



“Formulation And Evaluation Of Polyherbal Shampoo Bar”

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ABSTRACT

A polyherbal shampoo bar was formulated using a combination of guava, curry leaves, rosemary, clove, and flaxseed. The shampoo bar was designed to promote healthy hair growth, reduce dandruff and itchiness, and nourish and hydrate the hair and scalp. The formulation was evaluated for its physical and chemical properties, including pH, viscosity, and microbial contamination. The efficacy of the shampoo bar was tested on human subjects, who used the product for a period of 4 weeks. The results showed that the polyherbal shampoo bar was effective in promoting healthy hair growth, reducing dandruff and itchiness, and improving the overall health and appearance of the hair and scalp. The shampoo bar was also found to be safe and well-tolerated by the subjects. The study suggests that the polyherbal shampoo bar is a novel and effective formulation for promoting healthy hair growth and scalp health. The product's natural ingredients and gentle formulation make it an attractive alternative to conventional shampoo products.

(Keywords- poly herbal shampoo bar, guava, curry leaves, flax seed.)

1. INTRODUCTION

Shampoo is a widely used hair care product that cleans hair and scalp. There are numerous brands available, including both local and imported options. Shampoo bars, a solid alternative to liquid shampoos, typically do not contain the same harsh detergents, which helps to retain the hair's natural oils^[1]

A revolutionary way to cleanse and nourish your hair, naturally. This handcrafted bar is packed with a potent blend of herbs, carefully selected for their unique hair-loving properties. The Poly herbal Shampoo Bar is perfect for all hair types, including sensitive scalps. It's also a sustainable choice, as it eliminates plastic

packaging and reduces your environmental footprint. Experience the power of nature with the Poly Herbal Shampoo Bar and discover hair that's truly happy and healthy^[2]

TYPES OF SHAMPOO

1. Liquid shampoo
2. Powder shampoo
3. Solid shampoo
4. Aerosol foam shampoo
5. Jelly shampoo
6. Specialized shampoo

Fig no 1: Shampoo Bar

- a) Conditioning shampoo
- b) Antidandruff shampoo
- c) Baby shampoo
- d) Two-layer shampoo

Shampoo bars differ from liquid shampoos primarily because they often lack harsh detergents that strip hair of natural oils. They offer several advantages, such as conserving water, containing concentrated ingredients, and reducing plastic waste. Herbal shampoo bars utilize plant-based ingredients for effective hair and scalp cleaning, aligning with traditional medicinal practices. Benefits of solid shampoo bars include being travel friendly, environmentally friendly, gentle, economical, and easy to use. Their popularity has increased due to their sustainable and eco-conscious attributes, providing an effective and gentle hair-cleaning solution.^[3]

Skin is the body's largest sensory organ, functioning as a barrier, providing sensory data, and regulating temperature. It consists of three layers: the hypodermis, dermis, and epidermis, each playing a unique role. Historically, medicinal plants have been used for treatment, and despite the rise of synthetic alternatives, Ayurvedic products are valued for their effectiveness and safety. Many herbs offer a range of health benefits due to their active compounds, which can be utilized in topical applications for various skin issues and cosmetics.^[4]

IDEAL CHARACTERISTIC OF SHAMPOO BAR

1. Cleansing
2. Moisturizing
3. Promoting hair growth
4. Reducing dandruff and itchiness
5. Soothing and calming
6. Antifungal and antibacterial properties
7. Improving scalp health
8. Suitable for dry or damaged hair

9. Suitable for oily hair

10. Suitable for sensitive scalp

11. Natural and gentle

12. Free from harsh chemicals

13. Sustainable

2. MATERIALS

MATERIALS

Materials and formulation

1. Ingredients:

Table no. 1: Ingredient & their sources.

Sr.no	INGREDIENTS	SOURCES
1.	Guava leaves	Collected from botanical garden
2.	Clove oil	MIBP Gondia.
3.	Curry leaves	Collected from botanical garden
4.	Rosemary oil	Essancia living
5.	Flax seeds	Tata sampan.
6.	Reetha	MIBP Gondia.
7.	Citronella oil	Essancia living
8.	Sodium hydroxide	SDFCI Fine chem limited
9.	Propylene glycol	BURGOYNE
10.	Glycerin	Garima's
11.	Ethanol	Honeywell
12.	Stearic acid	BURGOYNE
13.	Water	Distillation process

2. List of equipment

Table No 2: List of Equipments

Sr no.	Name of Equipments
1.	Digital balance
2..	Ph meter
3.	Mixer grinder
4.	digital autoclave
5.	Hot air oven
6.	B.O.D incubator
7.	Heating mantle
8.	Water bath
9.	Petri dish
10.	Beaker
11.	Test tube
12.	Measuring cylinder
13.	Porcelain dish
14.	Dropper
15.	Thermometer
16.	Conical flask

3. EXPERIMENTAL WORK

Preformulation study

Preparation of Guava leaves extract ^[5]

1. Harvesting: Collect mature, healthy guava leaves.
2. Cleaning: Wash the leaves thoroughly with water to remove any dirt or debris.
3. Drying: Dry the leaves in a hot air oven (60°C)
4. Grinding: Grind the dried leaves into a fine powder using a laboratory mil.
5. Soaking: Place the guava leaf powder in a container with water.
6. Maceration Time: Allow the mixture to stand in a dark place for a specified period (72 hours).
7. Heating: Heat mixture for 3 hours.
8. Filtration: Filter the extract through a filter paper to remove any solid particles.
9. Concentration: Concentrate the extract by evaporating the solvent.
10. Storage: Store the concentrated extract in a cool, dark place in airtight containers.



Fig. no.2 : Guava leaves extract

Preparation of curry leaves extract^[6]

1. Harvesting: Collect mature, healthy curry leaves.
2. Cleaning: Wash the leaves thoroughly with water to remove any dirt or debris.
3. Drying: Dry the leaves in a hot air oven (60°C)
4. Grinding: Grind the dried leaves into a fine powder using a laboratory mil.
5. Soaking curry: Place the curry leaf powder in a container with water.
6. Maceration Time: Allow the mixture to stand in a dark place for a specified period (72 hours).
7. Heating: Heat mixture for 3 hours.
8. Filtration: Filter the extract through a filter paper to remove any solid particles.
9. Concentration: Concentrate the extract by evaporating the solvent.
10. Storage: Store the concentrated extract in a cool, dark place in airtight containers.



Fig No.3: Extraction of curry leaves

Preparation of Reetha extract^[7]

1. Harvesting: Collect mature, healthy Reetha.
2. Cleaning: Wash the seed thoroughly with water to remove any dirt or debris.
3. Drying: Dry the leaves in a hot air oven (60°C)
4. Grinding: Grind the dried seed into a fine powder using a laboratory mil.
5. Soaking curry: Place the powder in a container with water.
6. Maceration Time: Allow the mixture to stand in a dark place for a specified period (72 hours).

7. Heating: Heat mixture for 3 hours.
8. Filtration: Filter the extract through a filter paper to remove any solid particles.
9. Concentration: Concentrate the extract by evaporating the solvent.
10. Storage: Store the concentrated extract in a cool, dark place in airtight container



Fig. no.4: Reetha extract

Preparation of flax seed extract ^[8]

1. Harvesting: Collect mature, healthy flax seed.
2. Cleaning: Wash the seed thoroughly with water to remove any dirt or debris.
3. Drying: Dry the leaves in a hot air oven (60°C)
4. Grinding: Grind the dried seed into a fine powder using a laboratory mil.
5. Soaking flax seed: Place the powder in a container with water.
6. Maceration Time: Allow the mixture to stand in a dark place for a specified period (72 hours).
7. Heating: Heat mixture for 3 hours.
8. Filtration: Filter the extract through a filter paper to remove any solid particles.
9. Concentration: Concentrate the extract by evaporating the solvent & store it.

4. PROCEDURE

1. Prepare the ingredients: Dry powder the guava and curry leaves. And grind the flax seeds and Retha into a fine powder.
2. Extracted with decoction method: Soak the powder in a solvent like ethanol and water (1:1). maintain the ratio of powder to solvent between 1:5 by weight & Soak them for 48 hours. Boil it for 3 hours separately. Filter extract and concentrate it.
3. Preparation of soap base: 1.6 sodium hydroxide and dissolved in distilled water and the solution was heated to 70°C in another beaker 18.75ml propylene glycol, 6.25 ml glycerin, 19 ml of ethanol are heated, the mixture to 60°C with stirring. 13 gm of steric acid was added.
4. Blend the soap and mixtures: Slowly add the extract in soap base and blend it. Monitor the temperature and ensure it stays within the range of (38°C to 49°C). Add clove oil, citronella oil and rosemary oil.
5. Pour into the mould: Pour the mixture into a silicone mould or a rectangular soap mould. Tap the mould gently to remove any air bubbles. The mixture set and harden for 24 to 48 hours.^[9] Table no.3: Formulation of Polyherbal Shampoo Bar formulation

Sr.no	Ingredients	Formulation		
		F1	F2	F3
1.	Guava leaves	2 ml	-	1 ml
2.	Clove oil	1 ml	1 ml	1 ml
3.	Curry leaves	-	2 ml	1 ml
4.	Rosemarry oil	1 ml	1 ml	1 ml
5.	Flax seeds	2 gm	2 gm	2 gm
6.	Reetha	2 gm	1 gm	2 gm
7.	Citronella oil	1 ml	1 ml	1 ml
8.	soap base	q. s	q. s	q. s
Total weight:		10gm	10gm	10gm

Fig no 5: Preparation of polyherbal shampoo bar

Fig. no.5.1: Sieving



Fig. no.5.2: Extracting via decoction



Fig. no.5.3: Filtering the extract

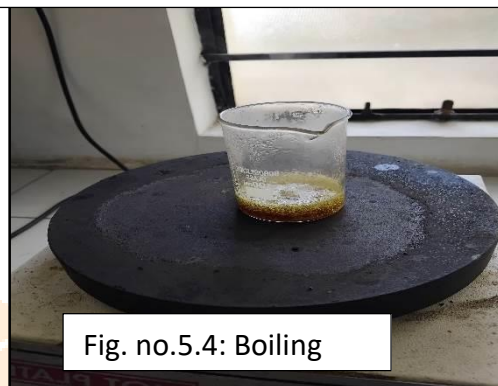


Fig. no.5.4: Boiling



Fig. no.5.5: Soap base formation



Fig. no.5.6: Blending the soap base



Fig. no.5.7: Pouring the mixture



Fig. no.5.8: Prepared formulation

5. EVALUATION OF POLYHERBAL SHAMPOO

1. Organoleptic Properties

a. Colour- When visualizing the herbal soap, a white background was used so that the Colour could be determined and so that the clarity of formulations F-1, F-2, F-3 could be seen.

b. Odour/Aroma-An evaluation of the odour of formulations F-1, F-2, F-3 we used two different methods. The first method included heating the sample on a hot plate. The second method involves inhaling a direct sample by five to six different people, including both males and females.

c. Shape-Evaluation of organoleptic properties, such as shape and clarity, was carried out by sensory and visual examination.

6. pH-In order to determine the pH or hydrogen ion concentration, we must prepare 1% of the sample. We used a pH 4 and pH 7 buffer solution to calibrate the pH meter. Take pH readings at room temperature, just as the reference solution. Record and note the pH level of the solution that was used to calibrate the meter and the electrode. the samples after they were each examined three times. [10]

7. Dirt dispersion-First, we prepare a 1% sample solution that was taken in a measuring cylinder and added two drops of ink in to the sample solution. The measuring cylinder was then shaken ten times while being covered by a hand. The ink is present concentrate in the foam is considered to be of low quality, investigate that the remaining dirt particles are then found in the water section. The amount of ink found in the foam was noticed. [11]

8. Wetting time-We take a piece of cotton fabric, cut it into a disc shape with a diameter of one inch, and then measure the sample's weight so that we may determine how long it took the sample to get wet. The next step is to prepare a sample that has been diluted (a 1% solution), as well as a piece of cotton cloth to lay on top of the sample. The disc made of fabric was allowed to float freely on top of the 1% sample solution. The amount of time that it took for the fabric disc to go from floating to sinking was carefully recorded and referred to as the wetting time. A higher wetting efficiency is associated with a shorter time to sink. [12]

9. Foam Forming Ability-The Cylinder Shake Method was utilized to determine the Foaming ability. First, in a 100 ml measuring cylinder, we put 50 ml of a 1% sample solution and shaken vigorously 10 times. After shaking for 1 minute, we measured the height of the foam that had formed and recorded the total volume of foam. [13]

10. Foam Stability- The Cylinder Shake Method was utilized to determine the Foaming ability. First, in a 100 ml measuring cylinder, we put 50 ml of a 1% sample solution. The cylindrical container was covered up with the use of the hand and shaken vigorously 10 times. The volume of the foam after ten minutes was calculated.^[13]
11. Moisture Content-About 10 grams of the material were heated in a hot air oven at 100 to 105 degrees Celsius for an hour. After that deducted the true weight of the tarred China dish from the total weight of the sample and dish. The weight of the material was recorded, and the method for calculating the percentage of the moisture content that can be found in it is shown below formula. ^[11]

Moisture content = (Difference in weight/initial weight) x100
12. Skin Irritation Test-For the determination of irritancy test, Use the soap sample on clean skin to observe for signs of irritation, such as redness, burning, or itching and 24 hours, the situation was monitored.^[14]
13. Anti-microbial test: The prepared soap was subjected to antimicrobial screening by the agar well diffusion standard cup plate method. Organisms used were E. coli, S. aureus, and P. aeruginosa. One gram of soap was mixed with 5ml of sterile water
14. Evaluation of Prepared Herbal Soap Formulation for Antimicrobial Activity

The [agar -well diffusion] standard cup plate technique was used to determine the antimicrobial activity by using seaboard dextrose agar [Hi- media]. The melted media were seeded with the suspension of microorganisms and allowed to solidify. The formulations were aseptically transferred to the Hi-media in Petri-dish with the help of sterile forceps. The medicated soap was kept for incubation in an incubator at 30°C for 5-7 days

15. Observation: The assessment of antimicrobial activity was based on the measurement of the diameter of the zone of inhibition in mm. ^[15]

14. Foam Retention: - 25ml of the 1% soap solution was taken into 100ml graduated measuring cylinder The cylinder is covered with hand and shaken for 10 times The volume of foam at 1min interval for 4min was recorded: ^[16]
15. Foam Height: - About 1 gm of soap solution was taken and was dissolved in distilled water about 50ml in a 100ml graduated measuring cylinder Measuring cylinder is shaken for about 3min and it was allowed stand for 10min Foam height was measured after 10min.Record the observation for three consecutive experiment and the mean was taken^[17]
16. Total fatty matter: - Take 5 gm of herbal soap sample, dissolve the soap sample in 75ml of distilled water. Add 10ml of concentrated sulfuric acid (H₂SO₄) to the solution Add 3.5gm of beeswax to the solution, heat the mixture to 60-70 0C and mix well until the beeswax is fully dissolved. allow

the mixture to cool, then separate the fatty acid layer from the aqueous layer. Dry the fatty acid layer and weigh it. ^[18]

Calculate TFM by using the formula

$$\text{TFM (\%)} = (A-X)/W \times 100$$

17. Surface Tension: This term refers to the amount of surfactants present in a shampoo to reduce surface tension. The lower the surface tension, the stronger the shampoo's cleaning power. Shampoos are considered of good quality if they reduce the surface tension of pure water from 72.28 dynes/cm to approximately 40 dynes/cm (Alton et al., 2007). All tested shampoos showed similar reductions in surface tension ranging from 31.68 to 38.72 dynes/cm. A decrease in surface tension is an indicator of good cleaning effect. The developed shampoo reduced surface tension to 38.72 dynes/cm, which is similar to Herbal Essences (38.36 dynes/cm). The lowest surface tension provides the best cleaning power. ^[19]
18. Alcohol Insoluble Matter :50 ml of warm ethanol was introduced to a conical flask containing a 5gm sample of soap in order to dissolve it. Using tarred filter paper and 20 ml of warm ethanol, the liquid was filtered and then dried at 105°C for an hour. The weighted filter paper had dried out. ^[20]
19. Uniformity of Mass - 6 bar are weighed. The average weight was determined. Then, bar was weighed individually and for each bar, the percentage of deviation of its weight from the average weight was determined. ^[21]
20. Determination of Percentage Solid Content – a clean dry evaporating dish weighed and 2 gm of shampoo bar was placed in it. The evaporating dish with shampoo bar placed on hot plate and allowed to evaporate the liquid component after drying the weight of shampoo bar's solid content was calculated. a decent shampoo bar has 20 -30 % solids. ^[22]
21. Stability of Shampoo Bar – over the course of one month, all of the shampoo bars were taken and stored at ambient temperature (30°C) as well as in the refrigerator physical characteristics were observed to change (0 means chemically and physically unstable, and 5 means chemically unstable). ^[23]
22. Conditioning Attributes – after washing hair with shampoo the conditioning impact on hair was examined conditioning characteristics encompass all desirable hair benefits such as hair mass better luster, softness and silkiness. conditioning effects were graded on scale of 1-5.
(1=very poor ,2= poor ,3=moderate, 4= good, 5=excellent). ^[24]

6. **RESULT & DISCUSSION****PRE-FORMULATION EVALUATION**

1. Characterisation & identification of plant extraction

Table no.4: Characterisation & identification of plant extraction

Sr no.	Parameters	Guava leaves	Flax seeds	Reetha	Curry leaves
1.	Colour	Green	Brown	Brown	Dark Green
2.	Odour	Aromatic	Aromatic	Aromatic	Aromatic

2. Solubility studies

Table no.5: Solubility studies

Sr no.	Parameters	Guava Leaves	Flax Seeds	Reetha	Curry Leaves
1.	Water	Partially Soluble	Partially Soluble	Partially Soluble	Partially Soluble
2.	Alcohol	Partially Soluble	Partially Soluble	Partially Soluble	Partially Soluble
3.	Ether	Partially Soluble	Partially Soluble	Partially Soluble	Partially Soluble

3. Preliminary phytochemical screening of extract

Table no.6: preliminary phytochemical screening of extract

Sr no.	Plant constituent	Test/Reagent	Guava leaves	Flax seeds	Reetha	Curry leaves
1.	Alkaloid	Mayer's test	+	+	+	+
2.	Tannin	Lead acetate test	+	+	-	+
3	Saponin	Foam test	+	+	+	+
4	Flavonoid	Shinoda test	+	+	+	+
5	Terpenoid	Salkowski's test	+	-	+	-
6	Glucoside	Aqueous NaOH test	-	-	+	+

RESULT OF EVALUATION OF POLY-HERBAL SHAMPOO**Evaluation of Poly-herbal shampoo**1. Physical Appearance:Table no7.: Physical Appearance

Sr. no.	Test	Formulation		
		F1	F2	F3
1.	Appearance	White	White	White
2.	Odour	Sweet Aromatic	Sweet Aromatic	Sweet Aromatic
3.	Consistency	Solid	Solid	Solid
4.	Homogeneity	Homogeneous	Homogeneous	Homogeneous

2. Solubility:Table no.8: Solubility

Sr. no.	Test	Formulation		
		F1	F2	F3
1.	Water	Fully soluble	Fully soluble	Fully soluble
2.	Alcohol	Soluble	Soluble	Soluble
3.	Ether	Partially soluble	Partially soluble	Partially soluble
4.	Glycerine	Partially soluble	Partially soluble	Partially soluble

3. Skin irritation:Table no.9: Skin Irritation

Sr. no.	Skin irritation Test (time)	Formulation		
		F1	F2	F3
1.	10 mins	No reaction	No reaction	No reaction
2.	1 hrs.	No reaction	No reaction	No reaction
3.	2 hrs.	No reaction	No reaction	No reaction

4. Dirt dispersion:Table no.10: Dirt Dispersion

Sr. no.	Dirt dispersion test	Formulation		
		F1	F2	F3
1.	Initial	Dark	Dark	Dark
2.	Final	Faint	Faint	More faint



Fig. no.6: Dirt dispersion test

5. Wetting time:

Table no.11: Wetting time

Sr. no.	Wetting time	Formulation		
		F1	F2	F3
1.	Time	25 sec	24 sec	30 sec



Fig. no.7: Wetting

6. pH test:

Table no.12: pH test

Sr.no.	Formulation		
	F1	F2	F3
1	7.27	7.31	7.28



Fig. no.8: pH of F1, F2 ,F3

7. Foaming ability:Table no.13: Foaming ability

Sr. no.	Foaming Ability Test	Formulation		
		F1	F2	F3
1.	Height	6 cm	6.5 cm	7 cm

8. Foam stability:Table no.14: Foam stability

Sr. no.	Foam stability time	Formulation		
		F1	F2	F3
1.	Time	1.5 min	2 min	2.5 min

9. Moisture content:Table no.15: Moisture content

Sr. no.	Moisture content test	Formulation		
		F1	F2	F3
1.	Initial weight	23.51gm	24.86 gm	23.75gm
2.	Final weight	23.09gm	24.04gm	23.23 gm
3.	Moisture content	0.122 gm	0.118 gm	0.123 gm
4.	Percentage of moisture content	12.2%	11.8%	12.3%

Calculation:

weight of porcelain dish +
dish with sample

$$F1 = 22.51 + 1 = 23.51$$

$$F2 = 22.86 + 1 = 24.86$$

$$F3 = 22.75 + 1 = 23.75$$

10. Antimicrobial test:Table no.16: Antimicrobial test

Sr. no.	Antimicrobial Test	Formulation			
		F1	F2	F3	Standard
1.	E. coli	4 mm	3.8 mm	4.2 mm	4.4 mm
2.	S. Aureus	3.9 mm	3.7 mm	4 mm	4.2 mm

Fig. no.9: Antimicrobial test11. Total fatty matter:Table no.17: Total fatty matter

Sr. no.	Total Fatty Matter	Formulation		
		F1	F2	F3
1.	Initial Weight	22.19gm	23.18gm	23.63gm
2.	Final Weight	27.19gm	28.18gm	28.63gm
3.	Total Fatty Matter	0.768gm	0.755gm	0.749gm
4.	Percentage of Total Fatty Matter	76.8 5%	75.5 %	74%

Fig. no.10: Total fatty matter

12. Alcohol insoluble matter:Table no.18: Alcohol insoluble matter

Sr. no.	Alcohol insoluble matter test	Formulation		
		F1	F2	F3
1.	Initial weight	23.15gm	23.63gm	22.96gm
2.	Final weight	28.15gm	28.63gm	27.96gm
3.	Alcohol insoluble matter	0.578gm	0.618gm	0.598gm
4.	Percentage of alcohol insoluble matter	57.8%	61.84%	59.8%

Fig. no 11: Alcohol insoluble matter13. Uniformity of mass:Table no.19: Uniformity of mass

Sr. no.	Uniformity of mass	Formulation		
		F1	F2	F3
1.	Initial weight	23.56gm	24.12gm	23.22gm
2.	Final weight	32.96gm	33.559gm	33.187gm
3.	Weight of sample	9.401gm	9.439gm	9.967gm
4.	Average	9.6023~10		

14. Determination of percentage solid content:Table no.20: Determination of percentage solid content

Sr. no.	Percentage solid content	Formulation		
		F1	F2	F3
1.	Initial weight	24.16gm	23.86gm	24.12gm
2.	Final weight	29.16gm	28.86gm	29.12gm
3.	Weight of Solid content	0.796gm	0.819gm	0.821gm
4.	Percentage solid content	79.6%	81.9%	82.1%

Fig. no 12 : Determination of percentage solid content15. Conditioning activity:Table no.21: Conditioning activity

Sr. no.	Conditioning activity test	Formulation		
		F1	F2	F3
1.	Initial	Freezy	Freezy	Freezy
2.	Final	Less smooth	Less smooth	More smooth

Fig no 13 : Hair strands after applying shampoo

14.Surface tension:Table no.22: Surface tension

Sr. no.	Surface tension	Formulation		
		F1	F2	F3
1.	Surface area of bubble	0.005m ²	0.006m ²	0.007m ²
2.	Change in surface area of bubble	0.01m ²	0.012m ²	0.014m ²
3.	Surface tension	0.006J	0.0072J	0.0084J

15.Stability testing:Table no.23: Stability testing of F1

Evaluation	F1		
	R.T.	Ref.	Oven
Temp	25.03±3.0	4.0±2.0	40.0±2.0
Colour	Buff brown		
Humidity	8.6%	8.64%	8.54%
pH	7.34	7.42	7.36

Table no.24: Stability testing of F2

Evaluation	F2		
	R.T.	Ref.	Oven
Temp	25.03±3.0	4.0±2.0	40.0±2.0
Colour	Brown		
Humidity	8.65%	8.56%	8.54%
pH	7.27	7.34	7.25

Table no.25: Stability testing of F3

Evaluation	F3		
	R.T.	Ref.	Oven
Temp	25.03±3.0	4.0±2.0	40.0±2.0
Colour	Dark brown		
Humidity	8.53%	8.34%	8.43%
pH	7.32	7.24	7.42

7. DISCUSSION

The polyherbal shampoo bar formulated with guava, flaxseed, curry leaves, rosemary, clove, and Reetha offers a comprehensive approach to hair and scalp care. Guava and curry leaves provide antioxidant and anti-inflammatory properties, promoting healthy hair growth and scalp health. Flaxseed moisturizes and nourishes the hair, while rosemary and clove stimulate hair growth and reduce dandruff and itchiness. Reetha, a natural cleansing agent, gently cleanses the hair and scalp without stripping them of their natural oils. The combination of these six herbs creates a potent synergy, addressing various hair and scalp concerns. The shampoo bar is effective in promoting healthy hair growth, reducing dandruff and itchiness, and improving scalp health. The natural ingredients and gentle formulation make it suitable for all hair types, including sensitive scalps. Additionally, the shampoo bar is free from harsh chemicals, making it an attractive alternative to conventional shampoo products. Overall, the polyherbal shampoo bar made from

guava, flaxseed, curry leaves, rosemary, clove, and Reetha offers a natural, effective, and gentle solution for comprehensive hair and scalp care.

8. CONCLUSION

Based on evaluation test studies and observation, it was found that the formulation of a polyherbal shampoo bar using guava, curry leaves, rosemary, and flaxseed, provides a natural and effective commercial shampoo. Each ingredient was selected based on its beneficial properties for hair health. the combination of these ingredients in a shampoo bar provides deep cleansing, scalp nourishment, and hair strengthening while avoiding the harsh chemicals found in synthetic shampoos. The shampoo bar format is also environmentally friendly, reducing plastic waste. The presence of bioactive compounds from these herbs makes it a safe and effective alternative to conventional shampoos. The study aimed to formulated and develop poly herbal shampoo in combination F1 F2 F3 where prepare by varying composition and evaluated for their physicochemical property. The study shows that formulation F3 was found to be effective due to combination of ingredient (guava and curry leaves).

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