

Formulation and Evaluation of Surfactant Free Polyherbal Shampoo

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Abstract:

Shampoos are cosmetics preparations meant for cleansing the hair by removal of the dirt Grease from the hair shaft and scalp. There are a wide range of synthetic shampoos available in the market with different functions. But these synthetic shampoo shows harmful effect on the Hair and scalp like dryness of hair and keratin loss. Due to these reasons herbal shampoos has Evolved as an alternative to synthetic shampoo because of the safe and traditionally used ingredients. Herbal shampoo is a cosmetic preparation which uses herbs and meant for Cleansing the hair and scalp just like regular shampoo. Many of the herbs are reported to have Beneficial effect on hair and are used in herbal shampoos.

Keywords: Herbal shampoo, Synthetic shampoo, cosmetics, Traditional ingredients.

I. Introduction:

Hair is an integral part of human beauty. In humans' hair serves lot of purposes like protection Against external factors, sebum, apocrine sweat and pheromonal production and Thermoregulations [1]. Hair care products are primarily meant for cleansing the hair. It also Modifies the hair texture, provides nourishment to the hair and gives healthy look to the hair










Shampoo is the most common hair care cosmetic. It is available either in viscous liquid or Powder form, applied for cleaning hair and scalp from dirt, residues of previously applied hair Styling products and environmental pollutants. In the early days shampoos were meant only for









cleansing hair and scalp, but the shampoos available today do much more than that. Along With cleansing it leaves the hair easy to comb, lustrous and controllable while being convenient to use. Nowadays a wide range of shampoos are available in the market like synthetic, Herbal, medicated and non-medicated shampoos with different functions. Among these herbal Shampoos are most popular ones as they bear the impression of having better purity, safety and Efficacy.



Herbal shampoos are prepared from natural ingredients and are meant for cleansing hair and Scalp just like regular shampoo. These shampoos are free from side effects since no surfactants Are involved, has good stability and are less harmful compared to synthetic shampoo. Synthetic shampoo contains surfactants. Long term use of these surfactants can lead to serious Effects like scalp irritation, loss of hair, drying of hair, greying of hair, split ends and eye Irritation. Due to these reasons the public is getting attracted towards herbal cosmetics due to Its insignificant side effects and inexpensive nature.

Requirements of shampoo :

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

Sno	constituents	Biological name	Uses	image
1	Retha fruits	Sapindus mukorossi	Detergent& antidandruff	
2	Shikakai	Acacia concinna	Retains natural oil of hair,keep hair healthy	
3	Amla	Embelica officinails	Promotes hair growth, prevents premature greying& control dandruff	
4	Hibiscus flowers	Hibiscus rose sinensis	Prevents hair loss &hair growth promoter	
5	fenugreek	Trigonella foenum graceum	Cleaning & softening	
6	ginger	Zingiber officinals	Promotes hair growth	
7	Aloe vera	Aloe barbadensis	Conditioning& moisturizing effect	
8	bhringraj	Eclipta prostrata	Hair tonic	
9	Hibiscus leaves	Hibicus rosa sinensis	Prevents hair loss& hair growth promoter	

10	Onion	Allium cepa	Presence of Sulphur, helps in loss of hair	
11	Rose petals	Rosa rubiginosa	Moisturizes& nourishes the hair	
12	Henna	Lawsonia inermis	Promotes growth of hair conditioner	
13	Neem	Azadirachta indica	Antimicrobia agent,prevents the dryness of hairs &flaking of hairs	
14	Green tea	Camellia sinensis	Hair growth& enrichment	
15	Tulasi	Ocimum sanctum	Antimicrobial &anti lice property	
16	ashwagandha	Withania somnifera	Control hair fall, promotes hair growth, improves circulation of the scalp	
17	Flax seeds	Linum usitatissimum	Reduce scalp infection,hair growth	

18	Black seeds	Nigella sativa	Reduce hair loss , antibacterial	
19	Curry leaves	Murraya koenigii	Moisturise scalp,antioxidants	

Formulation of Herbal shampoo:

Collection of materials Ingredients required for the preparation are collected and washed thoroughly and dried. Weighing ingredients are weighed individually and soaked overnight. Decoction preparation Ingredients are boiled in the

same water used for soaking on medium flame, then allow it to cool and filter. Filter it by using muslin cloth and collect the filtrate. Then add incorporate preservative (eg:Methyl paraben) to prevent microbial growth.

SNo	Constitution	Parts of plant used	Quality (1000ml)
1	Rita fruits	Fruits	100grams
2	Shikakai powder	Fruits	60
3	Amla powder	Fruit	8
4	Hibiscus flowers	Flower	80
5	Fenugreek powder	Seeds	40
6	ginger	Stem	4
7	Aloe vera	Leaves	80
8	Bring raj powder	Leaves	20
9	Hibiscus leaves powder	Leaves	80
10	Onion powder	Fruit	4
11	Rose petals	Leaves	80
12	Henna powder	Leaves	12
13	Neem powder	Leaves	4
14	Green tea	Leaves	4
15	Tulasi powder	Leaves	4
16	Ashwagandha powder	Leaves	8
17	Flax seeds powder	Seeds	45
18	Black jeera powder	Seeds	12
19	Curry leaves powder	Leaves	8
20	Castrol oil	Oil	2
21	Methy paraben		1

Evaluation of Herbal shampoo:

The prepared formulation was evaluated for product performance which includes organoleptic characters, pH, physicochemical characterization,

and for solid content. To guarantee the nature of the items, particular tests were performed for surface tension, foam volume, foam stability, and wetting time using standard protocol.

1. **Visual assessment:**

The formulations prepared was assessed for their color, clarity, odour, foam producing ability and fluidity

2. **pH determination:**

The pH of the prepared herbal shampoo in distilled water (10% v/v) was evaluated by means of pH analyzer at room temperature

3. **Testing of wetting :**

Wetting time was calculated by noting the time required by the canvas paper to sink completely . A canvas paper weighing 0.44 g 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

4. **Foaming ability and foam stability :**

The stability of the foam was determined using cylinder shake method. About 50 ml of formulated shampoo (1%) solution was taken in a graduated cylinder of 250 ml capacity and shaken for 10 times vigorously.

Foam stability was measured by recording the foam volume of shake test after 1 min and 4 min, respectively. The total foam volume was measured after 1 min of shaking.

5. **Dirt dispersion test :**

To 10 ml of distilled water two drops of shampoo 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 foam was measured and the result was graded in terms of none, slight, medium, or heavy.

6. **Solid content:**

A clean ,dry evaporating dish was weighed, and 4 grams of herbal shampoo was added to the evaporating dish. The weight of the dish and shampoo was determined. The liquid portion of the shampoo was evaporated by placing on a hot plate. Then the weight of the shampoo solid contents after complete drying was determined.

7. **Acid test :** To 1 ml of shampoo, added 25 ml of ethanol and 25 ml of diethyl ether. Add 2 drops of phenolphthalein indicator and titrate it with 0.5 N of KOH solution. then the solution turns into pale pink

8. **Rheological evaluation:**

The viscosity of the shampoo was calculated by using a viscometer. The viscosity of the shampoo was measured with the temperature and sample container size was kept constant during the study.

9. **Stability test:**

Stability and acceptability of organoleptic properties (odour and color) of formulations during the storage period of 2 months indicated that they are chemically and physically stable.

10. **Skin sensitivity test:**

This test is performed on skin of human volunteers and checks whether it is irritation on skin or not.

11. **Eye irritation test:**

This test is performed on human volunteers and checks whether it is irritation to eyes or not.

12. **Nature of hair after wash:**

Nature of hair after wash can be done by collecting the response of volunteers.

II. Results and Discussion :

SNo	Evaluation test	F1(1000ml)	F2	F3	F4
1	Visual assessment	Color: brown Odour: good	Color: brown Odour:good	Color: brown Odour:good	Color: brown Odour:good
2	PH determination	4	4.5	4.5	5.5
3	Testing of wetting	180	165	155	120 sec
4	Foaming ability & foam stability	340	400	325	500ml
5	Dirt dispersion test	medium	light	Light	light
6	Solid content	4.2%	4.0%	4.0%	3.7%
7	Acid test	1.04	0.98	0.98	0.96

8	Rheological evaluation	1.86	1.85	1.85	1.84cps
9	Stability test	Stable after two months	Stable after two months	Stable after two months	Stable after two months
10	Skin sensitivity test	No irritation	No irritation	No irritation	No irritation
11	Eye irritation test	No irritation	No irritation	No irritation	No irritation
12	Nature of hair after wash	Soft manageable	Soft manageable	Soft manageable	Soft manageable

III. Conclusion:

The present work was carried out with an aim to exclude the use of synthetic excipients which are common ingredients in all shampoos. The formulated shampoo is expertly crafted to provide multi facet solution for hair care.

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