

Formulation and Evaluation of Herbal Shampoo

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ABSTRACT: -

Shampooing is the most common form of hair treatment. Shampoos are primarily been 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 customers. A more radical approach in popularizing herbal shampoo would be to change the consumer expectations from a shampoo, with emphasis on safety and efficacy. We have formulated and evaluated the herbal shampoo and the findings of this investigation reveal that synthetic preservatives have sometimes been the cause of adverse effects among consumers. The physio chemical properties of shampoo are in accordance with standard values and the foam volume was on a par. So the herbal shampoo prepared is suitable for human use as per the standards of BIS.

I. INTRODUCTION:-

Formulation of herbal shampoo is done by using natural substances like Hibiscus rosasinensis, Aloe Vera, and other ingredients and is done in various trails.

Evaluation of shampoos comprises the quality control tests including visual assessment and physio chemical controls such as pH, density and foam stability.

MATERIALS AND METHODS:-

Formulation of herbal shampoo:-

Formulation is done in four trails by using various concentrations of

Hibiscus rosasinensis, Aloe Vera, Camphor, Coconut oil, Soap nut powder.

Trail 1:-

Hibiscus-50%, Aloe vera-30%, Camphor-0.1%, Coconut oil-7%, Soap nut powder-3%, Light magnesium carbonate-0.2%, Sodium benzoate-3%.

Trial 2:-

Hibiscus-60%, Aloe vera-25%, Camphor-2%, Coconut oil-6%, Soap nut Powder-5%.

Trail 3:-

Hibiscus-60%, Aloe vera-20%, Camphor-2%, Coconut oil-5%, Soap nut Powder-8%.

Trail 4:-

Hibiscus-60%, Aloe vera-15%, Camphor-3%, Coconut oil-4%, Soap nut Powder-13%.

All the formulations have been evaluated by various methods

EVALUATION OF HERBAL SHAMPOO: -

To evaluate the prepared formulations, quality control tests including the visual assessment and physio chemical controls such as pH, density, and solid content were performed. Also, to assure the quality of the product specific tests for shampoo formulation including dirt dispersion, foam stability were carried out. The results obtained were compared with standard values.

1. Physical appearance or visual inspection: -

The formulation prepared were evaluated in terms of clarity, foam producing ability and fluidity

2. Determination of pH:-

The pH of 10% shampoo solution in distilled water was determined at room temperature 25c

3. Determination of percentage of solid 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 shampoo was calculated only and put the evaporating dish with shampoo on the hot plate until the liquid portion was evaporated. The weight of the shampoo only (solids) after drying was calculated.

4. Dirt dispersion: -

Two drops of shampoo were added in a large test tube containing 10 ml of distilled water. 1 drop of Indian ink was added; the test tube was stoppered and shake it for 10 min. The amount of ink in the foam was estimated as none, Light, moderate or heavy.

5. **Foaming ability and foam stability:** - Cylinder shake method was used for determining foaming ability. 50 ml of the 1% shampoo solution was put in to a 250 ml graduated cylinder and cover the Cylinder with hand. Shake it for 10 times. The total volume of foam contents after 1 min shaking were recorded. The foam volume was calculated only. Immediately after shaking the volume of foam at 1 min intervals for 4 minutes were recorded.
6. **Eye irritation test:** -Animals (albino rats) were collected from animal house. About 1% shampoo solution was dripped in to eyes of six albino rats with their held open with clips at the lid. The progressive damage to the rabbit's eye was at specific intervals over an average period of 4 seconds. Reactions to the irritants can include swelling of eye lids, inflammation of the iris, ulceration, haemorrhage(bleeding), and blindness.
7. **Determination of non volatile alcohol soluble substance:-** Weigh 10gm of sample in 150 ml beaker and evaporate in steam bath to almost complete dryness. Add 50 ml of ethyl alcohol, filter and transfer filtrate to flask and heated in an oven at 105°C. Residue suspended in 50ml water and add silver nitrate using potassium chromate as indicator until brown colour is obtained.
8. **Total fatty substance content:** -Weigh 2 gm of sample in conical flask, add 25 ml of dil.HCL and reflux until phase separation. transfer to separating funnel. Rinse separating funnel with 10ml ethyl ether. Remove aqueous layer and shake it with 10ml ether for 2min. Combine ether extract and wash it with water till acid is removed. Filter through filter paper containing sodium sulphite in to pre-weighed conical flask. Dry the material at 60±2°C till constant weight.

TABLE 1:- EVALUATION OF FORMULATION FOR PHYSICAL APPEARANCE, pH AND FOAM STABILITY

S.NO	FORMULATION	PHYSICAL APPEARANCE	pH	STANDARD VALUES	FOAM VOLUME
1	F1	Dark brown and good foaming	6	5-7	130mm
2	F2	Dark brown and good foaming	6	5-7	132mm
3	F3	Dark brown and good foaming	6	5-7	140mm
4	F4	Dark brown and good foaming	6	5-7	153mm

TABLE 2:- EVALUATION OF FORMULATION FOR PERCENTAGE OF ALCOHOL SOLUBLE SUBSTANCE AND TOTAL FATTY MATTER

S.NO	FORMULATION	PERCENTAGE OF ALCOHOL SOLUBLE SUBSTANCE	STD VALUE	TOTAL FATTY MATTER	STD VALUE
1	F1	4.0%	<2%	8.0%	>15%
2	F2	3.0%	<2%	12%	>15%
3	F3	2.0%	<2%	14%	>15%
4	F4	1.8%	<2%	17%	>15%

II. RESULTS AND DISCUSSION:-

1.Physical appearance: - the results of visual inspection of all formulations are listed in table 1.

All formulations shown good characteristics with respect to foaming.

2.pH: - The pH of shampoos has been shown to be important for improving and enhancing qualities of

hair, minimizing irritation of eyes and stabilizing ecological balance of scalp. The current trend to promote shampoos of low pH is one of the ways to minimize damage of hair. Mild acidity prevents swelling and promote tightening of scales, inducing shine. All formulations are acid balanced and ranged to 6 which is near to skin ph.

3.Percent of solid contents: -if the shampoo has too many solids it will be hard to work in to hair or too hard to wash to wash out. The result of percentage of solid contents was found to be between 22-29%. They were easy to wash out.

4.Dirt dispersion: -shampoo that cause the ink to concentrate in the foam is considered as poor quality, the dirt should stay in water. Dirt that stays in foam will be difficult to rinse away. It will redeposit on hair. All formulations showed similar result that no dirt stays in foam. So prepared formulations safe satisfactory.

5.Foaming ability and foam stability: -

Although foam generation has little to do with cleansing ability of shampoos, it is of paramount importance to the consumer and therefore important criterion in evaluating shampoos. All formulations having similar foaming characteristics and foam heights are given in table 1. A point to be noted here is that there doesn't seem to be any direct correlation between detergency and foaming, which only confirms the fact that a shampoo that foams well need not clean well. The final formulation produced stable foams there was little bet change in foam volume.

6.Eye irritation test: -

The all formulation showed no eye irritation after 2 seconds, but little irritation shown after 4 secs of treatment by all formulations including marketed shampoos. The adverse reaction may occur to one of the primary constituents of cosmetic formulation or contamination or procedural misconduct. Preservatives are second most common cause of skin reactions besides fragrances. In most cases, they are only mild such as stinging or smarting and contact urticarial. In few cases reactions are severe with redness, oedema, drying and scaling. There were no eye irritations by all the formulations. All formulations are good.

6.percentage of alcohol soluble substance and total fatty matter: -

The values of alcohol soluble substances and total fatty matter for all the formulations has been given in table 2. Among all formulation 4 has shown the values with in the standard range. Hence formulation F4 is good for human use among all the formulations

III. CONCLUSION: -

The formulated shampoos were not only safer than the chemical conditioning agents, but also greatly reduce protein loss during combing. The value of pH and foam values are positive in all the four trails. All the four formulations have shown good results for dirt dispersion, foaming and eye irritation tests. But the values of percentage of alcohol is negative in trail 1 and 2. It is positive in trail 3 and 4. The values of total fatty matter is negative in trail 1,2 and 3 but it is positive in trail 4. So all the values of pH, foam, alcohol soluble substance and fatty matter all are within standard values in trail 4 as per BIS.

So the herbal shampoo prepared is suitable for human use as per standard of BIS.

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