

A Research on Formulation and Evaluation of Herbal Shampoo

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Abstract: *The study aimed to formulate a pure Shikakai shampoo and to evaluate and compare its physicochemical properties with the marketed synthetic and Shikakai shampoos. The Shikakai shampoo was formulated by adding the extracts of Acacia concinna in different proportions to a 10% aqueous gelatin solution. Small amount of methyl paraben 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 physico chemical properties of both prepared and marketed shampoos. The formulated Shikakai shampoo was also evaluated for conditioning performance by administering a blind test to 20 student volunteers. The formulated Shikakai shampoo was clear and appealing*

Keywords: Shikakai shampoo, conditioning, Physicochemical properties, Formulation, evaluation

I. INTRODUCTION

Shampoos are most commonly used as beautifying agents, and are a viscous detergent solution that includes appropriate preservatives and active ingredients. These are probably a hair care product designed to clean the scalp skin along with its hairs. The term shampoo entered the English language through India, where the Hindi word "shampoo" was used meaning to press or massage; it was used to denote cleaning through massage of the hair and skin. The development of products mainly to skin care, several cosmetic industries are focusing on hair care, with the production of safety products are paying attention to their action. For example, in recent literature the ethnicity appears as an important key factor to take into account in the clinical observation, management, and treatment of skin and hair disorders. Earlier, ordinary soap had been used for washing hair. During the early stages of shampoo, English hair stylists boiled soap in water and added herbs to give the hair shine and fragrance. The formulation and evaluation of herbal products is an important tool for creating high-quality herbal products. Herbal formulations are often made from raw materials collected from different locations, and the chemical efficacy of different batches should be compared. The best clinical efficacy preparations are selected, and all batches are checked for physical, chemical, and pharmacological parameters. The final finished product is selected based on these checks, and the manufacturing process is validated.^{2,3}

II. MATERIALS AND METHOD

Sample collection:-

All plant materials except flaxseed, fenugreek, Reetha, aloe Vera were obtained from garden of all other chemicals collect from the laboratory of Dr Panjabrao Deshmukh Medical College

One commercially available shampoos namely Clinic plus Shampoo were purchased from the local super Market⁴.

Preparation of plant extracts:-

100 g of flaxseed were washed with water to remove dirt and foreign particulates, homogenized and boiled in hot water for 4 hr. The aqueous extract was filtered and concentrated to obtain semi solid mass. However, Aq. Extracts of fenugreek & Reetha was also prepared by cold maceration method using 70% ethyl alcohol to obtain 11.2 g of solvent free semi solid mass (yield-11.2% w/w).⁵

Formulation of herbal shampoo:-

The plant extracts were mixed in different proportions to obtain a shampoo whose formula is shown in Table 1. Herbal Extracts were added to 10% glycerine solution and were mixed by shaking for 20 min. Methyl paraben were also added with stirring. Finally the pH of the solution was adjusted by adding sufficient quantity of 1% citric acid solution. Few drops of peppermint oil were also added to Impart aroma to the prepared shampoo and the final volume was made to 100 ml. with glycerine solution

III. FORMULATION OF HERBAL SHAMPOO

CONTENT:-

Sr.No	Name of Ingredients	Quantity Required	Quantity Required
1.	Reetha Extract	As Foaming Agent	10gm
2.	Amla Extract	To Provide Nourishment to hair	10gm
3.	Shikakai Extract	As Anti-Dandruff Agent	10gm
4.	Rose Oil	To impart Fragrance	Few drops
5.	Methyl Paraben	As Preservative	1ml
6.	Citric Acid	To Adjust Ph Level	As required
7.	Lemon Juice	To improve Aroma	qs



IV. PROCEDURE FOR SHAMPOO FORMULATION

1. Initially prepare the reetha extract by adding 30ml of 70% of ethyl alcohol and Keep aside for the Cold Maceration.
2. Then prepare the Extract of Amla And Shikakai by adding each powder in separate Beaker and then add 50ml of sterile water in each and boil that extract
3. Then add 1gm of gelatin powder to 50ml of Boiling Water For preparing the Gelatin Solution.
4. Then Take Mortar Pestle and then add all 4 extracts of herbs in that and triturate them.
5. Then Strain that mixture using sieve and then take that residue in Measuring Cylinder and Make Up the Volume Using Gelatin Solution
6. Then add Few Drops of Rose Oil Using Dropper to impart the Pleasant Fragrance to the Shampoo.
7. Then Check the PH Level of formulation and then adjust the ph. adding Citric acid.
8. Then Perform the Various Evaluation Tests of prepared Formulation.

V. EVALUATION OF HERBAL SHAMPOO

To evaluate the prepared formulation, quality control test including visual assessment and physico-chemical controls such as PH, 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. 3
- 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 calibrated PH meter 10
- 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 was evaporated. The weight of the solid content present in the shampoo was calculated after drying
- 4] 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.
- 5] Cleansing action: The cleansing property of the herbal shampoo was evaluated by the application of the shampoo on hair that has not been washed for 7 days. The shampoo was used to wash the hair of human subject that had applied oil 4-5 hours before washing. The performance of the shampoo was assessed on its ability to remove oily dirt from scalp.
- 6] 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 1min 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. 1ml shampoo is dissolved with 2ml water and shaken vigorously for 10 minutes produced 0.4ml foam. 11
- 7] Stability study: The stability of the formulation was studied for a period of 4 weeks by keeping at temperature of 25-30°C
- 8] 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.
- 9] Conditioning attributes: The conditioning effect of the shampoo on hair was evaluated after the hair had been washed with it. Conditioning properties include all desirable benefits imparted to the hair such as increase mass to the hair, improved lustre, softness and silkiness.
- 10] Viscosity: Viscosity of shampoo was determined by using Ostwald's viscometer. The viscosity of herbal shampoo was measured by counting drops of herbal shampoo from the mark to bottom.

VI. REQUIRIMENT OF SHAMPOO

- It should be nontoxic and non-irritating to the hair and scalp.
- It should remove sebum and atmospheric pollutants from scalp hair.
- It should be easily removed on rinsing with water.
- It should deliver an optimal level of foam to satisfy the expectations of the user.
- It should remove the residues of previously applied hair styling lotions and sprays.

VII. TYPES OF SHAMPOO

- Powder shampoo
- Lotion shampoo
- Clear liquid shampoo
- Solid gel shampoo
- Medicated shampoo
- Liquid herbal shampoo

VIII. ADAVANTAGE OF HERBAL SHAMPOO

- Hair to improve
- Quality of moisture
- Growth
- Repairs of damaged
- Shampoo keeps hair silky or smooth
- Treatment of hair loss
- Treatment of dry scalp
- Improving hair hygiene
- Cleansing properties
- Treating scalp conditions
- Relieves itch and irritation^{13.1}

IX. RESULT AND DISCUSSION

Sr.No	Evaluation	Herbal Shampoo	Result
1.	Organleptic evaluation A] Colour B] Clarity C] Odour	A] Brown B] Clear C] Good	
2.	PH determination	6.4	Measure using a ph meter expected result 4.5 to 5.5 (compatible with scalp ph).
3.	Percentage of solid content determination	25%	The percentage of solid ingredients is measured to ensure consistency in formulation.
4.	Foaming volume	168ml	Adeqate foaming was observed.
5.	Foam Type	Dense small	Bubbly foam, creamy foam.
6.	Wetting time test	120 second	The ideal wetting time balance quick application with sufficient contact time.
7.	Dirt dispersion test	Light	Dirt should disperse uniformly without dumping.
8.	Cleaning action	31.16%	Measure the shamoo's effectiveness is removing dirt oil, and residues from the hair & sclap.
9.	Conditioning performance evaluation	Good	Evaluates the shampoo's ability to improve hair texture & manageability.

CONCLUSION

Herbal shampoo using reetha, amla and shaikaki extract is prepared and evaluations were carried out for those following parameters: physical appearance/visual inspection, PH determination, determination of solid content percentage, wetting time, cleansing action, foaming ability and foam stability, stability study, skin irritation test, conditioning attributes, viscosity, density, microbial examination. The evaluation parameters data were shown in acceptance range. Further studies are appreciated for comparing this preparation with marketed one and establishing some effective results for hair cleansing action and conditioning effect as well.

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