



## Formulation and Evaluation of Herbal Anti Dandruff Shampoo

*Giri Ritik, Prajapati Sonu, Upadhyay Nikita, Gupta A. K*

Chameli Devi Institute of Pharmacy, Indore

Email: sonuprajapati340@gmail.com

### Introduction:

Dandruff is a major cosmetic problem that poses very great public health concern both in developed and developing countries. No population in any geographical region would have passed through freely without being affected by dandruff at some stage in their life. The word dandruff (dandruff, dandruff) is of Anglo-Saxon origin, a combination of „tan“ meaning „tetter“ and „drof“ meaning .Dandruff is a chronic scalp condition characterized by scaling, itching and redness of the scalp. It occurs when scalp sheds epidermal cells in large clumps. The skin of scalp renews itself about once a month. Usually, scalp sheds dead cells in nearly invisible way, but sometimes cell turnover becomes unusually rapid and dead cells are sheds visible flakes called dandruff.

### Method of preparation:

**Weighing:** Using a computerized balance, each essential herbal ingredient for the creation of shampoo was precisely weighed.

**Extraction:** The required herbal ingredients for shampoo formulation were extracted by decoction process. Decoction is an extraction procedure that has been used especially for water soluble and thermos table constituents. In this case, the crude plant is boiled in an open-type extractor that contains a specified volume of water and the process lasts for a specific time period

**Mixing:** To produce clear shampoo, all extractions are vigorously blended. Finally, perfume is added to the mixture.

**Storage:** Store in a suitable container.

**Table 1: List of herbs used**

Name of herbs used	Uses of herbs
Reetha	Used as natural surfactant Cleans and moisture the scalp
Fenugreek seed	They contain proteins and nicotinic acid, which are thought to strengthen the hair shaft.
Flaxseed	Flax seed oil or gel to promote hair growth.
Hibiscus	Hibiscus flowers and leaves will serve as the perfect remedy for you and stop hair fall.
Orange oil	Orange oil can use as perfuming agent and fragrance
Aloevera gel	It helps combat hair fall, fight dandruff, and nourish your hair.

### Method of preparation:

Material and method of crude drug:

1. Hibiscus
2. Flaxseed
3. Fenugreek seed
4. Soapnut
5. Aloevera gel

**Collection methods:**

All the medicinal plants were collected for Herbal antidandruff shampoo stud namely as Reetha, Flaxseed, Fenugreek seed, Mentha, Alovera gel, Lavender oil, Tulsi. The plant specimen was collected from Local market.

**Extraction methods:****Preparation of Aloe Vera gel:**

- Collect the raw material.
- Wash leaf and remove base and tip of the leaf.
- Leaf is cut into section.
- Extract mucilage part of the leaves into mixing jar
- Heat it and add agar-agar powder.
- Grinding /homogenization of unpasteurized juice.



Figure .1: Aloe Vera Gel

**Decoction Method:** weighed all the ingredients as per formula. Take all ingredients like alovera, fenugreek, nutgrass, , some flowers and leaves of hibiscus one by one in 1/4th quantity of water then heat them on very slow flame till the quantity become less than half of total quantity.



Figure .2: Extraction of Drugs by decoction Method (Hibiscus, & Fenugreek Extract)

**Maceration Method:** I was done the maceration method on soapnut by taking 1/4th quantity of soapnut in water. Then soak it at about 7-8 hours. Then filter it and filtrate was collected

**Figure. 3: Extraction of Drugs by maceration Method (Soapnut) and Fennel**



**Decoction Method:** weighed all the ingredients as per formula. Take all ingredients like alovera, fenugreek, nutgrass, , some flowers and leaves of hibiscus one by one in 1/4th quantity of water then heat them on very slow flame till the quantity become less than half of total quantity.



**Figure .04: Extraction of Drugs by decoction Method (Hibiscus, & Fenugreek Extract)**

**Maceration Method:** I was done the maceration method on soapnut by taking 1/4th quantity of soapnut in water. Then soak it at about 7-8 hours. Then filter it and filtrate was collected



Figure .5: Extraction of Drugs by maceration Method (Soapnut) and Fennel

TABLE 2: FORMULATION

Sr. No.	Ingredients	Formulation	Formulation	Formulation	Formulation
		F1(10ml)	F2(10ml)	F3(10ml)	F4(10ml)
1	Soapnut Extract	2ml	2ml	2ml	1ml
2	Hibiscus Extract	2ml	2ml	2ml	1ml
3	Fenugreek Extract	2ml	1ml	2ml	2ml
4	Alovera Extract	2ml	2ml	1ml	2ml
5	Flaxseed Extract	1ml	2ml	2ml	2ml
6	Orange oil	q.s	q.s	q.s	q.s
7	Saponified soap	q.s	q.s	q.s	q.s

#### Formulation of shampoo:

Mix all the ingredients as per quantity. Shikakai, Hibiscus and Fenugreek extract by decoction method ,Soap nut extract by maceration method and add aloe Vera gel which directly taken from aloe leaf and grind it.

- Then add Saponified soap by saponification method.
- Then the extracts are taken as per formula and then mixed those ingredients by shaking continuously till all ingredients are mixed.
- Then I have added Gum Tragacanth as a thickening agent for maintained of consistency of Herbal shampoo as like semisolid nature.
- Then the four different formulation was done are F1, F2, F3, F4.



**Fig. 6 Herbal Anti Dandruff shampoo**

#### **Evaluation of anti-dandruff 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

- **Visual assessment:** The prepared formulation was assessed for colour, clarity, odour, and froth content.
- **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.
- **Determination of Solid % Shampoo:** The percentage solid content was determined by weighing about 4g of shampoo bar in evaporating dish. The weight of the dish and shampoo was determined. The liquid portion of shampoo was evaporated by placing in heating mantle. Finally, the weight of solid contents after complete drying present in shampoo bar was calculated.
- **Foam stability test:** 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.
- **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.
- **Rheological Evaluations:** The viscosity of the shampoos was determined by using Brookfield Viscometer (Model DV-1 Plus, LV, USA) set at different spindle speeds from 0.3 to 10 rpm. The viscosity of the shampoos was measured by using spindle T95. The temperature and sample container's size was kept constants during the study.
- **Surface Tension Measurement:** Measurements were carried out with a 10% shampoo dilution in distilled water at room temperature. Thoroughly clean the stalagmometer using chromic acid and purified water. Because surface tension is highly affected with grease or other lubricants<sup>5, 6</sup>. The data calculated by following equation given bellow: where W1 is weight of empty beaker. W2 is weight of beaker with distilled water. W3 is Weight of beaker with shampoo solution. N1 is no. of drops of distilled water. N2 is no. of drops of shampoo solution. R1 is surface tension of distilled water at room temperature.

#### **Evaluation parameter:**

F1, F2, F3, and F4 there are four batches are prepared in Evaluation test for Herbal Anti Dandruff Shampoo:



Fig no: 07

**Table no 3: Comparison of formulated with marketed shampoo**

Evaluation parameters	Formulated shampoo	Marketed shampoo
Colour	Light brown	White
Odour	Pleasant	Pleasant
Transparency	Thick	Milk opaque
pH	6.6 ± 0.5	6.1 ± 0.5
% Solid content	25.75 ± 2%	23 ± 2%
Foam volume	98 ± 5ml	115 ± 5 ml
Surface tension	30.68 ± 0.5 dyne/cm	38.72 ± 0.5 dyne/cm
Wetting time	140 sec	187 Sec

## RESULT AND DISCUSSION:

The shampoo was formulated by admixing the aqueous extracts of all the ingredients. The above plant extract contains phytoconstituents like saponins which is a natural surfactant having detergent property and foaming property. I was formulated four formulations of herbal shampoo F1, F2, F3 & F4, F2 is best formulation after the observation of evaluation test. An ideal shampoo must have adequate viscosity and many natural substances possess good viscosity. Orange oil (few drops) added to the shampoo serves as anti-dandruff agent, natural antioxidant, and chelating agent and maintains the acidic pH in the formulation.

**Table no 4: Evaluation and observational Formulation Parameter**

Sr. No	Evaluation test	Observational Formulation			
		F1	F2	F3	F4
1	Visual Assesment	Dark Brown	Brown	Brown	Brown
2	pH Determination	6	6.5	7.1	6.3
3	Nature of Hair After use	Smooth & shiny	Smooth & shiny	Smooth & shiny	Smooth & shiny
4	Viscosity	Viscous	Viscous	Viscous	Viscous
5	Dirt Dispersion	Moderate	Moderate	Moderate	Moderate
6	Foaming Stability	2Min	3Min	2.5Min	2Min

---

**Conclusion:**

The present study was carried out with the aim of preparing the herbal shampoo that reduces hair loss during combing, safer than the chemical conditioning agents as well as to strengthen the hair growth. Herbal shampoo was formulated with the aqueous extract of medicinal plants that are commonly used for cleansing hair traditionally. Use of conditioning agents (synthetic) reduces the protein or hair loss. To provide the effective conditioning effects, the present study involves the use of Hibiscus, Flaxseed, and other plant extracts instead of synthetic cationic conditioners. The main purpose behind this investigation was to develop a stable and functionally effective shampoo by excluding all types of synthetic additives, which are normally incorporated in such formulations. To evaluate for good product performance of the prepared shampoo, many tests were performed. The results of the evaluation study of the developed shampoo revealed a comparable result for quality control test, but further scientific validation is needed for its overall quality.

**References:**

---

1. Kothari S, Patidar K, Solanki R. Polyherbal Anti-Dandruff Shampoo: Basic Concept, Benefits, and Challenges. *Asian J. Pharm.* 2018; 12(3): S849- 58.
2. Gubitosa J, Rizzi V, Fini P, Cosma P. Hair Care Cosmetics: From Traditional Shampoo to Solid Clay and Herbal Shampoo, A Review. *Cosmetics.* 2019; 6(13): 1-16.
3. Jaya Preeti P, Padmini k, Srikanth j, Lohita M, Sweyha K, vengal Rao P, A review of herbal Shampoo and its Evaluation, *Asian J. Pharm. Ana.3* (4): 2013, 176-182.
4. London and Wessman, *International Journal of Cosmetic Science* 2001, Volume 22, Issue4.
5. Suriyaprakash TNK, Kalaivani R, Lakshmana Prabu S, Sumathi. A Formulation and evaluation of poly herbal shampoos for its antimicrobial and anti-lice activity. *Elixir Pharmacy.* 2011; 39:4639-4642.
6. Ashwini Sukdev, Sujatha P. Ingale Formulation and Evaluation of Herbal Liquid Shampoo *World Journal of Pharmaceutical Research* 9(5), 901-911.
7. Rashmi Pal S, Ankita Wal. Preparation and Assessment of Polyherbal Anti-Dandruff formulation. *The open Dermatology Journal* 1874-3722/20 Journal 2020, 14.
8. Doi T, Kayihura K and Taguchi S. 2010. Survey of formaldehyde (FA) concentration in cosmetics containing FA-donor preservatives. *Journal of Health Science.* 56(1) :116-122
9. Persaud D and Kamath YK. 2004. Torsional method for evaluating hair damage and performance of hair care ingredients. *International Journal of Cosmetic Sciences.*
10. Kurnai T, Dharam P, Mesh ram, D.P and Mitesh. P. 2014. Evaluation of standard of some selected shampoo preparation. *Word Journal of Pharmacy and Pharmaceutical Sciences.* 5(2): 3622-3630.
11. Richa Madhu Sharma, Kinjal Shah and Janki Patel,(2011), Evaluation of prepared herbal shampoo formulations and to compare formulated shampoo with marketed shampoos, *Int J Pharm Sci*, Vol 3,pp no: 402-405 RupeshkumarGhagi, Surekha K. Satpute, Balu A.
12. Preparation and characterization of various polyherbal formulation for assessing the effects of hair colourants. Tomer KA, Sethiya NK, Singh VI. 2009;1:93-7 *Int J Pharm Science.*
13. Lather V., Kumar V., Gupta M., Kaushik D., and Dureja H.
14. Preethi PJ, Padmini K, Srikanth J, Lohita M, Swetha K, Rao PV. A review on herbal shampoo and its evaluation. *Asian J Pharm Anal* 2013;4:153-6. Pekamwar SS, Kalyankar TM, Jadhav AC. *Hibiscus rosa-sinensis: A review on ornamental plant.* *World J Pharm Pharma Sci* 2013;2:4719-27