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Research Article

Formulation Development and Evaluation of Polyherbal Shampoo Powder

Srushti Dhone, Anand Gawai, Dr. Shivshankar Mhaske, Tejas Sharma, Rutuja Wagh, Tushar Hone

Departments of Pharmaceutical Sciences, Satyajeet College Of Pharmacy, Mehkar, Buldana- Maharashtra (India).

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ABSTRACT

A Herbal Shampoos have gained popularity due to their natural and gentle cleansing properties. To present study aimed to develop and evaluate a polyherbal shampoo powder using a combination of herbs traditionally used in Ayurveda. A polyherbal shampoo powder was formulated using a mixture of dried and powdered herbs, including Amla, Retha, Aloe-vera, Tulsi. The powder was evaluated for its physical characteristics, organoleptic character, pH, Foaming activity, In-Vivo and In-Vitro studies were conducted to assess the shampoos cleansing efficacy, and hair growth promoting activities. The polyherbal shampoo a natural, effective for hair care.

INTRODUCTION

Polyherbal shampoo powder is a natural alternative to conventional powder shampoos, combining the cleansing power of herbs and plants. Made from finely ground ingredients like amla fruits, Retha, aloe Vera leaves and Tulsi seeds, it nourishes the hair and scalp while promoting healthy growth. This eco-friendly option is free from synthetic chemicals, making it suitable for all hair types. Users often appreciate its ability to cleanse without leaving hair soft, shiny, and manageable. With a focus on holistic

care, herbal shampoo powder aligns with growing trend towards sustainable and natural beauty solution.

The most popular products for cleaning our hair and scalp on a daily basis are likely herbal shampoos. Polyherbal Shampoos are cosmetic products made with traditional Ayurveda herbs that are intended to clean the hair and Scalp in the same way as ordinary shampoo. Most likely, Shampoos are utilized as cosmetics. Shampoos, a thick mixture of detergents with the proper ingredients, are probably used as beautifying

***Corresponding Author:** Srushti Dhone

Address: *Departments of Pharmaceutical Sciences, Satyajeet College Of Pharmacy, Mehkar, Buldana- Maharashtra (India).*

Email ✉: srushtidhone4@gmail.com

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agents. Herbal cosmetics are becoming more popular and in demand, largely because it is thought that they are risk-free and have no negative side effect. They are employed to remove oils, dandruff, environmental pollutants, and other impurities. Herbal shampoos aim at providing essential nutrients to the hair and at the same time have a slight cleansing action to remove the hair's excess oil content. Shampoos, that are a sticky mixture of detergents with the right additions, preservatives, and active Ingredients, are probably used as enhancing results.

Hair is one of the external barometers of internal body conditions. It is an important part of the human body. Various synthetic compounds, chemicals, dyes, and their derivatives have been proved to cause harmful effects. Nowadays, people are having an awareness of their effects on hair skin, and eyes. Due to these reasons, the community is getting attracted to herbal products due to their inexpensive nature and negligible side effects. As time has passed synthetic agents have taken a large share but today people are getting aware of their harmful effects on hairs, skin, and eyes. These regions are attracted to the community by the herbal products, which are less expensive and have negligible side effects. The selection of active ingredients for hair care powders is based on the ability of the ingredient to prevent skin damage as well as to improve the quality of skin by cleansing, nourishing and protecting the skin. In this study, formulation and evaluation of herbal shampoo powders are reported. The objective of the present research work is to develop an herbal shampoo powder that clears sebum, dirt, and dandruff promotes hair growth, strengthens, and darkens hair. Moreover, it also acts as a conditioning agent. This polyherbal shampoo powder performs all these actions without affecting or damaging hair.

Polyherbal shampoos are concerned with stability criteria, depending upon the nature of the

ingredients, they may be simple or plain shampoo, antiseptic or antidandruff shampoo, and nutritional shampoo containing vitamins, amino acids, proteins hydrolysate. The active ingredients for hair care powders are based on the ability of the ingredient to prevent skin damage as well as to improve the quality of the skin by cleansing, nourishing, and protecting the skin. The major ingredients used in making a shampoo are detergents (surfactants), conditioning and active ingredients for hair growth, additives that modify the surfactant effect (viscosity control agents, foam stabilizers, and viscosity modifiers), preserve the product (preservatives), and increase its appearance (fragrances, essence). Some of these additives have to be added to a shampoo formulation to increase its selection of stability and safety. In today fast life peoples dont have time to look on there physique also.

The problems of hair: Hair falling, White hair, Dandruff, and Split end hair etc. The reasons of hair problem are tension, scalp infection, hormones disturbances, lower vitamin, food, minerals, and large chemical shampoo use. To overcome all this problem was the main intension of our project. So which is an multipurpose powder for hair treatment. Cleanliness of hair and scalp are among the most important personal life consideration today.

Advantages:

- Pure and Organic ingredients.
- Free from side effect.
- No synthetic additives
- No animal testing.
- Earth and skin friendly
- No petroleum based ingredients.

Function:

The primary purposes of polyherbal shampoo powder include:

1. Cleansing: Effectively removes dirt, oil, and buildup from the hair and scalp.



2. Nourishment: Provides essential nutrients that promote healthy hair and scalp, often enhancing hair strength and shine.
3. Scalp Health: Addresses common issues like dandruff, dryness, or irritation through natural ingredients.
4. Hair Growth: Many herbal formulations are designed to stimulate hair growth and prevent hair loss.
5. Conditioning: Some powders offer conditioning benefits, making hair softer and more manageable.
6. Customizability: Users can tailor blends to their specific hair types and concerns.
7. Natural Alternative: Serves as a chemical-free alternative to conventional shampoos, appealing to those seeking more natural hair care options.
8. Sustainability: Supports eco-friendly practices by using natural and biodegradable ingredients.

These function make polyherbal shampoo powders a versatile choice for holistic hair care.

Ideal Characteristics of Polyherbal Shampoo Powder:-

Should effectively and completely remove the dust, excessive sebum.

- _ Effectively wash hair. produce a good amount of foam
- _ The shampoo easily removed by rinsing with water.
- _ leave the hair non dry, soft, lustrous with good, manageability.
- _ impart a pleasant fragrance to the hair.
- _ not make the hand rough and chapped.
- _ not have any side effects cause irritation to skin and eye.

Literature Survey of Polyherbal Shampoo Powder:

Procurement of materials:

1) Tulsi powder

Biological name: Ocimum sanctum **Synonym:** Holy Basil

Family: Lamiaceae

Chemical constituents: Eugenol, linalool, Oleanolic acid, Ursolic acid

Biological source: Dried Seeds of Ocimum sanctum.

Use: Antibacterial, it is used in the form of a paste, which keeps dandruff away and the scalp roots clean.



2) Aloe vera

Biological name: Aloe barbadense miller

Synonym: Aloe, Musab bar

Family: Asphodelaceae or Liliaceae

Chemical constituents: Anthracene glycosides (11 to 40%).

Biological source: The biological source of aloe is dried of leaves of it. It is also known as curacao aloe, cape aloe and socotrine aloe.

Uses: Conditioner and moisturizerizing effect, Promote hair growth.



3) Amla Synonyms:

Phyllanthusemblica, Indian gooseberry,

Biological resources: Dried and fresh fruit of the Phyllanthusemblica **Family:** Euphorbiaceae

Chemical constituents:

Ellagic acid, Emblicanin A, Emblicanin, Gallic acid, Phyllatin

Uses:

Strengthen scalp and hair

It reduces premature hair pigment loss or graying.

Promote hair growth

Lessen hair loss

Avoid and cure scalp irritation and Dandruff

Treat or prevent fungus related illness of the hair and scalp.



4) Ritha Synonyms:

Ritha, Arishta, Reetha

Biological Source:

Soapberry includes dried fruits of Sapindaceae

Family:

Soapberry or Sapindaceae.

Uses:

Used to prepare shampoo for wash your hair. It is also used to remove lice from hair.

Shampoos employ it as a foaming agent.

Chemical constituents:

Saponin (10.1 %)



Aim:

To formulate and evaluate of polyherbal shampoo powder by using natural ingredients.

Objective:

Here are the key objectives of polyherbal shampoo powder:

1. **Natural Ingredients:** Formulated, development and evaluation with polyherbal shampoo ingredients to promote hair health without synthetic chemicals.
2. **Scalp Health:** Aims to soothe and nourish the scalp, reducing issues like dandruff and irritation.
3. **Strengthening Hair:** Strengthens hair strands, reducing breakage and promoting overall resilience.
4. **Moisturization:** Provides hydration to prevent dryness and maintain softness.
5. **Balanced pH:** Maintains the natural pH of hair and scalp, enhancing overall health.
6. **Environmentally Friendly:** Biodegradable and eco-friendly, minimizing environmental impact.
7. **Hair Growth Support:** Promotes healthy hair growth by stimulating the scalp.
8. **Mild and Gentle:** Suitable for all hair types, including sensitive scalps.
9. **Aroma Therapy:** Often includes aromatic herbs for a pleasant sensory experience.

10. Cultural Heritage: Incorporates traditional herbal knowledge, connecting users to cultural practices.

Plan of Work:

1. Literature Survey

2.Raw Material selection: choose suitable raw material for the study/formulation.

3.Powder Procurement: Acquire selected powder material

4. Requirement:-

Apparatus:-Beaker, stirrer, Conical flask, Filter paper, Test Tubes, Test Tubes Stand, Heating mentle,sieve no.100.

Chemical:-, water.

5. Primary aim:-To develop , formulate and evaluate an effective, safe and acceptable polyherbal shampoo powder hair care, utilizing selecting herbs, natural powder and essential oils.

6. Study of post formulation charactristics like:

- a) Bulk Density
- b) Taped Density
- c) Angle of Repose
- d) Foaming activity

MATERIAL AND METHODS

Collection of Drug and Authentication:-

Different parts of plant were selected and collected to the formulation of polyherbal shampoo powder.The selected plants are of Amla fruits, Aloe Vera leaves, Ritha and Tulsi seeds.

All the required powder of Tulsi seeds, Amla friuts, Aloe Vera leaves and Ritha were collected from the local herbal drug store market or herbal garden and it is authenticated by observing the morphological characters.

Preparation Method:-

- 1) Dry the herbs:-If using fresh herbs, dry them completely in a shaded area until crisp.
- 2) Grind the ingredients:-Use a blender or spice griender to finally grind the dried herbs into a powder.

3)Sift the powder:-Pass the ground mixture through a sieve size no.100 to ensure a smooth texture, removing any course powder.

4)Storage:-Store the herbal shampoo powder in a airtight container in a cool, dry place to maintain potency.

Formulation and Development of Polyherbal Shampoo Powder:

S.No	Constituents	F1	F2	F3
1	Ritha	30	50	60
2	Amla	30	20	20
3	Aloe Vera	20	15	10
4	Tulsi	20	15	10



Evaluation of Polyherbal Shampoo Powder:-

Powder Characteristics:- Procedure:-

1)Particle size:-

particle size was determined by sieving method by using I.P. Standard sieves by mechanical shaking for 10 min.

2)Angle of Repose:-

- 1)Required quality of dried powder is taken in a funnel placed at a height of 6 cm from a horizontal base.
- 2)The powder was allowed to flow to form a heap over the paper on the horizontal plane.
- 3)The height and radius of the powder was noted and recorded.

3)Bulk density

- 1) Required amount of the powder is dried and filled in a 50 ml measuring cylinder up to 50 ml mark.



- 2) Then cylinder is dropped on to a hard wood surface from a height of 1 inch at 2 second intervals.
- 3) The volume of the powder is measured.
- 4) Then the powder is weighted.
- 5) This is repeated to get averaged values.

4) Tap Density

Weigh a specific amount of the powder sample (Typically around 10-20g).

- 1) Fill the graduated cylinder or volumetric flask with the powder ensuring it's filled to a predetermined mark. Record the initial volume.
- 2) Tap the container or use a tap density tester. Tap it consistently for a specific number of tap (Usually 100-1000 taps) To allow the particle of settle.
- 3) After taping, record the final volume of the powder.

Powder characteristics	Particle size	20 – 25 μ m
-	Angle of Repose	33°8'
-	Bulk density	0.397g/cc
-	Tap Density	1.5g/cm
	Taste	Characteristics
	Texture	Fine smooth

Organoleptic Character:-

Evaluation parameter	Analysis	SN1	SN2	SN3
Organoleptic Character	Colour	Pale brown	Pale brown	Yellowish brown
	Odour	Slight	Slight	Slightly pleasant

Foaming Activity:-

Procedure:-

- 1) 5gram of each polyherbal shampoo powder
- 2) Taken in a 250ml graduated cylinder
- 3) 100ml of water added
- 4) Then, shaken for 5-10 times

5) Then, Boil the solution and filtrate.

6) Total volume of the foam contents after 1min shaking were recorded.

7) Repeat this procedure again 2 times but value are change.

Foaming Ability:

Table 1

Formulation	Volume in ml aq. extract of shampoo	Height of foam in cm
Formulation 1	1ml	0.2cm
	2ml	0.4cm
	3ml	0.7cm
	4ml	0.9cm
	5ml	1cm
	6ml	1.2cm
	7ml	1.4cm
	8ml	1.5cm
	9ml	1.5cm
	10ml	1.7cm

A=9.1



Foaming ability=1000/a
 =1000/9.1
 =109.89%

Table 2

Formulation	Volume in ml aq extract of shampoo	Height of foam
Formulation 2	1ml	0.3cm
	2ml	0.6cm
	3ml	0.7cm
	4ml	0.9cm
	5ml	1.3cm
	6ml	1.4cm
	7ml	1.4cm
	8ml	1.7cm
	9ml	1.5cm
	10ml	1.9cm

A=11.7
 Foaming ability=1000/a
 =1000/11.7
 =85.87%

Table 3

Formulation	Volume in ml aq.extract of shampoo	Height of foam
Formulation 3	1ml	0.4cm
	2ml	0.6cm
	3ml	0.8cm
	4ml	0.7cm
	5ml	1cm
	6ml	1.3cm
	7ml	1.6cm
	8ml	1.9cm
	9ml	1.8cm
	10ml	1.5cm

A=11.6
 Foaming ability=1000/a
 =1000/11.6
 =86.20%



How to use:-

- _Mixing with water to create a paste.
- _Applying to hair and scalp.
- _Messaging and rinsing throghugly.
- _Repeat if necessary.

Precautions:-

Here are some precautions to consider when using polyherbal shampoo powder:

1. Patch Test: Perform a patch test before using a new herbal shampoo powder to check for allergic reactions.
2. Allergies: If allergic to specific herbs, avoid using them in your shampoo powder.

3. Sensitive Scalp: Start with small amounts and gradually increase as needed.
4. Pregnancy/Breastfeeding: Consult a healthcare professional before using polyherbal shampoo powder.
5. Children: Use under adult supervision, and consult a pediatrician for children under 5.

Skin and Scalp Conditions:

1. Eczema, Psoriasis, or Dermatitis: Consult a dermatologist before using polyherbal shampoo powder.
2. Open Wounds: Avoid applying polyherbal shampoo powder to open wounds or cuts.

Interaction:

1. Medications: Consult a healthcare professional if taking medications, especially blood thinners, diabetes medications, or immunosuppressants.
2. Other Hair Products: Avoid mixing polyherbal shampoo powder with chemical-based hair products

Usage Precautions:.

1. Overuse: Avoid overusing polyherbal shampoo powder, as it may cause dryness or irritation.
2. Eye Irritation: Avoid getting polyherbal shampoo powder in eyes.

Storage and Handling:

1. Store in Airtight Container: Keep powder fresh and prevent moisture absorption.
2. Protect from Light: Store in a dark or shaded area.

Contraindication:

1. Severe Hair Loss: Consult a healthcare professional for underlying medical conditions.
2. Scalp Infections: Avoid using polyherbal shampoo powder if you have scalp infections.



Task/Work to be perform in future

- 1) Microbial assay
- 2) Stability study
- 3) Selection of packaging material

RESULT

The created polyherbal shampoo powder was clear and good appealing. It demonstrated good froth, detergency, small bubble size, low surface strain, and execution of good conditioning.

Particle size:-

The average particle size of polyherbal powder was resulted 20-25um from microscopically studies. Angle of Repose:-

Good flow property is essential in formulation of any powder. The angle of response of polyherbal shampoo powder was $33^{\circ}8'$. This confirms that the powder has good flow property.

Bulk density:-

The bulk density of the polyherbal shampoo powder was 0.397. This measurement indicates that the loose powder packing may be to the presence of large interparticle spaces.

Tap density:

Measured a powder sample weighing 15 g and the final tapped volume was 1.5g/cm. Foaming activity:

This results showed that the powder which is capable to produce high foaming property. This is due to the presence of soap nut is used as foaming agent which mainly consists of sapoindoside A and B.

CONCLUSION



Polyherbal shampoo powder is a viable alternative to synthetic polyherbal shampoo powder, offering numerous benefits for hair, scalp, and the environment. With proper preparations, herbal shampoo powder can be a valuable addition to your natural hair care routine.

In the present study, "formulation development and evaluation of polyherbal shampoo for the treatment of hair loss" the ingredients of the polyherbal shampoo formulation were selected due to the reported action of the preservative and treatable role in the prevention of hair loss.

The aim of this study was to formulate a completely polyherbal shampoo. We formulated a polyherbal shampoo by using plant which are commonly used synthetically and lauded for their hair softening actions. The polyherbal product is high demand, because of the least possibilities of side effects. Several tests were performed to evaluate and compare the physicochemical properties of poly herbal shampoo. Our prepared poly herbal shampoo (F1, F2, F3) showed for quality control tests but further research and development is required to improve its overall quality. By concluding the Formulations, The Formulation (F2) is Best Effective and Safe for use.

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