time: Canvas paper was divided into discs with a 1-inch diameter and an average weight of 0.44 g. The stopwatch was activated after placing the disc's smooth surface on the 1% v/v shampoo solution. The wetting time was recorded as the length of time it took for the disc to start to sink.

Stability studies: The thermal stability of the formulation was studied by placing in a glass tube and they were placed in a humidity chamber at 45 ^{0}c and 75% relative humidity. Their appearance and physical stability were inspected for a period of 3 months at intervals of one month.

Conclusion:

The aim of this study was to formulate a completely herbal shampoo that is at par with the synthetic shampoo available in the market. Using plant extracts that are frequently used traditionally and celebrated for their hair-cleansing effects throughout Asia, we created a herbal shampoo. Since none of the components used to make shampoo are synthetic conditioning agents like silicones and polyquaterniums, they all have a significantly lower risk of causing hair or protein loss during combing. We have used Sheekakai, Amla, Ziziphus, and other plant extracts to give the conditioning effects rather than cationic conditioners. The physicochemical characteristics of both produced and commercially available shampoos were compared and evaluated by a number of experiments. Our prepared shampoo showed comparable results with that of marketed shampoo for quality control tests but further research and development are required to improve its overall quality.

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