

Formulation and Evaluation of Herbal Shampoo

Rasika Vachane¹, Sakshi Gavali² Mayuri Kale³, Arti Parad⁴, Sambhaji Dapkekar⁵, Tejas Pandit⁶

Samarth College of Pharmacy, Bangarwadi, Belhe, Pune, Maharashtra, India^{1,2,3,4,5,6}

Dr. Babasaheb Ambedkar Technological University, Maharashtra, India

Abstract: Hair is an important part of the body appeal and its look is a health indicator. Accordingly, recent advances in hair science and hair care technologies have been reported in literature claiming innovations and strategies for hair treatments and cosmetic products. The treatment of hair and scalp, primarily, involved the use of shampoo for an effective, but gentle cleansing; however, for years, the shampoo is considered not only as a cosmetic product having the purifying purpose, but it is also responsible for maintaining the health and the beauty of hair, imparting gloss and improving manageability. For meeting the needs of a multitasking formulation, following also the recent marketing-trend addressed to the "natural world", new challenges for cosmetic technology are aimed towards the research of natural ingredients, as well as new techniques for shampoo formulation. Regarding the recent development of solid shampoos, little information is available about their use, formulation and advantages. This review is largely focused on the description of solid shampoos, mainly based on the use of clays, herbs or flours as washing bases alternative to the traditional ones, consisting of a combination of synthetic surfactants, together with other usual ingredients expected in a shampoo formulation.

Keywords: Hair Anatomy and Physiology; Hair Care Cosmetics; Solid Clay Shampoo.

I. INTRODUCTION

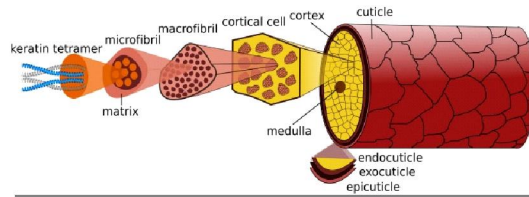
Hair-care products may be defined as the preparation which is meant for removal of dirt, excessive oil, dandruff from the hair and scalp. Hair cares products also provide nourishment to the hair and giving the healthy look to hairs. The real technology of cleaning the hair and scalp was developed in this century by the introduction of cake soap which was followed by the production of shampoo products. The shampoo is a word derived from the Indian subcontinent. It dates to 1762 and is derived from Hindi shampoo which means head massage with the mean of hair oil. A shampoo is a cosmetic preparation meant for the washing of hair and scalp. Its primary function is cleansing the hair of accumulated sebum, scalp debris, and residue of hair grooming preparation. The added function of a shampoo includes conditioning, lubrication, medication, and so on. The shampoo is preparation using surfactant as the main ingredient and additional ingredients that are functioned to increase the working power of shampoo. Shampoo which is available in the market use synthetic ingredients that are harmful to the skin. Most consumers are not aware of these harmful effects. Sodium lauryl sulphate is a surfactant which is widely used in shampoo which irritates scalp and damage hair follicles. Formaldehyde is also used as preservatives in shampoo formulations which lead to an increase in dermal sensitization. Today people are aware of synthetic products and their harmful side effects on hair, skin eye, this makes consumer prefer herbal products over synthetic products. Herbal products have negligible side effects. Shampoos are of various types, like powder shampoo, clear liquid shampoo, lotion shampoo, solid gel shampoo, a medicated shampoo, liquid herbal shampoo etc. As far as herbal shampoos are concerned instability criteria. According to the nature of the ingredients they may be simple or plain shampoo, antiseptic or antidandruff shampoo and nutritional shampoo containing vitamin, amino, acids, proteins, and hydrolysate.

II. HAIR

Hair is an important part of the body appeal and its look is a health indicator. Hair consists of the tissue called epithelium which corresponds to the cuticle of the epidermis. Hair has no blood vessels of nerve supply if its own. It depends upon the dermal layer for blood and nerve supply. The hair is mainly constituted by three parts: the bulb, the root and the stem, and it are implanted in the pilosebaceous follicle in the dermis. The bulb is the deepest end of the hair and is also the portion that makes it grow. When it is cut, it continues to grow. Its color depends upon the pigmentation. The composition of the hair shaft is generally uniform throughout. If we see through the cross section of the hair, it can

be divided into three parts know as cuticle, cortex and medulla. The cuticle is a very resistant layer of overlapping dead cells that form a protective barrier against the outside environment and external aggressions. It consists of endocuticle and exocuticle. Normal cuticles have a smooth appearance, allowing light reflection and limiting friction between the hair shafts. Indeed, it is responsible for the hair luster and texture. The cortex is made of packed spindle-shaped cortical cells, filled with keratin filaments parallelly oriented to the longitudinal axis of the hair shaft, and of an amorphous matrix of high Sulfur proteins. In particular, cysteine residues in adjacent keratin filaments tend to form covalent disulfide bonds with strong crosslink between adjacent keratin chains thus; it contributes to providing the shape, the st Hair consists of ceratoid or proteins and may be classed as course, medium and fine.

Structure of Hair



Hair Loss:

Hair loss is a common concern these days for both men and women who are in their mid to late adulthood many people are sufferinfrom baldness, receding hairline, hair loss and thinning of hair. Even though hair loss is very commonly seen in men here are many females too who are prone to this problem. The regular use of treatments like hair dyeing, hair straightening and curling which leads to many harmful chemicals being used on the hair is one of the main reason why females also feel hair loss at some stage in their life. The hair is not just a part of our body and it is a symbol of beauty, status and health. Variety of hair care products from shampoo, hair oils, hair colorants and other miscellaneous preparation are abundantly available in the market to suit the specific requirement of the consumer.

III. SHAMPOO

The most common hair care cosmetic product is the shampoo. Shampoo can be described, primarily, as a cosmetic preparation, packed in a form convenient for use, generally applied for cleaning hair and scalp from dirt, residues of previously applied hair styling products and environmental pollutants. A shampoo should also be easy to remove through rinsing with water, it should produce a good amount of foam to satisfy the expectations of the users (although the foam is not a guarantee of cleaning), and it should be non-toxic and non-irritating for hair and scalp, avoiding any side effects or skin and eye irritation. Nowadays, shampoo is well beyond the stage of pure cleaning agents of the hair. In detail, these “specific” shampoos contain antibacterial agents, natural essential oils or extracts for treating dandruff, dermatitis and other hair diseases.

3.1 Ideal characteristics of shampoo:

- Shampoo should effectively remove the dust and excess sebum from hair and scalp.
- Shampoo should effectively wash hair.
- Shampoo should be easily removed by rinsing with water. Shampoo should leave hair non-dry, lustrous, and good manageability.
- Shampoo should not make hand rough
- Shampoo should not have any side effect and should not irritate skin and eye.
- Shampoo should spread easily and disperse easily overhead and hairs.
- Shampoo must develop dense and luxurious lather
- It should be effective in a small amount.
- Ease of combing of wet hair.

Defined a shampoo classification, listing different types of products:

- Powder shampoo
- Liquid shampoo
- Lotion shampoo
- Solid gel shampoo
- Liquid herbal shampoo
- Solid cream shampoo
- Aerosol foam shampoo
- Specialized shampoo
- Conditioning shampoo
- Anti dandruff Shampoo
- Baby Shampoo.

1) POWDER SHAMPOO:

“Powder shampoo is essentially the same as your liquid shampoo, delivered to you without the water,” says founder Kailey Bradt. On average, liquid shampoos are 80% water and come in large eight-ounce bottles.

2) LIQUID SHAMPOO:

These are clear liquid preparations that are most widely used. They are usually made by using detergent of low cloud point. Alkanolamides can also be used in these preparations. Some of these shampoos may be transparent.

3) LOTION SHAMPOO:

These shampoos have a paste like consistency and are packed in a collapsible tube. They find great use in hair salons. They are also available in jars with wide mouth. The paste consistency is developed by addition of alkyl sulphates, also Cetyl alcohol is added, which serves as a builder.

4) SOLID GEL SHAMPOO:

These are transparent and thick usually made by incorporating a gelling agent, (e.g., cellulose). There is great use in hair salons and beauty parlors. The principle ingredient is detergent which can be used either alone or in combination with soap. By altering the proportion of detergent, gel of required consistency can be obtained. Addition of methyl cellulose to clear liquid shampoo and its subsequent thickening also gives rise to gel shampoo.

5) LIQUID HERBAL SHAMPOO:

Herbal Shampoo is a cosmetic preparation which uses herbs and it is meant for washing of hair and scalp just like a regular shampoo. The herbal shampoo was formulated using natural ingredients like Piper betel (Betel leaf), Azadirachta indica (Neem), Acacia concinna (Shikakai), Spindusmokorossi (Reetha), and Aloe barbadensis (Aloevera).

6) Aerosol Shampoos (Foam Type):

They are called aerosol shampoos because they are packed in aerosol containers. Their formulation, preparation and packing are complicated as an additional propellant is included. The propellant added must be compatible and should not reduce the activity of shampooing ingredients. The container opening is provided with a valve. Shampoo comes out as foam when the valve is pressed. Hence also called as foam type shampoo.

7) Special Shampoos:

These are the shampoos which are meant for special purpose.

Conditioning shampoo

Anti-dandruff Shampoo

Baby shampoo

- **Conditioner Shampoos:** These shampoos serve for hair conditioning. Initially they clean the hair (and scalp) and keep them in smooth and lustrous condition. They also prevent sticking of hairs. Conditioner shampoo nowadays is widely used by both men and women. Most of the conditioners are made from Quaternary ammonium compounds. These compounds have the property of reducing electric charges between the hair, as a result hair become lustrous easily manageable. These compounds can also exhibit a bactericidal effect.

- **Anti-dandruff shampoo:** An anti-dandruff shampoo is a treatment used to help relieve dandruff. Like a regular shampoo, it contains abrasives and cleansing agents that remove buildup in both hair and scalp.
- **Baby shampoo:** Baby shampoo is also called aspediatearic shampoo is a hair cleaning product specially formulated for infants and young children (usually under the age of three). Baby shampoo has a mild and gentle formulation to avoid irritation and prevent babies from experiencing a stinging or burning sensation should the shampoo accidentally get into the eyes.

IV. SYNTHETIC SHAMPOO

Conventional synthetic shampoos are more likely to expose the hair and the skin to harsh chemical ingredients that can potentially have harmful long-term effects, including skin irritation, dryness, a reduction in the size or deterioration of the hair follicles, premature graying, and even hair loss.

V. EVALUATION TEST OF SHAMPOO

Organoleptic Evaluation:

Color: The formulation's color was tested against a white background.

Odor: The odor of the formulation was assessed by smelling it.

Physicochemical Evaluation:

i) Determination of PH: The PH of shampoo can be measured by adding 10 % of shampoo solution in distilled water at the room temperature 25°C.

Standard Value= Around 6.2

ii) Determine percent of solid content: A Clean evaporating dish was taken and weighed. Add 4 grams of shampoo to evaporating dish. Weight the evaporating dish containing shampoo. Exact weight can be calculated by placing evaporating dish with shampoo on hot plate until the liquid portion was evaporated. Weight of shampoo after evaporation was calculated.

Standard value= 20 % -30 %

iii) Foaming Ability: This can be determined by using cylinder shake method. 1% of shampoo preparation (50 ml) transferred to 250 ml graduated cylinder and should be covered with one hand and shaken Upton 10 minutes the total volume of foam after 1 minute of shaking must be recorded.

Standard Value= 0.9 to 2.5 cm

iv)Foaming Index: One gram of this shampoo was weighed accurately and transferred into 250 ml conical flask containing 100 ml of boiling water. Then it is warmed gently for 30 minutes, cooled and filtered and make up the volume to 100 ml in standard volumetric flask. This extract is taken in 5 test tubes in a series of successive portion of 1, 2, 3, 4, 5 and remaining volume is made up with water to 10 ml. Then the test tubes were shaken in longwise motion for 15 seconds at speed of 2 frequencies / second. Then the tubes are allowed to stand for 15 minutes. The height of the foam was measured.

Foaming index =1000/a

v) Wetting Time: The Filter paper was cut into 1 inch diameter discs having an average weight of 0.44 g. The disc was floated on the surface of shampoo solution of 1% w/v and the stopwatch started. The time required for the disc to begin to sink was measured acutely and noted as the wetting time.

Standard Value= 3 sec

VI) Loss on drying:Loss on drying is the loss of mass expressed in percent m/m. Two gram of the powder was weighed accurately and transferred into a dry Petri dish. The Petri dish is placed in a dessicator for 2 days over calcium chloride crystals. Then the powder was taken and weighed accurately to find out the weight loss during drying.

vii) Moisture content: The moisture content is determined by heating a shampoo at 105°C in a hot air oven to a constant weight. 1 gm of Shampoo weigh in crucible and heat on steam bath for 30 min. Contineous heating at 105 °C in oven for 24 hrs, cool in dessicator.

viii) Ash Content: Weight about 5 ml of shampoo in flat bottom Petri dish and heat on steam bath under jet of air for 1 hour. Remove and add 1 g of ash less cellulose powder, keep the material in dish and heat in a 1 K heating lamp till 600o C in muffle furnace.

Standard Value= 0.03-0.07%

VI. ACKNOWLEDGEMENT

The completion of this article undertaking could not been possible without assistance of Guide. Their contribution are very sincerely appreciated and gratefully acknowledged. We would like to thanks for endless support kind and understanding spirit during case presentation.

VII. CONCLUSION

The present study was carried out with the aim of preparing the herbal shampoo that reduces hair loss during combing, safer than the chemical conditioning agents as well as to strengthen the hair growth. Herbal shampoo was formulated with the aqueous extract of medicinal plants that are commonly used for cleansing hair traditionally. Use of conditioning agents (synthetic) reduces the protein or hair loss. To provide the effective conditioning effects, the present study involves the use of shikakai, amla, and other plant extracts instead of synthetic cationic conditioners. 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 quality control test, but further scientific validation is needed for its overall quality.

REFERENCES

- [1]. Thakkar krunali, patel dhara1 , d.b meshram1 , patel mitesh2.evaluation of standards of some selected shampoo preparation. World journal of pharmacy and pharmaceutical sciences, volume 2, issue5,3622-3630.
- [2]. Vijayalakshmi a, sangeetha s, ranjith n. Formulation and evaluation of herbal shampoo.asian journal of pharmaceutical and clinical research, vol 11, special issue 4, 2018
- [3]. Richa madhu sharma*, kinjal shah, janki patel,evaluation of prepared herbal shampoo formulations and to compare formulated shampoo with marketed shampoos, international journal of pharmacy and pharmaceutical sciences issn- 0975-1491 vol 3, issue 4, 2011
- [4]. Jaya preethi p., padmini k., srikanth j., lohita m., swetha k., vengal rao p. A review on herbal shampoo and its evaluation, asian j. Pharm. Ana. 2013; vol. 3: issue 4, pg 153-156
- [5]. Khaloud al badi, shah a. Khan*, formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos.