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RESEARCH ARTICLE

Formulation and Evaluation of Herbal Shampoo: *Bryophyllum pinnatum*

Kavya V. Reddy¹, Ashish V. Yachawad², Krushna K. Zambare¹, Sopan Landge¹

¹SBSPM's B. Pharmacy College, Ambajogai – 431517. Dist. Beed., Maharashtra, India.

²SDMVM'S Diploma in Pharmacy Institute, Aurangabad, Maharashtra, India

*Corresponding Author E-mail: kavyareddy.ara@gmail.com

ABSTRACT:

Shampoo is a hair care product. Shampoos are used not only for cleansing of hair but also for control of hair fall, dandruff, frizz, or to prevent damage to excessive oily or dry scalp etc. The aimed of this study is to formulating the shampoo which contains the herbal extracts which can be the best alternative against the chemical based shampoos and also may show better safety. In this study we use herbal leaves of *Bryophyllum pinnatum*, family Crassulaceae possesses antioxidant, antimicrobial, antitumour, anti-inflammatory, antiviral and antiulcer properties. The objective of this study was to take the benefit of the nature of *Bryophyllum pinnatum* extract and prepare shampoo incorporating in the herbal constituent base and evaluate this natural herbal shampoo.

KEYWORDS: Herbal shampoo, Shampoo, *Bryophyllum pinnatum*, antimicrobial.

1. INTRODUCTION:

Hairs are very important butifying part of the humans. From the ancient time herbal drugs were used for butifying and cleaning the hairs. Now a day's various synthetic shampoos are used instead of hearbs in cleaning hairs but along with cleaning hairs these products are having various adverse effects on eyes and scalp. That's why most of the peoples today are paying attention on using herbal shampoos.¹ *B. pinnatum* is used in folk medicine to treat various diseases. For this reason, several *in vitro* studies were carried out in order to ver-ify the pharmacological properties of those species, which includes hepatoprotective, leishmanicide, immunomodulatory, antimicro-bial, antioxidant, anticancer, and antirolithiatic activities². Hence the current study is planned to prepare the herbal shampoo using leaves of *Bryophyllum pinnatum* as antmicrobial activities.

In this research work we try to formulated shampoo from leaves of *Bryophyllum pinnatum* after Literature Survey Table 1.

2. MATERIALS AND METHODS:

Plat material:

Leaves of *Bryophyllum pinnatum* are collected from the herbal garden of the SBSPM's B. Pharmacy College, Ambajogai, Maharashtra. Small amount of methyl paraben was added as a preservative and pH was adjusted with Sodium Hudroxide. Sodium lauryl sulphate used as foming agent. Safarinine used as colourant. Eucalyptus oil used as fragrance.

Soxlet Extraction:

The leaves of *Bryophyllum pinnatum* collected is dried in shed and then fine powdered using mortar and pestle. The powdered plant material is extracted using soxhlet extraction technique. The extraction is done using water as solvent. The aqueous extracts are filtered to remove solid mass. Filtrate, thus obtained was concentrated by evaporation of the solvent to get dried extract. The drying of extract is done using rota evaporator at controlled temperature. The obtained extract is dried and used for shampoo formulation^{8,9,10}.

Preparation of Shampoo:

The herbal shampoo was formulated by simple mixing process. Dried extract of *Bryophyllum pinnatum* were added methyl paraben. Further glycerin and sodium lauryl sulfate is added and mixed. At last the perfume and the water q. s. to make 100ml is added to the

mixture. The resulting liquid was mixed using mortar and pestle. The resultant formulation was poured in container and stored. The amount of ingredients took for the different herbal shampoo formulation is given in table 2.

Table 1. Review of Literature Survey

| Sr. No | Title | Author | Name of jornal | Activity |
|--------|--|---------------------------------------|---|---|
| 1. | Treatment of Helicobacter pylori infected mice with <i>Bryophyllum pinnatum</i> , a medicinal plant with antioxidant and antimicrobial properties, reduces bacterial load ³ | Laure Brigitte Kouitcheu Mabeku et al | Pharmaceutical Biology, 2017 VOL. 55, NO. 1, 603–610 | Antioxidant and Antimicrobial properties |
| 2. | Antimicrobial activity of <i>Bryophyllum pinnatum</i> leaves ⁴ | Akinpelu, D.A. et al | Fitoter-apia 2000, 71, 193–194 | Antimicrobial activity |
| 3. | In vitro antimicrobial activity of crude extracts from plants <i>Bryophyllum pinnatum</i> and <i>Kalanchoe crenata</i> ⁵ | Akinsulire, O.R. et al | Afr. J. Tradit. CAM 2007 4, 338–344. | In vitro antimicrobial activity |
| 4. | Broad-spectrum antibacterial and antifungal properties of certain traditionally used Indian medicinal plants ⁶ | Farrukh Aqil et al | World Journal of Microbiology and Biotechnology August 2003, Volume 19, Issue 6, pp 653–657 | Broad-spectrum antimicrobial activity (both antibacterial and antifungal) |
| 5. | Antimicrobial activities of methanol and aqueous extracts of the stem of <i>Bryophyllum pinnatum</i> Kurz (Crassulaceae). ⁷ | Nwadinigwe, A.O., et al | Afr. J. Biotechnol. 10,16342–16346. | Antimicrobial activity Antimicrobial activity |

Table 2. Formulation of Herbal Shampoo

| Sr. No | Chemical Component | Function | F1 | F2 | F3 |
|--------|----------------------------------|---------------------|--------|--------|--------|
| 1. | <i>Bryophyllum pinnatum</i> | Antimicrobial agent | 1gm | 2gm | 3gm |
| 2. | Sodium lauryl sulphate | Anionic surfactant | 20gm | 15gm | 10gm |
| 3. | Sodium Hydroxide | To adjusting pH | 0.5 | 0.5 | 0.5 |
| 4. | Glycerine | Conditioner | 5ml | 5ml | 5ml |
| 5. | Methyl Paraben | Preservative | 0.25gm | 0.25gm | 0.25gm |
| 6. | Safranin | Colourant | Q. S. | Q. S. | Q. S. |
| 7. | Eucalyptus oil | Perfume | Q. S. | Q. S. | Q. S. |
| 8. | Distilled water 100 upto [in ml] | Dilutant | Q. S. | Q. S. | Q. S. |
| | Total | ----- | 100 ml | 100 ml | 100 ml |

3. Evaluation of herbal shampoo:**3.1. Determination of pH:**

The 10% solution of the shampoo is prepared. The pH is measured by way of the usage of pH meter at room temperaturer¹¹.

3.2. Dirt dispersion:

The test tube containing 10ml of distilled water is added to it. Later two drops of shampoo formulation is introduced to the test tube. Afterwards one drop of India ink is added to the test tube. The test tube is then stopper with the cork and shaken for 10 times. The results had been written from amount of ink dispersed such as None, Light, Moderate, or Heavy^{11,12,18,19}.

3.3. Physical appearance/ Organoleptic properties:

In organoleptic properties the colour and odour of the shampoo was evaluated. The colour of the shampoo was determined by visual inspection of the formulation. The odour of the shampoo was determined by odour sensitive 5 peoples^{13,14,18}.

3.4. Foaming ability and foam stability:

The foaming capability and foam stability test is carried out by using cylinder shake method. In this technique 50 ml of the 1% shampoo solution was taken in a 250 ml graduated cylinder and covered the cylinder with hand. The cylinder is then shaken for 10 times. The volume of the foam appeared due to shaking is measured after every one minute consecutively for four minutes^{11,14,18,19}.

3.5. Skin irritation test:

The herbal formulation of shampoo was applied on the skin of volunteers and kept for five minutes. The area of skin is observed where shampoo is applied after 5 minutes. The redness or skin irritation was observed^{15,18}.

3.6. 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 recorded time required to remove frothing from hair by water is determined^{16,17}.

3.7. Ease of Combing:

After rinsing hair with herbal shampoo the ease of combing was determined on wet hairs. This was done by passing a comb through the wet hair and checking whether the comb glides smoothly while combing was determined^{15,17}.

3.8. Luster of Hair:

Luster of hair was determined after rinsing the hair with herbal shampoo and later drying them^{15,17}.

4. RESULTS AND DISCUSSION:

In the present research work three formulations were made whose detail is given in table no. 2. Further physical appearance, dirt dispersion, ease of combing, luster of hair and pH were determined and they are given in table 3.

Table 3. Evaluation of Formulation for Physical Appearance, pH, Dirt dispersion, Ease of combing and Luster of hair

| Formulation | pH | Appearance | Dirt Dispersion | Ease of combing and Luster of Hair |
|-------------|-------------|-----------------|-----------------|------------------------------------|
| F1 | 5.70 ± 0.02 | Red | Light | Good |
| F2 | 5.82 ± 0.04 | Raspberry | Light | Good |
| F3 | 5.96 ± 0.03 | Light Raspberry | Light | Good |

All the herbal shampoo formulations exhibit desirable foaming ability. The pH of formulation is slightly acidic and was ranging from 5.70 to 6. also the dirt dispersion outcomes point out that no dirt would stay in the foam; so organized formulations are appropriate for use. Further the foaming ability and foam stability effects confirmed that foam produced stays long adequate and foaming ability is also good. furthermore it is also observed that after rinsing the hair the combing is easy and the hairs are lustrous. The cleansing action of shampoo is now not dependent on the foaming capability but the quantity of foam produced and its long stay creates customer acceptability. The results of foaming capability and foaming stability are given in table 4.

Table 4. Foam Stability of Herbal Shampoo Formulations

| Time in minutes | Volume of Foam (ml) | | |
|-----------------|---------------------|-----|-----|
| | F1 | F2 | F3 |
| 01 | 166 | 175 | 180 |
| 02 | 163 | 172 | 178 |
| 03 | 161 | 170 | 176 |
| 04 | 159 | 168 | 173 |
| 05 | 157 | 166 | 171 |

The skin irritation take a look at revealed that there is no swelling or redness after application of shampooable.

5. CONCLUSION:

From the consequences it can be concluded that the formulated herbal shampoos are better in a variety of aspects. The marketed shampoos have a number chemical compounds which can harm scalp. Further from the existing find out about it can be concluded that herbal shampoos are formulated and are better in overall performance as that of the marketed formulation but further lookup is required for the betterment of its quality.

6. REFERENCES:

1. Vlavi SM, Patil AD, Yeowle HM, Jain VH, Pawar SP. Formulation and Evaluation of Herbal Shampoo Powder. International Journal of Pharma and Chemical Research. 2017; 3(3): 492-498.
2. Júlia M. Fernandes et al, 'Kalanchoe laciniata and *Bryophyllum pinnatum*: an updated review about ethnopharmacology, phytochemistry, pharmacology and toxicology; Revista Brasileira de Farmacognosia 29 (2019) 529–558.
3. Laure Brigitte Kouitcheu Mabeku et al, 'Treatment of *Helicobacter pylori* infected mice with *Bryophyllum pinnatum*, a medicinal plant with antioxidant and antimicrobial properties, reduces bacterial load,' Pharmaceutical Biology, 2017 Vol. 55, NO. 1, 603–610
4. Akinpelu, D.A. et al, 'Antimicrobial activity of *Bryophyllum pinnatum* leaves', Fitoterapia 2000, 71, 193–194.
5. Akinsulire, O.R. et al, 'In vitro antimicrobial activity of crude extracts from plants *Bryophyllum pinnatum* and *Kalanchoe crenata*' Afr. J. Tradit. CAM 2007 4, 338–344
6. Farrukh Aqil et al, 'Broad-spectrum antibacterial and antifungal properties of certain traditionally used Indian medicinal plants', World Journal of Microbiology and Biotechnology August 2003, Volume 19, Issue 6, pp 653–657
7. Nwadinigwe, A.O., et al, 'Antimicrobial activities of methanol and aqueous extracts of the stem of *Bryophyllum pinnatum* Kurz (Crassulaceae)', Afr. J. Biotechnol. 10,16342–16346.
8. Reddy K.V., Ashish Yachawad, 'Overview on recent extraction techniques in bioanalysis' Int. Res. J. Pharm. 2016;7(2):15-24
9. Sahraei S, Mohkami Z, Golshani F et. al. Antibacterial activity of five medicinal plant extracts against some human bacteria. European Journal of Experimental Biology. 2014; 4(3): 194-196
10. EN Siju, GR Rajalakshmi, D Vivek, Hariraj N, RV Shiniya, MK Shinojen, KV Pravith. Antimicrobial Activity of Leaf Extracts of *Cleodendrum viscosum*. Vent. Research J. Pharm. and Tech.2 (3): July-Sept. 2009, Page 599-600.
11. Vinod Kumar P., et. al. Formulation and Evaluation of Herbal Anti-Dandruff Shampoo from *Bhringraj* Leaves. ARC Journal of Pharmaceutical Sciences. 2018; 4(2): 29-33.
12. Prashanthi P, Elumalai A, Chinna Eswaraiah M, Narasimha Rao Y, Ahamed J. Assessment on General Parameters for Formulation and Evaluation of Herbal Shampoo. Res. J. Topical and Cosmetic Sci. 2012; 3(1): 31-33.
13. Anusha Potluri, Asma Shaheda S.K., Neeharika Rallapally, Durriel S., Harish G. A Review on Herbs Used In Anti-Dandruff Shampoo and Its Evaluation Parameters. Res. J. Topical and Cosmetic Sci. 4(1): Jan. –June 2013 pag 05-13.
14. Praveen Kumar M., et. al. Formulation and Evaluation of Powder Herbal Shampoo. World Journal of Pharmacy and Biotechnology. 2016; 3(1): 10-14.
15. Jaya Preethi P, Padmini K, Srikanth J, Lohita M, Swetha K, Vengal Rao P. A Review on Herbal Shampoo and Its Evaluation. Asian J. Pharm. Ana. 2013; 3(4): 153-156.
16. Saraf S, Hargude SM, Kaur CD, Saraf S. Formulation and Evaluation of Herbal Shampoo Containing Extract of *Allium sativum*. Res. J. Topical and Cosmetic Sci. 2011; 2(1): 18-20.
17. Kengar MD, Vamburkar GB, Gavade AS, Jagtap AM, Raut ID. Formulation and Evaluation of Polyherbal Shampoo. Research J. Topical and Cosmetic Sci. 2018; 9(1): 01-03.
18. Krushna K. Zambare, Swati B. Gonge, Geetanjali B. Shewale, Pranita S. Pawar. Preparation and Evaluation of Polyherbal Shampoo. Research J. Topical and Cosmetic Sci. 10(2): July-Dec.2019 page 41-44.
19. Anil Kumar Aher, Subodh Pal, Sadahev Yadav, Umesh Patil, Snehen du Bhattacharya. Evaluation of Antimicrobial Activity of *Casuarina equisetifolia* Frost (Casuarinaceae). Research J. Pharmacognosy and Phytochemistry 2009; 1(1): 64-68.