



Formulation And Evaluation Of Polyherbal Anti-Dandruff Shampoo

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ABSTRACT

The primary purpose of this research is to develop and assess polyherbal antidandruff shampoo based on natural sources. The herbs were extracted using simple decoction method. The most effective herbs such as – shikakai, reetha, neem, aloe vera, belpatra, pomegranate, rose oil, glycerine, methyl paraben. Polyherbal shampoo is a hair care product made consisting of a variety of herbal extracts and natural ingredients. Polyherbal shampoos don't contain the scientific ingredients found in ordinary shampoos. Unlike normal shampoos which use a single synthetic component to cure our hair problems; polyherbal shampoos use several plant-based, natural components to ensure a holistic approach to hair health. Each herb offers its own unique benefits e.g. nourishment to the scalp, enhancement of shine, strengthening of hair. Polyherbal shampoo exists due to recent desire of holistic and natural hair care solutions. This shampoo is for people looking for effective hair care solutions that emphasize both hair health and a person's well-being. The variety of herbs also provides vitamins, minerals, and antioxidants while promoting faster hair growth, reducing dandruff, and preventing damage.

INTRODUCTION

Hair is one of the important components of the body derived from ectoderm of the skin and protective appendages on the body and is considered an accessory structure of the integument along with sebaceous glands, sweat glands and nails^[1]. Hair care products are usually defined as a preparation that is meant to eliminate excess oil, dirt, and dandruff from the head and hair. Hair care products can also nourish the hair and give it a healthy appearance. The idea of cake soap during this century and development of shampoo products marked the beginning of real technology to clean the hair and scalp. Shampooing is as old as human civilization itself, and the entire concept for shampoo originates from the Indian subcontinent. Shampoo is derived from the Hindi word shampoo, which means to massage the head with hair oil (dating to about 1762). A shampoo is a cosmetic preparation to cleanse the hair and scalp. The principal purpose is to remove the surplus natural oil (sebum), debris of the scalp and cosmetic preparations. Shampoos can act as a lubricant, conditioner, medication, and a number of other variable purposes. Among the various agents in the preparation of shampoos, surfactant is the main ingredient, while other ingredients serve as additives to improve the performance of the product^[2].

HERBAL SHAMPOO

It is a type of cosmetic product that uses herbs or plants as its natural active ingredients. It is used for cleaning the hair, and the main reason for using shampoo is for the removal of dandruff, oils, dirt, environmental pollutants, etc., without any side effects, with the main objective of the shampoo preparation is to impart hair which is soft and silky^[3].

DANDRUFF

Dandruff is one of the most common dermatological skin disorders, and it is a chronic non-inflammatory condition of the scalp tissue. Dandruff is thought to be caused by a fungus called *Malassezia restricta* and *M. globosa*. *Malassezia* is a yeast-like fungus that causes infection to the scalp and skin. The main source of dandruff is not properly known, however there may be several factors being poor hygiene leading to the fungal infection, oily scalp, and it seems more likely if the hair is long as long as a week without washing^[4].

CLASSIFICATION OF DANDRUFF

Depending on the symptoms, dandruff can be classified into two main types:

(A) Dry Dandruff

(A) Dry dandruff is also known as pityriasis simplex. It is represented by a significant formation of small scales that pile up on the area of the scalp. It does not present with skin inflammation. The scales first present in the center of the scalp, then move to the front, parietal, and occipital areas.

(B) Oily Dandruff

(B) Oily dandruff clinically known as pityriasis steatosis. It could be due to sebaceous glands of the scalp producing excessive sebum. It may also appear during puberty. There may be inflammation on the scalp, applying dirty yellowish color oily scales. Practically that may lead to hair loss. This type of dandruff mainly affects the scalp, behind/near the ear, over the breast bone, and armpits^[5].

ANTI-DANDRUFF SHAMPOO

An anti-dandruff shampoo is a specific hair-wash product made to treat and prevent dandruff, characterized by the flaking, itching and irritation of the scalp.

Dandruff is a skin condition that is caused due to fungus *Malassezia fungi* that affect the scalp.

IDEAL PROPERTIES OF POLYHERBAL ANTIDANDRUFF SHAMPOO

Today's shampoos formulations go way beyond just cleaning the hair. Many additional benefits, such as conditioning, smoothing of hair surface, improved compatibility, and leather creaminess, are considered essential.

1. It should remove different types of soil or dust, excess sebum and/or other fatty substances from the hair, thoroughly and completely.
2. It should produce a reasonable amount of foam to satisfy the user's determined psychological need.
3. It should impart a pleasing fragrance to the hair.
4. It should not cause irritation to the skin and eye.
5. It should leave hair feeling soft, lustrous, and non-dry after washing.

BENEFIT OF POLYHERBAL ANTIDANDRUFF SHAMPOO

- cleansing action.
- promoting good hair health.
- treatment of scalp condition.
- treatment of dry scalp.
- repairs damaged hair.
- treatment for hair loss.
- provides itch and irritation relief^[6].

PLANT PROFILE

1. BELPATRA



Fig no 01

KINGDOM	PLANTAE
DIVISION	MAGNOLIPHYTA
FAMILY	MAGNOLIOPSIDA
ORDER	SAPINDALES
GENUS	RUTACEAE
SPECIES	AURANTIOIDEAE
BOTNICAL NAME	AEGLE
SYNONYME	A. MARMELOS
REGION	BAEL PATRA, BAEI

Table no 01

BOTANICAL DESRIPTION:

- **Plant:** Sacred Medicinal Tree
- **Height:** 12 to 18 meters (40 to 60 feet)
- **Stem:** bluish gray and corky
- **Leaves:** trifoliate (three leaflets per leaf) aromatic and deciduous
- **Flowers:** three bears bell-shaped flowers
- **Fruits:** thick sweet pulp orange
- **Seeds:** layers of flakes or peels
- **Uses:** 1) **dandruff applied on scalp** - as it is a natural anti-fungal it can be effective in reducing dandruff by removing debris and oils from the scalp.

2) **Shine and texture to hair** – Bael can help to smooth hair cuticles and aide in shine and improving hair texture overall^[7].

2. NEEM



Fig no 02

KINGDOM	PLANTAE
DIVISION	MAGNOLIPHYTA
FAMILY	MELIACEAE
ORDER	SAPINDALES
GENUS	AZADIRACHTA
SPECIES	INDICA
BOTNICAL NAME	AZADIRACHTA INDICA A. JUSS.
SYNONYME	MELIA AZADIRACHTA

Table no 02

BOTNICAL DISCRIPTION:

- **Plant type:** deciduous tree; origin India subcontinent
- **Height-**15-30m
- **Leaves-**alternate pinnate with 18-19 leaflets
- **Flowers-**white, fragrant flowers; axillary panicles
- **Fruits-**small, oval to round, green & edible (fruit)
- **Seeds-**one per fruit, in hard white shell
- **Uses:** 1) promotes the hair growth
2) uses for lice treatment

3. SHIKAKAI



Fig no 03

KINGDOM	PLANTAE
DIVISION	MAGNOLIOPHYTA (ANGIOSPERMS)
FAMILY	FABACEAE
ORDER	FABALES
GENUS	ACACIA
SPECIES	ACACIA CONCINNA
BOTNICAL NAME	ACACIA CONCINNA
SYNONYME	SAPTALA, SOAP POD

Table no 03

BOTANICAL DESCRIPTION:

- **Plant form:** climbing shrub or small tree
- **Height:** 3-10 meters
- **Leaves:** Bipinnate, spiny on the rachis
- **Flowers:** white or yellowish, in clusters, occur
- **Fruits:** thick, fleshy pods that are constricted
- **Seeds:** 6-10 in each pod
- **Uses:** 1) cleansing and nourishing of hair
2) assists in hair growth and strength^[8].

4. REETHA



Fig no 04

KINGDOM	PLANTAE
DIVISION	MANGNOLIOPHYTA
CLASS	MAGNOLIOPSIDA
SUBCLASS	ROSIDAE
FAMILY	SAPINDACEAE
ORDER	SAPINDALES
GENUS	SAINDUS
SPECIES	SAPINDUS MUKOROSI
BOTNICAL NAME	SAPINDUS MUKOROSI
SYNONYME	SOAPNUT, SOAPBERRY, RITHA, ARITHA

Table no 04

BOTNICAL DISCRIPTION:

- **Plant structure:** Sapindus mukorossi is a large permanent aquarium plant
- **Height:** 12 to 20 meters
- **Leaves:** 18 to 25 cm long, lanceolate
- **Flowers:** small creamy white flowers grown in large,
- **Fruits:** drupe, 1-2 cm diameter which is yellow when unripe
- **Seeds:** each drupe typically contains one, two or three seeds
- **Branches:** branch pubescent
- **Saponins:** saponins are found in the fruit and are natural surfactants
- **habitat:** it grows in the sub himalayan region of Nepal and India, and is now cultivated in other topical countries
- **other names:** soapberry, washnut and aritha in Ayurvedic, Arishtak
- **Uses:** 1) gentle cleansers: cleans gently and is a low suds product,
2) natural and mild and is good for sensitive scalp and hair.

5) ALOEVERA



Fig no 05

KINGDOM	PLANTAE
DIVISION	MAGNOLIOPHYTA
CLAAAS	LILIOPSIDA
ORDER	LILIALES
FAMILY	LILIACEAE
SUBFAMILY	ASPHODELOIDEAE
GENUS	ALOE
SPECIES	A. VERA

Table no 05

BOTNICAL DESCRIPTION:

- **Plant type:** perennial, succulent herb.
- **Height:** 60-70 cm
- **Leaves:** fleshy, lanceolate, green and gray green.
- **Flowers:** yellow, tubular
- **Family:** Asphodelaceae
- **Habitat:** warm, dry, drought tolerant areas.
- **Common names:** true aloe, Indian aloe, Barbados aloe.
- **Uses: as a moisturizer for the hair:** moisturizers hair, gives hair hydration making soft and shiny hair/ decreased dandruff

6) POMEGRANATE



Fig no 06

KINGDOM	PLANTAE
DIVISION	MAGNOLIOPHYTE
CLASS	MAGNOLIOPSIDA
ORDER	MYRTALES
FAMILY	PUNICACEAE
GENUS	PUNICA
SPECIES	GRANATUM

Table no 06

BIOLOGICAL DESCRIPTION:

- **Plant:** it is an evergreen shrub or a small tree
- **Height:** 5-8 m
- **Leaves:** opposite leaves, 3-7 cm long, 2 cm broad, greenish and leathery
- **Flower:** bright red flower with 3-7 petals
- **Fruit:** (technically) a berry, tough leathery skin
- **Seeds:** many seeds, juicy, sweet
- **Other features:** woody stem
- **Varieties:** dwarf varieties of pomegranate
- **Origin:** native
- **Uses:** 1) hair growth
2) hair strength^[9].

EXPERIMENTAL WORK

MATERIALS AND METHOD

A) COLLECTION OF PLANT MATERIALS

Fresh leaves and fruits of belpatra, neem, shikakaki, reetha, aloe vera, pomegranate were collected from the local vicinity of gondia district and rose oil was collected from local market.

B) PREPARATION OF PLANT MATERIALS

The composition was done using simple decoction procedure. Since all the herbs were collected, fresh herbs were accurately weighed using digital balance as indicated in table. The crude herbs were collected and these ingredients were size reduced using hand driven, each type of herbs were ground into powder. After the herbs were reduced to crude powder, fine powder would be passed through sieve no.120 and separate mixed with 100ml distilled water and boiled together until reduction to one quarter volume. After boiling, the extract would be cooled at normal room temperature and filtered using muslin cloth to get filtered final extract.



FILTERED HERBAL EXTRACT (fig no 07)

PREPARATION OF POLYHERBAL ANTIDANDRUFF SHAMPOO

FORMULATION:- Polyherbal shampoo was formulated using a simple mixing process of all herbs ingredients extracts as enlisted in table. The final polyherbal formulation were kept in suitable plastic container for further evaluation parameter. The formulation of both f1 and f2 is shown in below tables:

Formulation of polyherbal antidandruff shampoo f-1

SR NO.	INGREDIENTS	QUANTITY
1.	BELPATRA	5ML
2.	NEEM	2ML
3.	SHIKAKAI	3ML
4.	REETHA	3ML
5.	ALOEVERA	2ML
6.	POMEGRANATE	5ML
7.	ROSE OIL	1ML
8.	GLYCERINE	2ML
9.	METHYL PARABEN	2Mg

Table no. 07

Formulation of polyherbal antidandruff shampoo f-2

Sr No.	INGREDIENTS	QUANTITY
1.	BELPATRA	7ML
2.	NEEM	2ML
3.	SHIKAKAI	3ML
4.	REETHA	3ML
5.	ALOEVERA	2ML
6.	POMEGRANATE	7ML
7.	ROSE OIL	1ML
8.	GLYCERINE	2ML
9.	METHYL PARABEN	2Mg

Table no 08

EVALUATION TEST FOR POLYHERBAL ANTIDANDRUFF SHAMPOO**1) Physical attributes / visual assessment:**

The formulation of polyherbal antidandruff shampoo was manufactured by evaluated for the colour, odour, clarity, & foam producing capacity and other aspects.

2) PH determination:

The PH of the 10% volume/volume shampoo solution in distilled water was measured at room temperature using pH meter.

3) Determination of % of solid content:-

5gm of shampoo were poured in a clean, dry, & the previously weighed evaporating dish. The evaporating dish containing shampoo was re-weighed to ensure the accurate amount of shampoo by weight. The liquid portion of the shampoo was evaporated by placing the plate on the hot plate. The weight of the remaining portion was determined for the percent of shampoo left after complete drying then calculated.

4) Dirt dispersion Test:

In a dirt dispersion test using a large test tube, two drops of shampoo were added to 10ml of distilled water with the addition of one drop of ink then the test tube was shaken 10 times. The amount of ink dispersed in the foam was assessed and rated as none, light, moderate, heavy.

5) Surface tension measurement:

The surface tension of 10% w/v shampoo in distilled water was determined by using stalagmonometer and at room temperature.

6) Foaming ability and foam stability:

Foaming ability was assessed using the cylinder shake test. In brief, 50ml of a 1% w/v commercial or formulated shampoo solution was introduced into a 250ml graduated cylinder, capped with one hand, and shaken 10 times. After 1 minute of shaking, the total foam volume was measured. The foam stability was determined by measuring the foam volume after the 1-minute and 4-minute cylinder shake test^[10].

RESULT AND DISCUSSION

- physical appearance/ visual inspection

SR NO.	Evaluation parameter	Formulation (f1)	Formulation (f2)
1.	Color	Greenish brown	Greenish brown
2.	Odour	Pleasant	Pleasant
3.	Texture	Smooth	Smooth
4.	Appearance	Translucent	Translucent
5.	Grittiness	Non-gritty	Non-gritty
6.	Stability	Stable	stable

Table no 09

- Ph

Parameter	Formulation 1	Formulation 2
pH	5.25	5.32

Table no 10

- % solid content



Fig no 08

- Dirt dispersion

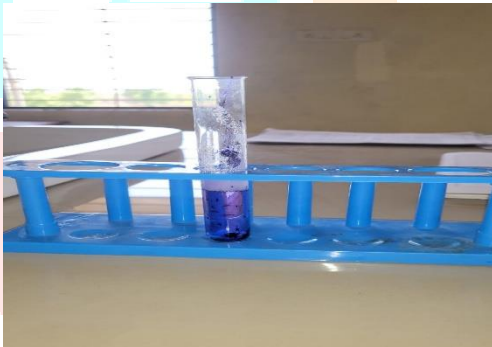


Fig no 09

- Foaming ability



Fig no 10

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