

Preparation of Herbal Shampoo (Hs), Evaluation and It's Characterization

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Abstract— In a present day the chemically exhausted world is assiduous to return towards the natural herbal materials because it has no some other side effects in compare of chemicals. So, the study aimed to formulate a pure herbal shampoo without using chemicals. We are going to apply the formulated items for improvement of our hair, decreasing their enormity, quality of the hair, strength, the volume and shine. Every individual synthetic object like cleaning agent consists of a detrimental substance that's in rate of harm of hair. HS is the most effective product which used for washing dull & rough hair and extensively utilized for hair treatment on hair problem. In recent study herbal shampoo (HS) has splendid properties toward healthy hairs. Green preparation of HS has divided into two parts. The first part contains herbal extract prepared by mixture of Reetha, Shikakai, and Gooseberry as Reetha has a great foaming and also cleaning ability and the others make the hair healthy & shiny. Herb extract (10%) - Take Gooseberry, Reetha and Shikakai all in raw form in a beaker in aqueous medium, warm up to till the beginning of boiling with big bubbles [Boiling time-1.10Hrs] by hot plate method, sieve and put for cooling, obtained herb extract. In second section beaker contains Hibiscus leaves & Flower, Tulsi leaves and Aloe vera. The preparation had done using of no chemical as every chemical has some side effect which may not be good for hair and scalp. The pH of HS is between 5 -7 at 25C room temperature, formed HS is little acidic in nature which is good quality. Percentage of solid contents of HS is 0.05g in average after dry& this part of evaluation test was done for 5 times. The cleaning rate of the formed HS is 15.1. Dirt dispersion of formed HS is light. In 1% of HS, it gives 50ml froth. All these are these characters demonstrates that the herbal HS is high quality for usable in daily life.

Index Terms: Herb Extract, Pure herbal preparation, Herbal Shampoo (HS), Chemical free.

I. INTRODUCTION

In present day Herbal shampoo is a widely used daily cosmetic product. Studies have shown that, it has been used by many people worldwide. 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 HS 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 use under certain condition removes grease, dirt and debris from the scalp, which cleanse adverse effects on hair or scalp health. The user can have many types of Hs such as powder, liquid, lotion, cream, jelly, aerosol. It contains all instinctive ingredients with herbal substance. It is very helpful for improving the quality of hair, such as maintaining the moisture of the hair, make the hair shiny, hair growth, thickening, increasing the strength of the hair follicles etc. The advantages of the natural shampoo are that, it is prepared without any side effects. So, it is to be hoped that, the future market will be for herbal shampoos.[4][5][6][9]

II FUNCTION OF INGREDIENTS [9][10]

INGREDIENTS	PICTURE	FUNCTIONS
Gooseberry (<i>Phyllanthusemblica</i>)		<ul style="list-style-type: none"> It purifies the blood of scalp & enhance hair's natural colour by preventing premature graying of hair. It has anti-fungal & anti-viral properties which prevent dandruff and other fungal infections and improve scalp health.
Shikakai (<i>Acaciaconcinna</i>)		<ul style="list-style-type: none"> Imparts shine and softness to hair. Remove hair lice and dandruff. Provide strong and thicken hair. Heal infections, smooth scalp, nourishes hair follicles, resting hair loss.
Reetha (<i>Sapindus mukorossi</i>)		<ul style="list-style-type: none"> Vitamin A, D, E & K found in reetha (soap nuts) which makes hair shiny and smooth. It is a natural antimicrobial agent. So, it is good option to cure microbial and other scalp infections.
Hibiscus leaves (<i>Hibiscusrosa-sinensis</i>)		<ul style="list-style-type: none"> It is rich with vitamin C, prevent split ends & treats dandruff. Rest hair loss. Thicken hair and add volume. Make hair healthy, shiny and lustrous.
Tulsi leaves (<i>Ocimumtenuiflorum</i>)		<ul style="list-style-type: none"> Rich in vitamin K and Anti-oxidants. Tulsi benefits hair by stimulating blood circulation and promoting hair growth. Deep cleans the skin. No more premature graying. Banishes dandruff. Treats Acne.
Aloevera (<i>Aloe barbadensis</i>)		<ul style="list-style-type: none"> A special enzyme called 'Proteolytic Enzyme' found in aloe vera which promotes healthy hair growth. It also acts as a thickening agent. It effectively breaks down death skin cells on the scalp that may clog hair follicles.

III EXPERIMENT

Materials:

Ingredients: i) Soap nut (Reetha) ii) Shikakaiiii) Gooseberry Powe iv) Hibiscus leaves & flower v) Tulsi leaves vi) Aloe Vera

Chemicals: No chemical used.

METHODS

- Part -1: Combining the ingredients – Fill a huge glass bowl with sparkling water after which pour 25gm of cleaning soap nuts (ritha), 25gm of dried gooseberry and 24gm of dried shikakai into the water. Let the components soak for in a single day or for approximately 12 hours in order that they get soft.
- Part -2: Boiling the mixture – Keeping the ingredients in the same pot/bowl put them on the

hot plate and maintain the heat at 75C. Wait till seeing big bubbles upward push to the pinnacle of the water at approximately 1 hour. The water becomes muddy during boiling.

- Part -3: Scope out the cleaning soapnuts and put off the seeds – Keep the soft shell into thr mixture and through away the seeds.
- Part -4: Boil aloe Vera, hibiscus leaves & blossom, tulsi leaves in a pot – Take 710ml of fresh water in a fresh glass bowl and then put 64gm of aloe vera, 64gm of hibiscus leaves & flower, 64gm of tulsi leaves. Now heat them on hot plate at about 1.20 hours until seeing large bubbles are arising to the top of the water.
- Part -5: Combine each bowl and mix the mixture - Carefully natural each of the bowl of substances right into a blender, then pulse the

blender four to five times. Try to mixture the shampoo proper right into a pulp, but now not a smooth juice.

- Part -6: Strain the liquid in a glass jar – Strain the mixture by a fine mesh strainer and store the obtain shampoo into a fresh glass jar.

IV EVALUATION AND DISCUSSION

The comparative performance of the designed natural and industrial shampoos became decided via way of means of a chain of easy physicochemical experiments, the findings of which can be offered below.

1. Visual examination/ Physical characteristics: The formulations were judged on their clarity, thickness, semi-transparent, brown in colour and ability to produce a lot of foam adaptability and competence.[9]

2. pH measurement: At room temperature (27°C), combine 10 gm shampoo with 90 ml water and test the pH with a pH meter. pH = 5.90 at the room temperature.[1]

3. Calculate the percentage of solids in the mixture: Good shampoos commonly contain 20% to 30% solid content, because solid content is easier to apply and rinse out of the hair. We weighed a smooth dry evaporating dish and introduced 1 gm of shampoo to it. The shampoo and dish have been weighed. Only the precise weight of the shampoo turned into estimated, and the evaporating dish containing the shampoo turned into positioned on a warm plate till the liquid element evaporated. After drying, the load of the shampoo solely (solids) turned into calculated.[2]

Table no.- 1: Calculation of presence of solid particles in prepared HS

Blank Dish (gm)	Dish + Herbal		Solid (gm)
	Before hit (gm)	After hit (gm)	
41.63	42.63	41.64	0.01
41.63	46.64	41.76	0.14
41.63	51.64	41.86	0.22
41.63	56.63	41.94	0.31
41.63	61.63	42.08	0.45

4. Evaluations of Rheology or Viscosity: A Brookfield viscometer was used to determine the viscosity of the shampoos. Well viscous preparation.[7]

5. Surface tension measurement: The organized shampoo had a floor anxiety lower of 35.18 dynes/cm. The lower of floor anxiety is one of the tactics with inside the detergency property, and this can be the criterion for an awesome detergency impact of the shampoo, which can be carried out with the aid of using decreasing the floor anxiety of water from 72. 8 dynes/cm to 32–37 dynes/cm.[7][14]

6. Dirt dispersion: Dirt dispersion is a key thing for comparing shampoo’s cleaning ability. A big test tube with 10 ml of distilled water became full with five of drops of shampoo. 1 drop of Indian ink became added, the check tube became sealed, and the contents have been shaken ten times. None, Light, Moderate, or Heavy ink content material became decided with inside the foam.[1][2]

7. Test for skin sensitivity: This test is done on human volunteers’ skin to see if it causes irritation. But no irritation found.[11]

8. Ability to froth and foaming stability: The consumer values foaming or lathering, so it’s a key factor in shampoo evaluation. To test foaming ability, the cylinder shaking method was used. A 250 ml graduated cylinder becomes full of 50 ml of the 1% shampoo solution, which become protected with a hand and shaken 10 times. Volumes in overall after 1 minute of shaking, the contents of the froth had been measured. The quantity of froth becomes considerable. Only computed Shake the quantity of froth for four mins at 1-minute intervals. The time becomes saved in mins.[1][2]

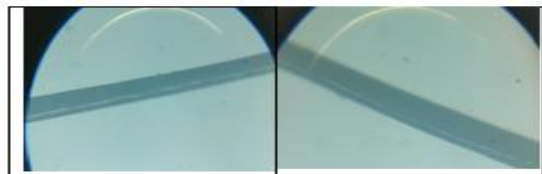
9. Wetting time: To determine the efficacy of a shampoo, the wetting ability of a surfactant must be determined, which is dependent on the surfactant concentration. The canvas disc method is a simple, quick, and accurate way to determine a shampoo's wetting capabilities. The wetting time for the prepared shampoo is around 120 seconds. The shampoo has a smaller number of detergents, as seen by the maximum wetting time.[7][8]

10. Cleaning Action: Five gm of wool yarn have been soaked in grease after which located in a flask with two hundred ml of water and 1 gm of HS. The water temperature turned into saved at 35 degrees. The flask turned into shaken 50 instances in keeping with

minute for four minutes. The pattern turned into withdrawn from the solution, dried, and weighed. The cleansing activity HS is determined to be 25% when the weight of control sample in sebum is 1g. The results of cleaning wool yarn in grease were satisfactory.[1][2]The quantity of grease does away with become calculated with the aid of using the subsequent equation is -

$$DP = 100(1 - T/C)$$

11. Electron microscopy with Compounds: Compound electron microscopy was used to study the hairs' surface morphology. Hair samples were directly mounted to the CEM hair sample slide using double-sided stitching tape and hair that had been treated with herbal HS (HS). Surface character was determined using photomicrographs at a magnification of 45X. [1][13]



Sample1: Hair without HS Sample2: Hair with HS

12. Stability test: The stability and acceptability of the formulations' organoleptic properties (odour and colour) over a two-month storage period indicated that they were physically stable. Only physical stability was observed due to no chemical had used to prepare the HS.[3][4]

Table no.- 2: Characterization of Herbal HS

SN	Characterization	Result
1	Visual examination/ Physical Appearance	Brown, transparent
2	pH Measurement	5.90
3	Determine Percent of solid contents	0.23 gm/L in average after 5 times of test
4	Rheological evaluation/Viscosity	Good viscous
5	Dirt dispersion	The expected quantity of ink with inside the foam is light
6	Test for skin sensitivity	Good for skin, no irritation found
7	Ability to froth and foam stability	50ml & Dense
8	Wetting time	120 seconds
9	Surface tension measurement	35.18 dynes/cm
10	Cleaning action	25%
11	Electron microscopy with compounds	45X identified
12	Stability Studies	Stable as previous

V.CONCLUSION

The current study is for developing a successful pure herbal shampoo that reduces hair loss compared to chemical conditioning agents and promote hair growth and strengthen hair. The herbal shampoo is prepared with the help of some traditionally used medicinal plant's part like Rita, Shikakai, Gooseberry, Tulsi leaves, Hibiscus leaves and flowers, Aloe vera. These are generally used for hair cleansing. Using an artificial conditioning agent can reduces hair protein or responsible for hair loss. To give the harmful effects of synthetic conditioners, extracts of shikakai, amla and other plants are used instead chemical conditioner in the present study. The major intention of this study was to create a natural and fruitful shampoo instead of synthetic cationic conditioner or shampoo. With the exception of all types of chemical substance, those are usually included in those shampoos are available in market, the shampoo is prepared without use of any chemicals. Evaluation for good products, the performance of the prepared shampoo and other necessary evaluations test has been tested. Preparation and assessment of superior natural shampoo, description of research's results, it miles a comparative end result for quality control tests, but requires more scientific validity for its overall quality.

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