



# PURE ESSENCE: SHIKAKAI SHAMPO TABLETS

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## Abstract:

Shikakai shampoo tablets are novel form of herbal hair care product. That are ecofriendly easy to use. Formulation is done by using natural ingredients like alovera gel, shikakai, fenugreek powder, it was prepared by direct compression method. And result showed satisfactory physical properties, good foaming and cleansing ability. They are made for applying on scalp by mixing it in water for diluting the concentric shampoo. It will help the scalp to become strong and free from dandruff and other dirt. Less dandruff will make hair growth faster with strong hairs. With no side effects such as hair fall, thinning of hairs.

**Keywords:** - shampoo tablet, shikakai, hairfall solution.

## I. Introduction to shampoo-

Shikakai Shampoo Tablets are a natural hair care product that cleanses and nourishes the hair and scalp. Shikakai, the herb used to manufacture it, has antioxidants, vitamins, and saponins. Shampoo is a hair care product that uses suction to remove impurities like grease, sweat, and debris from the hair and scalp. It is crucial for keeping hair healthy and is a part of many people's everyday hygiene routines. Shampoo's primary goal is to cleanse the hair and scalp in an effective and non-irritating manner. It often consists of a blend of components, such as conditioners, perfumes, preservatives, and surfactants, which are compounds that aid in removing oil and impurities from the hair and scalp.



Fig 1- shampoo

It's crucial to apply shampoo to damp hair, work it into the scalp and hair with a gentle massage, and then give the hair a thorough water rinse. You might decide to use a conditioner afterward to help hydrate and untangle your hair, depending on your hair type and needs. All things considered, shampoo is an essential tool for maintaining clean, healthy, and well-groomed hair.

## Advantages of herbal shampoo over synthetic shampoo.

Advantage of herbal shampoo.	Disadvantage of synthetic shampoo.
Made from Natural ingredients which are safe to use like reetha , amla etc.	Made from chemicals which are not much safe to use like SLS, SLD.
Higher concentration does not cause any harm.	Higher concentration of shampoo leads to hair fall hair damage and dandruff.
Safe for environment.	Unsafe for environment.
Effect is for longer time even after stopped using for longer time.	Effect of shampoo vanishes withing few days after use.
Promotes scalp and hair health.	Does not take care of scalp health.

Table no. 1- Advantages of herbal shampoo over synthetic

## II. Causes of hair damage-

Hair fall can occur due to various reasons, including:

Sr.no.	Cause	
1.	<b>Genetics</b>	Family history plays a significant role in determining whether you'll experience hair loss.
2.	<b>Hormonal Changes:</b>	Imbalances in hormones, such as during pregnancy, childbirth, menopause, or thyroid disorders, can lead to hair fall
3.	<b>Stress</b>	Physical or emotional stress can disrupt the hair growth cycle, leading to temporary hair loss.
4.	<b>Nutritional Deficiencies</b>	Lack of essential nutrients like vitamins, minerals, and proteins in your diet can weaken hair strands and contribute to hair fall
5.	<b>Medical Conditions:</b>	Certain medical conditions like alopecia areata, scalp infections, or autoimmune diseases can cause hair loss.
6.	<b>Medications</b>	Some medications, such as those used for cancer, high blood pressure, depression, or arthritis, can cause hair fall as a side effect.
7.	<b>Excessive Styling or Treatments</b>	Overuse of hair styling tools, harsh chemicals, frequent hair coloring, or tight hairstyles can damage the hair shaft and lead to breakage.
8.	<b>Age</b>	As you age, the rate of hair growth slows down, and hair follicles may become thinner, leading to gradual hair loss.

Table no. 2- Causes of Hair damage.

### III. Need of rational –

- Shikakai is a traditional Indian herb known for its cleansing and conditioning properties. It is rich in vitamins, antioxidants, and other nutrients that promote healthy hair and scalp. By using shikakai shampoo tablets, individuals can avoid synthetic chemicals and potentially harsh detergents found in many liquid shampoos, making it a preferable option for those seeking more natural hair care solutions.
- Shikakai is harvested from the pods of the Acacia concinna tree, which is native to Asia. Using shikakai shampoo tablets can be more environmentally friendly compared to liquid shampoos that often come in plastic bottles, contributing to plastic waste. Additionally, since shikakai is a renewable resource, its cultivation and use can support sustainable practices.
- Shikakai shampoo tablets offer convenience, especially for travelers or those on the go. They are lightweight, compact, and easy to use, eliminating the need for bulky liquid shampoo bottles. This convenience factor makes them a practical choice for individuals looking for hassle-free hair care solutions.
- Shikakai has mild cleansing properties that effectively remove dirt, oil, and buildup from the hair and scalp without stripping away natural oils. This gentle cleansing action makes shikakai shampoo tablets suitable for all hair types, including sensitive scalp conditions.
- Regular use of shikakai shampoo tablets can promote overall hair health by nourishing the scalp, strengthening hair follicles, and preventing issues such as dandruff and hair fall. The natural ingredients in shikakai support hair growth and can leave the hair feeling soft, shiny, and manageable.

### IV. Aim and Objective-

To make novel form of shampoo that is easy to dilute and use which will reduce dandruff and other hair problems.

- Preventing wastage of shampoo, and easy to use.
- Does not cause any side effect and decreases scalp related problem.
- Nourish and strengthen the hair follicles and prevent hair fall.
- To reduce the concentration of synthetic chemicals on shampoo.

### V. Material and Method-

Herbal shampoo tablets is the formulation made from natural ingredients which are easily available in market and healthy for good hair growth and nourishment. Herbal ingredients used to treat hair fall in shikakai shampoo tablets are shikakai powder, amla powder, fenugreek powder, Ritha powder, alovera gel, lemon juice, rose water. Due to high available of natural ingredients it is gaining high popularity in market. It was also used previously/ anciently to clean scalp or to reduce hair fall. In this project we will dissolve the shikakai tablet in water and directly apply on scalp to reduce hair fall. Saponins found in shikakai are natural surfactants, which shows detergent like property which helps them to bind with oil and dirt allowing them to rinsed away with water. Shikakai contains a high concentration of saponins, making it an effective natural cleanser for the hair and scalp. In addition to saponins, shikakai also contains other beneficial compounds such as vitamins, antioxidants, and amino acids, which contribute to its overall hair care benefits.

Other than shikakai other ingredients are Amla used for anti-oxidant and anti-bacterial property, Fenugreek for hair growth and to treat dandruff, Reetha is used for foaming and cleansing property. For shikakai shampoo tablet evaluation test was performed like dissolution time, washout time, form index, and Hardness of tablet.

- Material collection
  - shikakai powder brought from shri. Bhrama ayurved pharmacy shop no. 981 budhvar Peth, below Janta bank Talegaon dabhade.
  - Amla powder brought from shri. Bhrama ayurved pharmacy shop no. 981 budhvar Peth, below Janta bank Talegaon dabhade.
  - Fenugreek seeds brought from local market and made powder in college.
  - Ritha, alovera, lemon juice, and rose water from college itself.
- Application
  - Shikakai powder- Acts as natural cleansers and contains essential vitamins and antioxidants and amino acids for hair.
  - Amla powder- used as anti-oxidant and anti-bacterial.
  - Fenugreek powder- used for hair growth and to treat dandruff.
  - Ritha powder- used as foaming agent.
  - Alovera gel- for moisturizing of hair.
  - Lemon juice- Lemon juice contains vitamin C and antioxidants, which can help promote a healthy scalp.
  - Rose water- Rose water can add a subtle shine to the hair, leaving it looking healthy and vibrant.

## VI. Method and Preparation of Shikakai Shampoo Tablets-

### A. Shikakai –



Fig 2- Shikakai plant

#### **Taxonomical classification**

Kingdom: Plantae - Plants  
 Phylum: Magnoliophyta - Angiosperms  
 Class: Equisetopsida - Land plants  
 Order: Fabales - Legumes  
 Family: Fabaceae - Pea family  
 Genus: Acacia  
 Species: Acacia concinna

**Botanical name:** Acacia Concinna

**Synonyms:** Satala, Virala, Sari, Tatphala, Charماشahva, Dipta, Bahu phena.

**Biological source:** Dried Pods seeds, leaves and bark of Acacia Concinna belonging to family Fabaceae i.e. Pea family.

**Geographical distribution:** It is a climbing shrub native to the Indian subcontinent, particularly found in regions of India, Nepal, and Pakistan.

**Chemical constituents:** Tannins, Saponins, Flavonoids, Vitamins and Minerals, and other phytochemicals, such as alkaloids, phenols, and terpenoids are found in shikakai.

**Uses:**

- Shikakai is widely used in traditional Indian hair care practices.
- It is also used in skincare products due to its mild cleansing and soothing properties.
- It is useful for treating conditions such as dandruff, itching, and scalp infections.
- It has been traditionally used as a natural hair dye.

**B. Amla-****Fig 3- Amla****Taxonomical classification**

Kingdom: Plantae – Plants

Phylum: Magnoliophyta - Angiosperms

Class: Equisetopsida - Land plants

Order: Malpighiales

Family: Phyllanthaceae

Genus: Phyllanthus

Species: Phyllanthus emblica

**Botanical name:** Phyllanthus emblica.

**Synonyms:** Indian Gooseberry, Dhatri, Amalaki.

**Biological source:** The biological source of amla is the Phyllanthus emblica tree, commonly known as the Indian gooseberry tree, which belongs to the Phyllanthaceae family.

**Geographical source:** It is primarily found in the Indian subcontinent, including regions of India, Nepal, Pakistan, and Sri Lanka.

**Chemical constituents:** Amla is rich in vitamin C, tannins, flavonoids, alkaloids, and phenolic compounds. It also contains minerals such as calcium, phosphorus, iron, and carotene, along with essential fatty acids and amino acids.

**Uses:**

- Amla is widely used in hair care products such as oils, shampoos, and hair masks due to its nourishing and conditioning properties
- It helps protect the skin from oxidative stress, promotes collagen production, brightens the complexion.
- It aids in digestion, relieves constipation, and helps maintain healthy gut flora
- Amla is rich in vitamin C, which is known to boost the immune system and protect against infections.



## C. Fenugreek



Fig 4 - Fenugreek seed

### Taxonomical classification

Kingdom: Plantae (plants)  
Phylum: Angiosperms (flowering plants)  
Class: Eudicots (plants with two seed leaves)  
Order: Fabales  
Family: Fabaceae (the pea family)  
Genus: *Trigonella*  
Species: *Trigonella foenum-graecum*

**Botanical name:** *Trigonella foenum-graecum*

**Synonyms:** alholva, bird's foot, Bockshornklee, Bockshornsame, Chandrika, Egypt fenugreek, Feno Greco, fenugrec.

**Biological source:** They are seeds and green leaves of *Trigonella foenum-graecum* belonging to family Fabaceae/ Leguminosae

**Geographical source:** Fenugreek is native to the eastern Mediterranean region, including countries like Egypt, Greece, and Syria. However, it is now cultivated in various parts of the world with suitable climates, including India, Pakistan, China, and parts of Europe and North America. India is one of the largest producers and consumers of fenugreek

**Chemical constituents:** Alkaloids, such as trigonelline, Saponins, Flavonoids like vitexin and orientin, Steroids like sitosterol and stigmasterol, Proteins, Essential oils like cineole and limonene, Polysaccharides including galactomannans, Minerals, vitamin A, vitamin C, and some B-complex vitamins, and Fiber.

### Uses:

It is believed to have various health benefits, including

- aiding digestion,
- promoting milk production in nursing mothers,
- managing blood sugar levels, and supporting heart health.
- to create hair masks or treatments believed to strengthen hair, promote growth, and add shine.

## D. Ritha



Fig 5- Ritha

### Taxonomical classification

Kingdom: Plantae (plants)

Clade: Tracheophytes (vascular plants)

Clade: Angiosperms (flowering plants)

Clade: Eudicots

Order: Sapindales

Family: Sapindaceae

Genus: Sapindus

Species: Sapindus spp.

**Botanical name:** Sapindus mukorossi

**Synonym:** Soapnut, Soapberry, Arishta, Dodan, Ritha, Phenil, Reetha .

**Biological source:** It consist of dried fruits of sapindus mukorossi or sapindus trifoliatus belonging to family sapindaceae.

**Geographical source:** It is native to South Asia, particularly found in countries such as India, Nepal, and Sri Lanka. In India, reetha trees are commonly found in the foothills of the Himalayas, especially in the northern states such as Himachal Pradesh, Uttarakhand, and parts of Uttar Pradesh.

**Chemical constituents:** Fruit contains saponin (10-11.5%), sugure(10%) and mucilage. Sapa saponin is mixture of 6 sapindosides(A,B,C,D, & mukorozi saponin(E1,Y1) like Dioscin, protodiscin, diosgenin, gitogenin, chlorogenin & rusogenin. Seed contain fatty acid B-sitosterol, starch, sugars (10%), mucilage, protein.

Pericarp contain 2 new triterpenoid saponin emerginatoside-B & C

### Uses:

- Reetha extract is used as a key ingredient in facial cleansers and body washes due to its gentle yet effective cleansing properties
- Reetha is often included in hair conditioners and hair treatments for its conditioning properties.
- Ground reetha powder is sometimes used as a natural exfoliant in cosmetic products such as facial scrubs and body polishes

**VII. Formulation table for preparation of shikakai shampoo.**

Sr. no.	Ingredients	Quantity
1.	Shikakai powder	8.0 gm
2.	Amla powder	3.0 gm
3.	Fenugreek powder	3.0gm
4.	Ritha powder	3.0 gm
5.	Alovera gel	5 ml
6.	Methyl paraben	0.01 gm
7.	Lemon juice	2 ml
8.	Rose water	q.s
9.	Magnesium stearate	0.01 gm

**Table no. – 3 Formulation table.**



**Fig 6- Ingredients for formulation**

**Equipment’s used:**

**1. Tablet punching machine:**



**Fig 7- Tablet punching machine**

**Brand-** Riddhi  
**Model:** RDMP  
**Capacity:** 200 tablets per min  
**TECHNICAL SPECIFICATIONS**

MODELS	RDB4-Mini Press
No. of Station	10 Tooling B/ 8 stn. D tooling
Tablet Dia.	Max.16mm
Depth of fill	Max.17mm
Output/hr. min/max	6000 min / 18000
Max Turret RPM	min/max10-30
Max. Comp. Pressure	6 Tons
Upper Punch penetration	2.5/6 mm
Dia. of Die mm	30.16
Length of Punch mm	133.65
Ele. Motor	1.5 Hp (1.1 kw) / 1440 RPM

**Table no. 4 – Machine specification.**



## 2. Weighing balance:



For weighing accurate ingredients weighing balance was used. We used weighing balance of brand- wensar, it is high precision balance.

Capacity-200 gm  
Accuracy-1 mg  
Calibration – external.  
Application- laboratory measurements.

Fig 8 - Weighing balance

## 3. Hot air oven:



It was used to dry the granules at temperature of 80 ° C for tablet formation.

Specifications of hot air oven we used are –

Brand – BTL

Application- Research department, laboratories.

Material- stainless steel.

Temperature range- 50-250°C

Double walled inner made of thick stainless steel / mild steel, outer made of heavy duty mild steel / G.I. duly powder coated. Temp range 50°C to 250°C Temp accuracy  $\pm 2^\circ\text{C}$  controlled by thermostatic.

Fig 9- Hot air oven

## Procedure For Formulation of Shikakai Shampoo Tablets

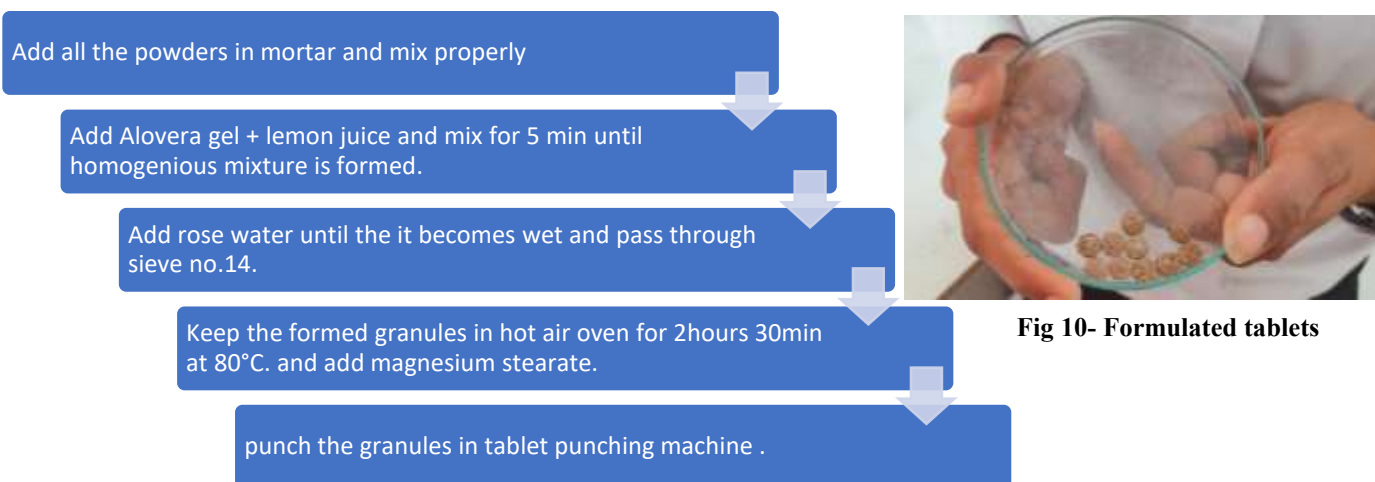


Fig 10- Formulated tablets

### VIII. Evaluation Parameters:

**a. Tablet hardness test-** As we require a tablet with less hardness to breakdown easily, it should not excide above 3kgf using Pfizer hardness test apparatus.

Using Pfizer hardness tester- 1.5 - 2kgf  
i.e. easily breakable.

### b. Foam forming test-



Fig 11-Foam test

Foaming index is calculated by using the following formula  
Foaming index =  $1000/a$  in case of V1  
Foaming index =  $1000 \times 10/a$  in case of V2

### c. Washability –

Within 3-4 mins the shampoo is completely washed.

### IX. Conclusion

The tablets formed are not so hard in nature and have great washing and cleansing ability. Reduces dandruff and removes dirt and debris from scalp. Improving scalp health which helps to grow hairs long and strong. Being natural and in tablet form they are not harmful to nature and also reduces plastic from our bathrooms. These tablets will have huge benefit in market mostly to hotels and hospitals.

**X. Result-**



**Fig no. 13 - Before use**



**Fig no. 12 - After use**

The shampoo tablets were found to be useful, it reduced oil, improved hair strength and provided nourishment leading to hair growth and shiny hairs when used twice a week by diluting it in water. It also reduced dandruff from scalp.

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**XI. REFERENCES: -**

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