

**FORMULATION AND CHARACTERIZATION OF HERBAL SHAMPOO USING  
CUSCUTA REFLEXA AS AN ACTIVE INGREDIENT FOR ALOPECIA**<sup>1</sup>\*Maya Y. Gaikwad and <sup>2</sup>Vaishnavi Katkale<sup>1</sup>Lecturer SMBT Institute of D. Pharmacy, Dhamangaon, Nashik.<sup>2</sup>Student SMBT Institute of D. Pharmacy, Dhamangaon, Nashik.**\*Corresponding Author: Maya Y. Gaikwad**

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**ABSTRACT**

Herbal shampoos are the cosmetic preparations that with the use of traditional ayurvedic herbs are meant for cleansing the hair and scalp just like the regular synthetic shampoo. They are used for removal of oils, dandruff, dirt, environmental pollutions etc. Herbal shampoo is a type of cosmetic preparation that uses herbs from plants as an alternative to the synthetic shampoo available in the market. The herbal shampoo is important, as people nowadays prefer herbal products than chemical ones for they proved to enhance health. The awareness and need for cosmetics with herbs are increasing day by day, primarily because it is believed that these products are safe and free from side effects. In this research, we use *Cuscuta reflexa* as an active ingredient for hair growth activity.

**INTRODUCTION****Herbal Shampoo**

Shampoos are probably the most widely used cosmetic products used for cleansing hairs and scalp in our daily life. Herbal shampoos are the cosmetic preparations that with the use of traditional ayurvedic herbs are meant for cleansing the hair and scalp just like the regular synthetic shampoo. They are used for removal of oils, dandruff, dirt, environmental pollutions etc. Herbal shampoo is a type of cosmetic preparation that uses herbs from plants as an alternative to the synthetic shampoo available in the market. The herbal shampoo is significant, as people nowadays desire herbal products than chemical ones for they proved to enhance health. The awareness and need for cosmetics with herbs are increasing day by day, primarily because it is believed that these products are safe and free from side effects.<sup>[1]</sup>

**History**

Indian subcontinent: In the Indian subcontinent, a multiplicity of herbs and their extracts have been used as shampoos since ancient times. A very useful early on shampoo was made by boiling Sapindus with dried Indian gooseberry (amla). Sapindus, also called as soapberries or soapnuts, a tropical tree available in India, is known as ksuna. In ancient days Indian used its fruit pulp contains saponins which act as natural surfactant. The extract of soapberries forms froth which Indian texts called phenaka. It makes the hair soft, shiny and convenient. Other products used for hair cleansing in our country mainly shikakai (Acacia concinna), hibiscus flowers, ritha (Sapindusmukorossi) and arappu (Albizziaamara).Guru Nanak, the founder and the first

Guru of Sikhism, made references on soapberry tree and its soap in the 16th century.<sup>[2]</sup>

Cleansing with hair and body massage (champu) during one's daily bath was an excess of early colonial traders in India. When they returned to Europe, they introduced the newly cultured habits, including the hair treatment they called shampoo.<sup>[3]</sup>

**Types of Shampoo**

Shampoos are of the following types:

- Powder Shampoo
- Liquid Shampoo
- Lotion Shampoo
- Cream Shampoo
- Jelly Shampoo
- Aerosol Shampoo
- Specialized Shampoo
- Conditioning Shampoo
- Anti- dandruff Shampoo
- Baby Shampoo<sup>[4]</sup>

*Cuscuta reflexa* is commonly called as dodder plant, and also known as devil's hair, witch's hair, love vine, amarbel or akashabela etc. *Cuscuta reflexa* is a parasitic weed plant and also an extensive climber. It grows as homoparasite. *Cuscuta reflexa* is rootless, leafless, perennial parasitic twining herb of Convolvulaceae family, commonly known as amarbel or dodder.

**Botanical Classification of *Cuscuta Reflexa***

- Kingdom - Plantae
- Subkingdom - Tracheobionta

- Superdivision - Spermatophyta
- Division - Angiospermes
- Class - Eudicots
- Subclass - Asterids
- Order - Solanales
- Family - Cuscutaceae
- Alternate - Convolvulaceae
- Genus - Cuscuta
- Species - reflexa

**Synonyms For Amarvel:** Akashavalli, amarvallari, khavalli, asprsha, vyomvallika, aakashbel, amarbel, aaloklata.

#### Vernacular Names





- Hindi - Amarbel
- Bengali - Swarnlata
- Malyali - Nirmuli
- Gujrati - Akasbel


- Telugu - Nulutega
- Tamil – Erumaikkottan
- Persian – Aftimoon
- Assamese- Akakhilata
- English – Dodder

The plant having various activities like On cardiovascular system, antitumor, antipyretic, antiarthritic, antioxidant, antidiabetic, anti-inflammatory, anti microbial, hair growth activity.

**Hair growth activity:** The petroleum ether and ethanolic extract of Cuscutareflexa were given at the dose 250 mg/kg in male swiss albino rats. Cyclophosphamide (125 mg/kg) was used to induce alopecia. This study was shown to be capable of promoting follicular proliferation or preventing hair loss in cyclophosphamide induced hair fall<sup>[5]</sup>

#### METERIALS AND METHODS

Sr. no.	Ingredients	Biological source	Family	Uses	Image
1.	Amarvel	Cuscutareflexa	Convolvulaceae	Hair growth	
2.	Ritha	Sapindusmukorossi	Sapindaceae	Helps to control hair fall by removing dandruff from the scalp	
3.	Shikakai	Acacia concinna	Leguminosae	Controlling hair fall and dandruff	
4.	Amla	Emblicaofficinalis	Euphorbiaceae	Condition your scalp and promote healthy hair growth.	

5.	Gelatin solution	pig skins, bovine hides and beef and porcine bones	Bovidae	Helps to smooth the hair cuticle, boost shine and reduce breakage.	
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### Method of Shampoo preparation

#### A. Preparation of Extract

##### 1. Ritha Extract

- Prepared by cold maceration process
- 10 g of Ritha powder in 70% ethyl alcohol

##### 2. Amla Extract

- 10 g of Amla powder in 50 ml water and boil.

##### 3. Shikakai Extract

- 10 g Shikakai powder boiled in 50 ml water.

##### 4. Gelatin Extract

- 1 g of gelatin powder boiled with 50 ml water.
- Then mix all the extracts and triturated together.
- Lecturer SMBT Institute of D. Pharmacy, Dhamangaon, Nashik. 10 g of Amarvel powder in 70 % ethyl alcohol (30 ml).

the herbal extract and mixed by shaking constantly at the time interval of 20 min. 1 ml of lemon juice was also added with constant stirring to get uniform mixture. For better aroma in the formulation, sufficient quantity of essential oil (rose oil) was added and made up the volume to 100 ml with gelatin.

**Table 1: Formula for preparation of Shampoo.**

Material required	Quantity	Medicinal use
Ritha Extract	0.5 g	Foaming agent
Amarvel Extract	1 g	For hair growth
Amla Extract	0.5 g	Antidandruff agent
Shikakai Extract	0.5 g	Detergent
Aloe vera	1 g	Moisturizing agent
Gelatin Extract	q.s.	Gelling agent
Lemon juice	q.s.	Antimicrobial agent
Rose oil	q.s.	For fragrance purpose

#### B. Preparation of Shampoo

Formulation of the herbal shampoo was done as per the following formula. To the gelatin solution (10%), added



**Fig. 1: Mixing of ingredients**



**Fig. 2: Herbal extract with gelatin solution.**

#### Evaluation of herbal shampoo

- 1) Visual assessment- The prepared formulation was assessed for color, clarity, odor, and froth content.
- 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.<sup>[6]</sup>
- 3) Determination of solid content percentage-The percentage of solid substance was determined by

weighing about 4 g of shampoo in a dry, clean, and evaporating dish. To confirm the result, the procedure was performed again. The liquid portion of the shampoo was evaporated in a dish by placing on hot plate. The percentage and the weight of the solid contents present in the shampoo were calculated after drying completely.<sup>[7]</sup>

- 4) Foam ability and foaming 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.<sup>[10]</sup> The total foam volume was measured after 1 min of shaking.
- 5) Dirt dispersion: Two drops of herbal shampoo were added in a large test tube contain 10 ml of distilled water. 1 drop of ink was added then the test tube was stoppered and shakes it ten times. The amount of ink in the foam was determined as None, Light, Moderate, or Heavy.
- 6) Stability: Stability and acceptability of organoleptic properties (odour and color) of herbal shampoo during the storage period of 2 months indicated that they are chemically and physically stable.
- 7) Skin sensitization test: This test is performed on skin of human volunteers and checks whether if irritation persist on skin or not.

**Table 2: Evaluation test of Herbal shampoo compared with Marketed formulation.**

Sr. No.	Evaluation tests	Result obtained (Herbal shampoo)	Result (Marketed formulation, Clinic plus)
1	Visual assessment	Color: Dark brown Fragrance: Perfumed Consistency: Semi liquid	Color: Blue Fragrance: Perfumed Consistency: Semi liquid
2	pH determination	5	6
3	Determination of solid content percentage	8.25%	6.5%
4	Nature of hair after wash	Soft	Soft
5	Foam ability and foaming stability test	333.3	500
6	Dirt dispersion	Light	Light
7	Stability	Stable	Stable
8	Skin sensitization test	No irritation on skin	No irritation skin

**CONCLUSION**

The formulated herbal shampoo was not only safer than the chemical conditioning agents, but also greatly reduces the hair loss during combing as well as improves the hair growth. The pH of the shampoo was adjusted to 5, to retain the acidic mantle of scalp. The physicochemical approach used for preservation of the formulations to avoid the risk posed by chemical preservatives. In the present scenario, it seems improbable that herbal shampoo, although better in performance and safer than the synthetic ones, will be popular with consumers. Formulators must play an active role in educating the consumers about the potential harmful effects of synthetic detergent in shampoos.

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