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PHARMACOGNOSTIC STUDIES AND FORMULATION OF HERBAL SHAMPOO: BRYOPHYLLUM PINNATUM

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ABSTRACT

A shampoo can be thought of as a cosmetic product used to wash the hair and scalp. Its main purpose is to rid the hair of built-up sebum, scalp impurities, and grooming product residue. In the current situation, polyherbal shampoo outperforms synthetic shampoo and is safer. In order to create the herbal shampoo, Bryophyllum pinnatum, amla, and hibiscus were added. Shampoo with a high level of effectiveness was made possible by the combination of such herbal elements. It was simple to create various shampoo formulations at the laboratory scale and to assess them for a variety of characteristics to assure their efficacy.

KEYWORDS: Herbal, Shampoo, Bryophyllum Pinnatum, Antimicrobial.

INTRODUCTION

The Bryophyllum Pinnatum is commonly used traditionally as a medicine in various part of India. The traditional practitioner's in various parts of world use this plant in numerous conditions like hypertension, skin disorders, asthma, cold, insect stings, abscesses, urinary tract infections, etc.

Bryophyllum Pinnatum belongs to the family Crassulaceae. It is also known as Kalanchoe Pinnatum OR Bryophyllum Calycinum. The Bryophyllum Pinnatum has different common name like Miracal Plant, Air Plant, Panfuti (Hindi), Life Plant, love Plant, Good Luck OR Resurrection Plant, Zakhm – E – Hayat, Canterbury bells, Cathedral Bells, Parnabeeja etc.

The word Bryophyllum Pinnatum is derived from two greek word ‘Bryo’ and ‘phyllon’, Bryo means to sprout and Phyllon means the leaf.

Herbal Shampoo is defined as a preparations of a surfactant (surface active material) in suitable form liquid, solid or powder which when used under the conditions specified will remove surface grease, dirt and skin debris from the hair shaft and scalp without affecting adversely the hair, scalp or health of the user. B. Pinnatum is used in folk medicine to treat on various diseases; for this reason several in vitro studies were carried out in order to verify the pharmacological properties of those species which includes hepatoprotective, leishmanicide, immunomodulatory, antimicrobial, antioxidant. Anticancer & antiurolithiatic activities. Hence the current study is planned to prepare the herbal shampoo using leaves of Bryophyllum pinnatum as antimicrobial activities. Shown in Fig no.1

Pharmacognostic Studies

Synonyms:- Bryophyllum Calycinum Salisb, Kalanchoe Pinnatum (Lam.) Pers, Cotyledon Pinnatum Lam., Sedum madagascaricum Clus.[3]

Plant Description

- Plant Name :- Bryophyllum Pinnatum
- Synonyms:- Kalanchoe Pinnatum
- Family:- Carssulaceae
- Common Name:- Miracal Plant, Air Plant, Panfuti (Hindi), Life Plant, love Plant, Good Luck OR Resurrection Plant, Zakhm – E – Hayat, Canterbury Bells, Cathedral Bells, Parnabeeja, Curtain Plant, Floppers, Sprouting Leaf, Miracle Leaf etc.

Vernacular Names

- Sanskrit:- Parnabeeja, Asthibhaksha
- English:- Air Plant
- Hindi:- Zakhmhaiyat, Pathharchoor
- Kannada:- Gandukalinga, Kadu basale
- Malayalam:- Elamaruga
- Tamil:- Malaikalli, Ranakali
- Telugu:- Ranapala
- Marathi:- Gayamari

- Bengali:- Koppatha, Pathar kochi.

Family Features

The family Crassulaceae which means the plant of crassula tribe; the leaves are fleshy & succulent the family has 25 genera & 450 species.

The plants of this family are herbs/ under shrubs. Stem & branches are usually with fleshy & succulent. Leaves are alternate/ opposite, simple less commonly pinnately divided, ex stipulate. Flowers are usually cymose, hermaphrodite/ rarely unisexual & regular. Calyx is free, 4-5 fid/ 4-5 partite. Petals are as many as sepals & alternate to the monopetalous corolla. Carpels are as many as petals & are opposite to them with a hypogynous gland/ scale at the base. Fruits are follicles & membranous with few seeds.

Geographical Source:- It is perennial herb growing widely all over the world in tropical and subtropical are areas including Africa, America, India, China, Australia, Asia, Newziland, Philippines. The plant grows all over the India in hot and moist areas, especially in Bengal and Uttarakhand.

Ayurvedic properties

- Rasa: Kashaya, Amla
- Guna: Laghu
- Virya: Sheeta
- Vipaka: Madhura
- Doshaghnata: Vatakaphahara
- Karma: Ashmarighna, Vranaropaka, Mootrala, Shonita sthapana, Rakta stambaka, Grahi.
- Rogaghnata: Ashmari, Atisara, Raktasrava, Visuchika.

Chemical Constituents

B.Pinnatum is rich in alkaloids, triterpenes, glycosides, flavonoids, cardienolides, steroids, bufadienolides and lipids. The leaves contain a group of chemicals called bufadienolides which are very active. Bufadienolides like bryotoxin A, B, C which are very similar in structure and activity as two other cardiac glycosides, digoxin and digitoxin and possesses antibacterial, antitumorous, cancer preventative and insecticidal actions.

Pharmacological Activities

- Antimicrobial activity
- Anticancer property
- Anti hypertensive activity
- Anti-Diabetic activity
- Wound healing property
- Antilithogenic activity
- Hepato-protective activity
- Anti-inflammatory activity
- Cytotoxicity of testis
- Uterine Contractility
- Immunosuppressive Effect
- Protein Profiling
- Neuropharmacological activity
- Anti leishmanial activity
- Gastroprotective Anti-ulcer activity
- Effect on hematological parameters
- Anti-oxidant activity
- Nephroprotective effects:
- Neurosedative and muscle relaxant activity

MATERIALS AND METHODS

Plant material

Leaves of Bryophyllum pinnatum collected from the herbal garden of are St. Wilfred's Institute of Pharmacy, Panvel, Maharashtra.

Flowers of hibiscus were collected from a house gardenin panvel, Maharashtra.

Fruits of amla were collected from St. Wilfred’s Institute of Pharmacy, Panvel.

Small amount of Phenoxyethanol was added as a pereservative and pH, was adjusted with Sodium Hydroxide. Sodium lauryl sulphate used as foaming agent. Cocoa is a versatile agent ingredient / component which is used as colourant, fragrance and flavourant.

Cocoa butter deeply penetrates & Nourishmentes the hair while soothing and supporting scalp health. It won't weigh your hair; down and helps maintain long-lasting hydration. Using

a scalp treatment with Cocoa butter is especially nourshing for natural hair. It helps to maintain healthy oil production.

Preparation of Shampoo

The herbal shampoo was formulated by simple mixing process. Dried extract of B.P. were added phenoxy ethanol. Further glycerin and sodium lauryl sulfate is added- mixed. At last the perfume & the water. q.s. to make 100ml is added to the mixture. The resulting liquid was mixed using morter and pestle. The resultant formulation was poured in container and stored. The amount of ingredients took for the different herbal shampoo is given in table.no.1

RESULT

Three formulations were created for the current study project. Other physical characteristics such as dirt dispersion, combing ease, hair shine, and pH were discovered. All of the herbal shampoo formulas have good foaming properties. The formulation had a pH between 5.70 and 6. Also, the results of the dirt dispersion test show that no dirt would remain in the foam, indicating that organised compositions are appropriate for application. Also, the impacts of foam stability and foaming ability proved that the foam created has good foaming capacity and lasts for an acceptable amount of time. Also, it has been noted that after rinsing the hair, combing is simple and the hair is shiny. The amount of foam created and not the foaming ability anymore determines how well shampoo cleans. Customer acceptance is created by its prolonged presence. Following application of shampooable, a skin irritation examination indicated no swelling or redness.

Tables

Table no.1

Sr. No.	Chemical Components	Functions	F1	F2	F3
1	Bryophyllum Pinnatum	Antimicrobial agent	1g	2g	3g
2	Amla	Nourishment	1g	2g	3g
3	Hibiscus	Hair Growh	1g	2g	3g
4	Sodium Lauryl Sulphate	Anionic Surfactant	20g	20g	20g
5	Sodium Hydroxide	pH adjustment	0.5g	0.5g	0.5g
6	Glycerine	Conditioner	5ml	5ml	5ml
7	Phenoxyethanol	Preservative	0.25g	0.25g	0.25g
8	Cocoa	Flavourant	q.s	q.s	q.s
9	Eucalyptus oil	Perfume	q.s	q.s	q.s
10	Distilled Water	Dilutant	q.s	q.s	q.s
11	Total	-	100ml	100ml	100ml

Figures

Fig no.1.

DISCUSSION

Evaluation Tests

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.
3. Foam 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. The total foam volume was measured after 1min of shaking.
4. Skin irritation test:- The herbal formulation of shampoo applied on the skin of volunteer's & kept for 5 minutes. No irritation detected.
5. Ease of Rinsing:- The ease of rinsing action of herbal shampoo was performed by applying 5 ml of the herbal shampoo over the hair and record time required to remove frothing from hair by water. It was Easy to rinse.
6. Ease of combing**:-** After rinsing hair with herbal shampoo the ease up combing was determined on wet hairs. This was done by passing a comb thisthe wet hair & checking whether the comb glides smoothly while combing was determine. Easy to comb after shampooing.
7. Luster of Hair:- Luster of hair was determined after rinsing the hair with herbal shampoo & later drying them. No luster found.

Ideal Properties of Shampoo

- To make the hair smooth and shiny.
- Produce good amount of foam.
- Should not cause irritant to scalp, skin and eye.
- Should completely, effectively remove dirt.
- Impart pleasant fragrance to hair.

Functions of Shampoo

- It should effectively and completely remove dust or soil, excessive
- Sebum or other fatty substances and loose corneal cells from the hair.
- It should produce a good amount of foam to satisfy the psychological
- Requirements of user.
- It should be easily removed on rinsing with water.
- It should leave the hair non -dry, soft, lustrous with good
- Manageability and minimum fly away.
- It should impart a pleasant fragnance to the hair.
- It should not cause any side-effects / irritation to skin or eye.
- It should not make the hand rough and chapped.

Classification of Shampoo

- Based on Appearance.
- Powder shampoo
- Liquid shampoo or lotion shampoo
- Gel shampoo or Solid shampoo
- Cream shampoo
- Oil shampoo
- Miscellaneous anti dandruff shampoo or medicated shampoo
- Based on Use or Function.
- Conditioning shampoo
- Antidandruff shampoo
- Therapeutic shampoo
- Baby shampoo
- Balancing shampoo

- Clarifying shampoo
- Based on Origin.
- Herbal shampoo
- Egg shampoo

CONCLUSION

The results indicate that the herbal shampoos that have been specially designed are superior in a number of ways. The shampoos that are sold contain a lot of chemicals that might damage the scalp. More research is needed to improve the quality of herbal shampoos, which may be inferred from the current knowledge that they are formulated and perform better overall than commercial formulations.

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