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Formulation And Evaluation Of Herbal Shampoo

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Abstract: The main objective of this present study is to prepare and evaluate herbal shampoo . Herbal Shampoo is the natural haircare product which is use to remove grease, dirt, dandruff and promote hair growth, strengthness and darkness of the hair. It also provides softness, smoothness, and shineness for the hair. Various chemicals are used for the preparation of cosmetics shampoo, which is likely to show various side effects such as hair loss, increased scaling, scratching, discomfort, nausea and headache. Therefore an attempt is made to formulate herbal shampoo that is free from side effects.

Keywords: Herbal Shampoo, Azadirachta indica, Phyllanthus emblica, Sapindus mukorossi, evaluation.

I. INTRODUCTION

1.1 Herbal Shampoo

Shampoos are probably the most widely used cosmetic products for cleansing hairs and scalp in our daily life.[1] Herbal shampoos are the cosmetic preparations with the use of traditional Ayurvedic herbs are meant for cleansing the hair and scalp just like the regular shampoo. They are used for removal of oils, dandruff, dirt, environmental pollutions etc. Herbal shampoo is a type of cosmetic preparation that uses herbs from plants as an alternative to the synthetic shampoo available in the market. The herbal shampoo is important, as people nowadays prefer herbal products than chemical one due to their side effects. [2]

Need of Shampoo

The skin on our head produce a greasy fluid called sebum. It is produced to protect the hair by coating itself all over the head. This gives the hair a healthy shine but when sebum secretes in large amount it makes the hair look dirty.

Advantages:

- Pure and organic ingredients
- Free from side effect
- No chemical surfactants
- Earth and skin friendly
- No petroleum waste ingredients

Hair is an important part of overall appeal of human body. There are many hair problems like thinning of hair, lack of hair volume, immature greying, conditioning, hair loss etc. have been observed by most of the individuals. Shampoo can also be defined as a cosmetic preparation used for washing scalp and hair packed in a form which is convenient for use. [3]

Hair structure: Hair, protective appendages on the body and the structure of integument with sebaceous glands, sweat glands and nails are considered an important part of a body, derived from the skin ectoderm. They are also known as epidermal derivatives, since they originate from the epidermis during embryological development.^[4]

Hair fall: It is thinning of hair on scalp. Alopecia is the term for hair fall; it can be permanent or temporary. Hair fall is the most common problem among all patients. Hair fall can occur due to various problems such as poor diet i.e., less protein intake etc.^[5] excessive hair colouring and styling, physical stress, deficiency of vitamin B and taking excessive amount of vitamin A. To overcome this problem many hair growth promoters use natural ingredients such as emblica officinalis (amla), ocimum sanctum (tulsi) etc. Herbal shampoo is a widely used product all over the world. Herbal shampoos are defined as a preparation of surface-active material (surfactant) in suitable form solid, powder, or liquid which when used under the conditions specified will remove dirt, grease from the scalp and hair. It contains all natural ingredients with herb extract. It helps to improvise the quality of hair by providing shine, moisture, growth and strength to hair roots.^[6]

II. MATERIALS AND METHOD

AMLA :The fruit of *Emblica officinalis*, leaves of *Azadirachta indica* and fruits of_ were collected from local market, Bengaluru.

2.1 Chemicals required

Chloroform, Gelatin, 0.1M sodium chloride, guar gum, almond oil, jasmine oil, vitamin E capsule, activated charcoal, distilled water.

2.2 Extraction

Emblica officinalis, *Azadirachta indica* and *Sapindus mukorossi* were collected and shade dried, then powdered and subjected to maceration separately and then filtered, excess solvent evaporated using a rotary evaporator. The dried extract was collected and kept in desiccator for cooling. The three extracts were subjected to phytochemical screening.

III. FORMULATION OF HERBAL SHAMPOO

Procedure: Take 0.1M Sodium Chloride into a beaker add Guar Gum and Almond oil. To the above beaker add Gelatin and a capsule of Vitamin-E along with charcoal powder. Add Reetha, Amla and Neem extract and mix well. Water is added as required to make it smooth and uniform paste, for fragrance add few drops of Jasmine oil to the mixture. Continue to stir it for some times to avoid formation of any lumps. Allow it to cool and evaluate.

IV. EVALUATION OF HERBAL SHAMPOO

To evaluate the prepared formulation, quality control test including visual assessment and physio-chemical controls such as, density, viscosity, surface tension, foam volume, foam stability and wetting time was performed using standard protocol.

- 1. Physical appearance/visual inspection:** The formulation prepared was evaluated for the clarity. Colour, odour and foam producing ability and fluidity.
- 2. Determination of pH:** A 10% v/v shampoo solution was constituted in distilled water and the pH of the solution was measured by using a pH meter.
- 3. Determination of solid content percentage:** A clean dry evaporating disc was weighed and 4gm of shampoo was added to the evaporating disc. The evaporating disc with shampoo was placed on the hot plate until the liquid portion

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7. **Wetting time:** Wetting time was calculated by noting the time required by the canvas paper to sink completely. A canvas paper weighing 0.42gm was cut into a disc of diameter measuring 1 inch. Over the shampoo [1%v/v] surface, the canvas paper disc was kept and the time taken for the paper to sink was measured using the stopwatch.
8. **Dirt dispersion test-**To 10 ml of refined water two drops of cleanser were included and taken in a wide-mouthed test tube. To the formulated shampoo, added one drop of Indian ink and shaken for 10 min after closing the test tube with a stopper. The volume of ink in the froth was measured and the result was graded in terms of none, slight, medium, or heavy ^[7]
9. **Foaming ability and foam stability:** Cylinder shake method was used for determining foaming ability. 50ml of the 1% herbal shampoo solution was put into a 250ml graduated cylinder and the cylinder was covered with hands and shaken for 10 minutes. The total volume of the foam content after 1min shaking was recorded. Immediately after shaking the volume of the foam at 1 min intervals for 10 minutes were recorded. The foam volume remains same throughout the period of about 5min showing that the generated foam by the shampoo has good stability and the prepared shampoo exhibits. Higher foam property which may be due to the presence of soapnut. 1 ml shampoo is dissolved with 2ml water and shaken vigorously for 10 minutes produced 0.4ml foam. ^[8]
10. **Stability study:** The stability of the formulation was studied for a period of 4 weeks by keeping at temperature of 25-30°C.
11. **Skin irritation test:** Prepared herbal shampoo was applied on skin for 5 minutes after that was washed and tested for irritation or inflammation to the skin.
12. **Viscosity:** Viscosity of shampoo was determined by using Ostwald's viscometer. The viscosity of herbal shampoo was measured by counting drops of herbal shampoo form the mark to bottom.

$$\text{Viscosity} = \frac{\text{density of shampoo} \times \text{timing of runoff of shampoo}}{\text{density of water} \times \text{timing of runoff of water}} \times \text{viscosity of water}$$

13. **Density:** An empty weight of Pycnometer was taken fill it till neck with shampoo and weigh. Weight of water after filling the Pycnometer was weighed.

$$\text{Density} = \frac{\text{Weight of pycnometer with shampoo} - \text{Weight of empty pycnometer}}{\text{Weight of pycnometer with Water} - \text{Weight of empty pycnometer}}$$

V. RESULT AND DISCUSSION

Physical Appearance/visual inspection: The formulated herbal shampoo was blackish in colour and has light odour.

pH

The pH of formulated shampoo was 6.5, falling within the ideal pH range for the shampoo which is between 5 and 7.8. The formulated shampoo is acid balanced which is near to the skin pH. The pH of the shampoo is very essential for growth of hair, stabilizing ecological balance if the scalp and minimizing the irritation to the eyes .

Percentage of solid content: The result of percent of solid content 0.10%



Wetting time: It was performed. The wetting time of the herbal shampoo was found to be 3.08.

Foaming ability and foam stability: although foam generation has little to do with the cleansing ability of shampoo, it is of importance of consumer. The final formation produces stable foam.



Skin irritation: The prepared shampoo does not produce any harmful effect to the skin, this is due to the absence of harmful synthetic ingredient. In herbal formulation all most all ingredients are obtained naturally.



Density: The density of the herbal shampoo was found to be 1.23gm/ml which was good enough for its compactness.

Viscosity: Viscosity of the shampoo plays an important role in determining the ease of flow on removal from packing and spreading on application to hair. The viscosity of the formulated shampoo was found to be 0.87 poise or Pascal.

VI. CONCLUSION

The herbal shampoo formulated using neem, reetha and amla extract and evaluations were carried out for following parameters: Physical appearance, pH determination, determination of solid content percent, wetting time, foaming ability and foam stability determination, skin irritation test, viscosity, density. And evaluation parameters data that are shown in acceptance range.

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