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“Formulation and Evaluation of Herbal Shampoo”

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Abstract: *The shampoo sector is probably the largest unit sale among the hair care products since shampoos are one of the cosmetic products used in daily life. Synthetic preservatives and detergents have sometimes been the cause of adverse effects among consumers. A more radical approach in reducing the synthetic ingredients is by incorporating natural extract whose functionality is comparable with their synthetic ingredients. A shampoo is a cleaning aid for the hair and is counted among the foremost beauty products. Today's shampoo formulations are beyond the stage of pure cleaning of the hair. Additional benefits are expected, e.g., conditioning, smoothing of the hair surface, good health of hair, i.e., hair free of dandruff, dirt, grease and lice and, above all, its safety benefits are expected. As the scalp is one of the most absorbent part of the body, products applied to the scalp go directly to the blood, without being filtered in any way. In the scenario of changing food habits, stress level and dependent environment conditions, number of skin and hair disorders are encountered. This herbal shampoo was formulated using natural ingredient like Fenugreek seeds, Acacia concinna (shikakai), Sapindus mukorossi (reetha), Ocimum sanctum (tulsi), Aloe vera (aloe), Hibiscus rosa sinensis (china rose), Embelica officinalis (amla), Lawsonia inermis (henna), Citrus lemon (lemon), with proven efficacy of hair care preparation is prepared. The combination of several such ingredient of herbal origin has made it possible to secure highly effective dry powder shampoo. The formulation at laboratory scale was done and evaluated for number of parameters to ensure its safety and efficacy.*

Keyword: *herbal shampoo, natural and healthy, evaluation of shampoo*

I. INTRODUCTION

A liquid or cream preparation of soap or detergent to wash the hair is called as shampoo. Shampoo is a hair care product, typically in the form of a viscous liquid that is used for cleansing hair. The goal of using shampoo is to remove the unwanted build-up in between the hair without stripping out so much sebum as to make hair unmanageable. Shampooing is the most common form of hair treatment. Shampoos are primarily being products aimed at cleansing the hair and scalp. In the present scenario, it seems improbable that herbal shampoo, although better in performance and safer than the synthetic ones, will be popular with the consumers. A more radical approach in popularizing herbal shampoo would be to change the consumer expectations from a shampoo, with emphasis on safety and efficacy. The word shampoo in English is derived from Hindustani shampoo. Shampoos are typically composed of 10 to 30 ingredients.

II. CLASSIFICATIONS OF SHAMPOO

A. Based on Appearance

Powder shampoo
Liquid shampoo
Gel shampoo
Oil shampoo

B. Based on use or Function

Conditioning shampoo
Antidandruff shampoo
Baby shampoo
Clarifying shampoo

C. Based on Origin

- 1) *Herbal Shampoo:* Egg shampoo evaluation of shampoo comprises the quality control test including visual assessment and physiochemical control such as pH, density and viscosity.

2) *Ideal Properties of Shampoo*

- a) To make the hair smooth and shiny.
- b) Produce good amount of foam.
- c) Should not cause irritant to scalp, skin and eye.
- d) Should completely, effectively remove dirt.
- e) Impart pleasant fragrance to hair.

D. *Functions of Shampoo*

- a) It should effectively and completely remove dirt or soil.
- b) It should effectively wash the hair.
- c) It should produce a good amount of foam to satisfy the user.
- d) It should be readily removed by rinsing with water.
- e) It should impart a pleasant fragrance to the hair.
- f) It should not have any side effects or causes irritation to the skin and eye

III. OBJECTIVE OF SHAMPOO

To formulate the herbal shampoo using an extract of amla, ritha, shikakai and understand the uses or application of the ingredients in day to day life .To evaluate the herbal shampoo prepared from the extract of amla ,ritha ,shikakai to understand the stability and applicability of the shampoo.To understand the advantages of herbal shampoo over chemical based shampoo and reduce side effect . To understand various applications.To study evaluation of herbal shampoo and effect on hair.

IV. INGREDIENTS

Fenugreek seeds	0.4gm
Amla	2.55gm
Shikakai	2.55gm
Hibiscus	2gm
Aloe vera	0.5gm
Lemon juice	0.5gm
Rose oil	0.5ml
Ritha	0.85gm
Distilled water	1ml

A. *Use of Ingredient*

1) *Fenugreek Seeds*

Antimicrobial dandruff treatment
 Revives damaged hair and induces hair growth
 May reduce hair loss and shedding
 Support healthy scalp
 Prevent premature graying of hair



2) *Amla*

Strength the scalp and hair

Reduce premature pigment loss from hair or greying .

Stimulate hair growth

Reduce hair loss

Prevent or treat dandruff and scalp

Prevent or treat fungal and bacterial hair and scalp infection

Improve overall appearance of hair



3) *Shikakai*

Cleanses hair

Add moreshine to the hair

Prevent grays

Provide nourishment to the hair and promote healthy and rapid hair growth .

Prevent spilt ends.



4) *Hibiscus*

Stimulate hair growth and lost hair volume

Condition hairs

Prevent baldness

Treat dandruff and itchy scalp

Prevent premature greying.



5) *Aloe vera*

Calm and itchy scalp

Deep cleans oily hairs

Strengthens

Aloe vera contains proteolytic enzyme which repair dead skin cells on scalp.

Promote hair growth

Smooth natural curls

Reduce frizziness

Detangle hairs



6) *Lemon Juice*

Add more shine

Get rid of dandruff

Split ends

Reduce hairfall

Gives natural colour to hair

Promote growth of hairs



7) *Rose Water*

It require hair damage

Improve growth of hairs

Reduce the dandruff



8) *Ritha*

It is used in preparation of shampoo

It is used as a foaming agent in the shampoo

Can be used as a cleanser for hair.

It is also used for removing lice from hair.



V. FORMULATION OF HERBAL SHAMPOO

Weighied all the ingredients according to the formula Soak it for overnight next morning (all ingredients become puffy and filled with water after soaking overnight).boiled ingredients in the same water on medium flame the cool the mixture and filter it. 1ml of lemon juice was also added with constant stirring .then preservatives was added and developed shampoo was stored in a suitable container and used for the further evaluation.

VI. EVALUATION OF PREPARED HERBAL LIQUID SHAMPOO

To evaluate the prepared formulations, quality control tests including visual assessment and physicochemical controls such as pH, density and viscosity were performed. Also, to assure the quality of products, specific tests for shampoo formulations including the determination of dry residue and moisture content, total surfactant activity, salt content, surface tension, thermal and mechanical stability and detergency tests were carried out.

- 1) *Physical appearance/visual inspection:* The formulations prepared were evaluated in terms of their clarity, foam producing ability and fluidity.
- 2) *Determination of pH:* mix 01gm of shampoo with 09ml of water and determine the pH using pH meter at 27°C.
- 3) *Determine Percent of Solids Contents:* A clean dry evaporating dish was weighed and added 4 grams of shampoo to the evaporating dish. The dish and shampoo was weighed. The exact weight of the shampoo was calculated only and put the evaporating dish with shampoo was placed on the hot plate until the liquid portion was evaporated. The weight of the shampoo only (solids) after drying was calculated.
- 4) *Rheological or Viscosity Evaluations:* The viscosity of the shampoos was determined by using Brookfield viscometer. 10ml of shampoo is taken in a beaker and spindle is dipped in it for about 5min. and then reading is taken.
- 5) *Dirt Dispersion:* Two drops of shampoo were added in a large test tube contain 10 ml of distilled water. 1 drop of India ink was added; the test tube was stoppered and shakes it ten times. The amount of ink in the foam was estimated as None, Light, Moderate, or Heavy.
- 6) *Cleaning Action:* 5 grams of wool yarn were placed in grease, after that it was placed in 200 ml. of water containing 1 gram of shampoo in a flask. Temperature of water was maintained at 35°C. The flask was shake for 4 minutes at the rate of 50 times a minute. The solution was removed and sample was taken out, dried and weighed. The amount of grease removed was calculated by using the following equation: $DP = 100(1 - T/C)$ In which, DP is the percentage of detergency power, C is the weight of sebum in the control sample and T is the weight of sebum in the test sample.

- 7) *Detergency Ability:* The Thompson method was used to evaluate the detergency ability of the samples. Briefly, a crumple of hair was washed with a 5% sodium lauryl sulfate (SLS) solution, then dried and divided into 3g weight groups. The samples were suspended in a hexane solution containing 10% artificial sebum and the mixture was shaken for 15 minutes at room temperature. Then samples were removed, the solvent was evaporated at room temperature and their sebum content determined. In the next step, each sample was divided into two equal parts, one washed with 0.1 ml of the 10% test shampoo and the other considered as the negative control. After drying, the residual sebum on samples was extracted with 20 ml n-hexane and re-weighed. Finally, the percentage of detergency power was calculated using the following equation: $DP = 100(1 - T/C)$ In which, DP is the percentage of detergency power, C is the weight of sebum in the control sample and T is the weight of sebum in the test sample 3, 4.
- 8) *Foaming Ability and Foam Stability:* Cylinder shake method was used for determining foaming ability. 50ml of the 1% shampoo solution was put into a 250 ml graduated cylinder and covered the cylinder with hand and shaken for 10 times. The total volumes of the foam contents after 1-minute shaking were recorded. The foam volume was calculated only. Immediately after shaking the volume of foam at 1 minute intervals for 4 minutes were recorded.
- 9) *Stability Studies:* The thermal stability of formulations was studied by placing in glass tubes and they were placed in a humidity chamber at 45°C and 75% relative humidity. Their appearance and physical stability were inspected for a period of 3 months at interval of one month.

A. Benefits of Herbal Shampoo

- 1) More shine
- 2) Less hair loss
- 3) Long lasting colour
- 4) Stronger and more fortified hairs
- 5) All natural chemicals
- 6) Keep healthy natural oils.

B. Advantages of Herbal Shampoo

- 1) Easy to manufacture and cheap in cost.
- 2) Easily available and found in large variety and quantity.
- 3) They did not provoke allergic reaction and do not have negative side effects.
- 4) Easily incorporate in skin and hair.

C. Disadvantages of Herbal Shampoo

- 1) Difficult to hide odour and taste sometimes.
- 2) Herbal drugs having slower effect than allopathic drug hence require long term therapy.
- 3) Manufacturing process is time consuming and complicated.

VII. OBSERVATION TABLE

Evaluation test	Formulated shampoo
Colour	Brown
Transparency	Clear
Odour	Good
Foam type	Dense small
Wetting time	120s

VIII. RESULT

The shampoo was formulated by admixing the equal amount of the aqueous extracts of all the ingredients with soapnut (Table 1). The above plant extract contains phytoconstituents like saponins which is a natural surfactant having detergent property and foaming property. An ideal shampoo must have adequate viscosity and many natural substances possess good viscosity. The gelatin solution (10%) behaves as a pseudoplastic forming clear solutions. Lemon juice (1 ml) added to the shampoo serves as anti-dandruff agent, natural antioxidant, and chelating agent and maintains the acidic pH in the formulation.

IX. CONCLUSION

The formulated shampoo were not only safer than the chemical conditioning agent but also greatly reduce the hair loss during combining as well as strengthens the hair growth the pH of the shampoo was adjusted to retain the acidic pH of scalp the physiochemical approach used for preservation of the formulation to avoid the risk posed by chemical preservatives herbal shampoo better in performance and safer than the synthetic one will be popular with consumers.

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