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Formulation and Evaluation of Herbal Shampoo

Vinayak M. Chavan*, Kundan J. Tiwari Kiran A. Suryavanshi, Aditya S. Bhor
SMBT Institute of D. Pharmacy, Nandi-Hills Dhamangaon, Nashik.

ABSTRACT

The aimed to formulate and evaluate herbal shampoo because synthetic may causes the adverse effect on hair and scalp. The herbal shampoo was formulated by extracting *murraya koenigi*, *sapindusmukorossi*as foaming agent, also addition of preservative agent. Citric acid used as viscosity modifier and pH adjusting agent and glycerin used as conditioning agent. HPMC(hydroxyl propyl methyl cellulose) used as thickening agent. The formulation at laboratory scale was done and evaluated for number of parameters such as pH, foam formation, viscosity, conditioning and wet ability were evaluated, and also to ensure its safety and efficacy

Keywords: Beta –carotene,preservatives, surfactants, viscosity.

*Corresponding Author Email: tiwarikundan236@gmail.com
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INTRODUCTION

People often complain about various brand of a shampoo that has caused various conditions such as scalp irritation, hair loss[1].Herbal shampoo is the cosmetic preparations that with the use of traditional Ayurvedic herbs are meant for cleaning the hair and scalp just like regular shampoo. It is a hair care product, typically in the form of viscous liquid that is used for cleaning hair. There are many different types of ingredients for making an herbal shampoo. Each ingredient has specific activity in herbal shampoo's formulation. Murrayakoenegii has been used as traditional medicine for centuries especially as remedies for hair tonic and hair stimulant. The leaves of murraya konegii are believed to be having several beneficial potential in scope of hair care and medicinal field. The leaves of murraya konegii traditionally used for hair care few day after using the leaves extract change in hair quality .however there has been no report study regarding the preparation of herbal shampoo containing murraya konegii leaves extract. Even though the leaves of murraya konegii wear traditional used for hair care .hence in the present study we are interested to formulating an herbal shampoo containing extract of murrayakoenegii extract[2]. Shampoos are of various types, like powder shampoo, clear liquid shampoo liquid shampoo, lotion shampoo, solidgel shampoo, medicated shampoo, liquid herbal shampoo etc.

Herbal shampoos are concerned in stability criteria, depending upon the nature of the ingredients, they may be simple or plain shampoo, antiseptic or antidandruff shampoo and nutritional shampoo containing vitamin, amino acids, proteins hydrolysate[3]. 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. As far as herbal shampoos are concerned in stability criteria. 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 in a shampoo formulation to increase its stability and safety.

Ideal characters of herbal shampoo

- Should effectively and completely remove the dust, excessive sebum.
- Should effectively wash hair.
- Should produce a good amount of foam
- The shampoo should be easily removed by rinsing with water.
- Should leave the hair non dry, soft, lustrous with good, manageability.

- Should impart a pleasant fragrance to the hair.
- Should not make the hand rough and chapped.
- Should not have any side effects or cause irritation to skin or eye.

Composition of Herbal shampoo

- Active agents
- Foaming agents
- Conditioning agents
- Thickening agents
- Colors, perfumes and preservatives

Types of Shampoo

- Shampoos are of the following types:
- Powder Shampoo
- Liquid Shampoo
- Lotion Shampoo
- Cream Shampoo
- Jelly Shampoo
- Aerosol Shampoo

MATERIALS AND METHOD

Plant collection:

Leaves of *murraya koenigii* obtained from local market. Authentication of samples was done by Dr. Wankhede at SMBT Ayurveda College & Hospital, Dhamangaon.

Phytochemical study:

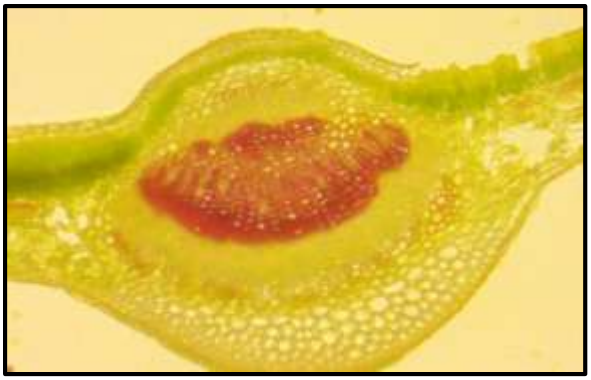


Figure 1 T.S. of murraya koenigii (Stained)

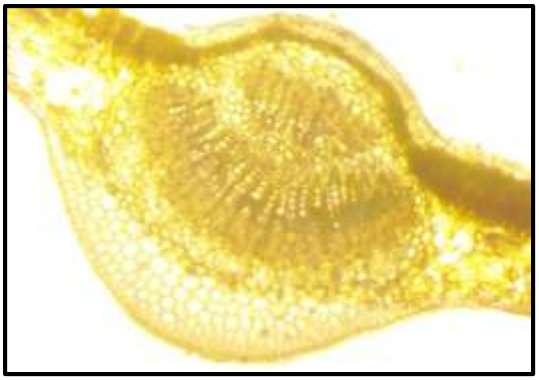


Figure 2 T.S. of murraya koenigii (Un-Stained)

Test for alkaloid:

Dragendorff's test, Wagner's test, Mayer's test and Hager's test.

Test for carbohydrates:

Molisch test, Fehling's test and Benedict's test

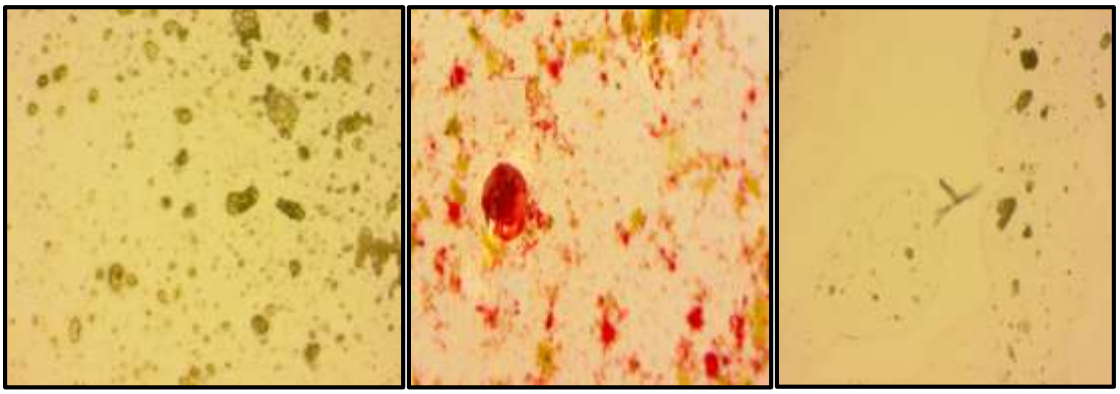
Test for proteins :

Biuret test, Xanthoproteic test and Lead acetate test:

Test for tannies:

Lead acetate test and gelatin test

Powder Characteristics:



(3) (4) (5)

Figure: (3) Unstained (4) Phuloroglucinol HCl (5) Ruthenium red

Preparation of plant extract: **Soxhlet extractor:**

For extraction of beta –carotene

The dried leaves finely powdered .Weighs 20g of powder drug with 60 ml of Acetone. The extraction is for 4-5 hours at temp 60℃ .After extraction the filtrate. Filter extract of leaves are kept in porcelain dish. After drying the product Re-crystallisation process take place. Because of crystallization pure form of **Beta –carotene** formed.

Suction pump extraction process:

For extraction of beta –carotene: Fresh plant material and silages. Samples were finely cut with scissors or knife ground in pestal morter. 5-10g of Weighed test portion was extracted with Acetone 60ml,80ml petroleum ether and o.1g magnesium carbonate. Blended for 5 min. Filtration was done with the aid of Suction pump and then sample was decanted into separator. Residue was wash with 30ml of Acetone and then 30 ml of petroleum ether and extract were combined. The combined extract was evaporating to dryness and residue was re-dissolved in Acetone. Vole was made made-up to 5-10ml using acetone depending upon matrix. The sample will then analysed by High performance liquid chromatography (HPLC).

Preparation of herbal shampoo:

- Herbal shampoo of *Murrayakoenigii* prepared by both way, solid preparation (Dry shampoo) as well as Liquid preparation (Liquid Shampoo).

Liquid preparation shampoo:

Ingredient	F1	F2	F3
plant extract	10ml	10ml	10ml
Ritha extract	5ml	10ml	15ml
Citric acid	0.03g	0.06g	0.08g
HPMC(hydroxyl propyl methyl cellulose)	0.06g	0.08g	0.08g
Methyl paraben	0.6g	0.6g	0.6g
water	q.s. upto 30ml	q.s. upto 30ml	q.s. upto 30ml

Physical parameter:

Colour	Brown
Odour	Good
pH	5-6
Foam producing ability	Yes
Foam volume (ml)	5 ml
Foam type	Dense and uniform
Foam stability	good

Figure. 6

Figure 7

Physical appearance:

As any other herbal cosmetic products, the attractiveness of shampoos for consumers tends to be judged visually, thus having good physical appearance is important. Formulated shampoo as shown in Figure 6 was opaque and brown in colour. It has a good odour given by the fragrance in the ingredients and also a good foam producing ability. The formulated shampoo was observed to be significantly different with synthetic shampoo in terms of color and transparency[7].

Results and discussion:

Evaluation of herbal shampoo:

To evaluate the prepared formulations, quality control tests including organoleptic and physicochemical characterization such as pH, solid contents and viscosity were performed .As well to ensure the quality of the products, specific tests for shampoo formulations including: surface tension, foam volume and foam stability, detergency, eye irritation, skin sensitization tests and preliminary stability study were also carried out. The results were compared with frequently used marketed herbal shampoo considered as reference

Physical appearance/visual inspection

All samples were observed for their physical appearance/visual inspection. The prepared formulations were evaluated in terms of their clarity, foam producing ability and fluidity.

Determination of pH

The pH of shampoo solution (10% w/v) in distilled water was determined at room Temperature

Detergency and cleaning action

5gm sample of solid human hair is placed at 35ºc in 200cc of water containing of 1gm of shampoo. The flask is shaken 50 times a minute for 4 minute. Then washed once again with sufficient amount of water, then after filter the hair dried and weighed. The amount of soil removed under this condition is calculated

Conditioning action:

Conditioning action the degree of conditioning given to hair is ultimately judged by shampoo user who is making the evaluation on the basis of past experience.

Foam, foam stability

200 ml of surfactant solution is dropped into a glass column containing 50 ml of the sane solution .the height of foam generated is measured immediately and again after specified time interval and is considered proportional to the volume[6]

Viscosity:

Viscosity of liquid shampoo is determined using “Ostwald Viscometer" Product viscosity plays an important role in defining and controlling many attributes such as shelf life stability and product aesthetics such as clarity ease of flow on removal from packing and spreading on application to hair and product consistency in the package. The flow characteristics of non-Newtonian materials are usually not measured with a single data point, because their viscosity is dependent on the shear rate. The best approach is to take multipoint measurements approximate to those of the process being modeled. Indicates that shampoos are low viscosity products, whose viscosity remains

almost unchanged over the range of r.p.m used. Shampoo shows pseudo plastic behavior the same as the commercial one (reference), which is a desirable attribute in a shampoo formulation. At a low r.p.m., these shampoos show high viscosity. On increasing the shear, the viscosity[6]

Dirt dispersion

Two drops of shampoo were added in a large test tube contain 10 ml of distilled water. 1 drop of India ink was added; the test tube was stopper and shakes it ten times. The amount of ink in the foam was estimated as None, Light, Moderate, or Heavy. Ossify drops, which would allow ease of spreading on the hair[7].

Evaluation parameter of shampoo:

Shampoo	Surface Tension	Viscosity	pH
F1	41.63±0.2967	4259±26.0576	6.15±0.01528
F2	42.11±0.43501	2519±77.6745	6.33±0.16803
F3	42.33±0.6282	2115±75.2861	6.99±0.06658

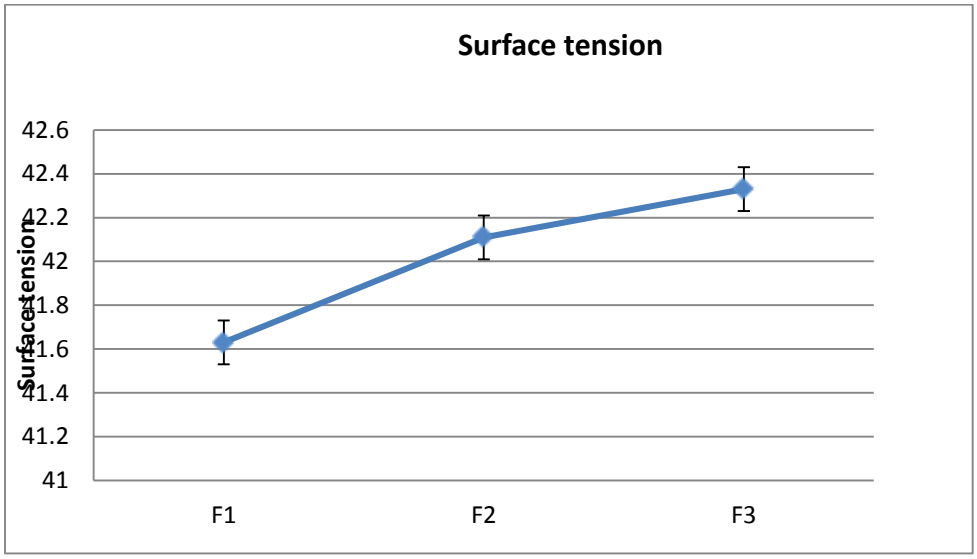


Figure 8. Graphical representation of Surface tension

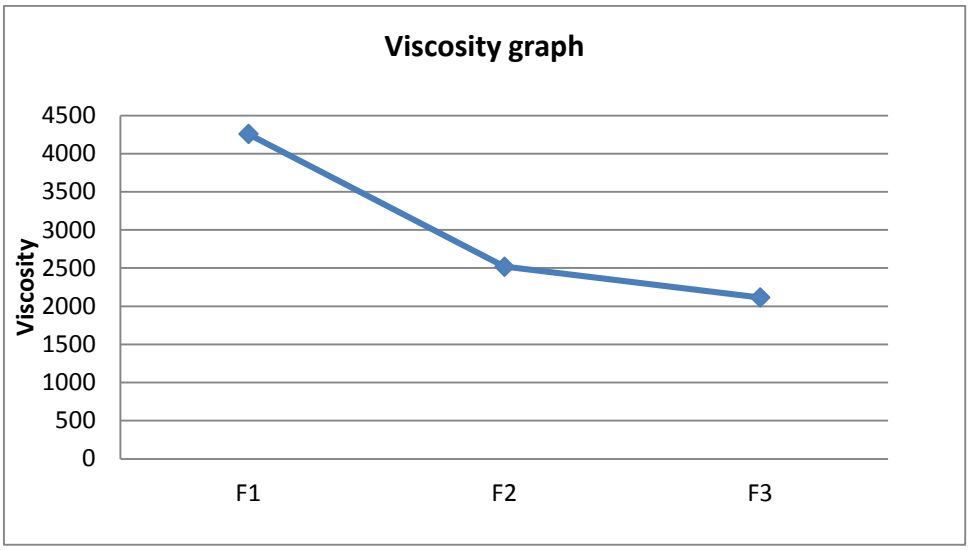


Figure 9:Graphical representation of Viscosity

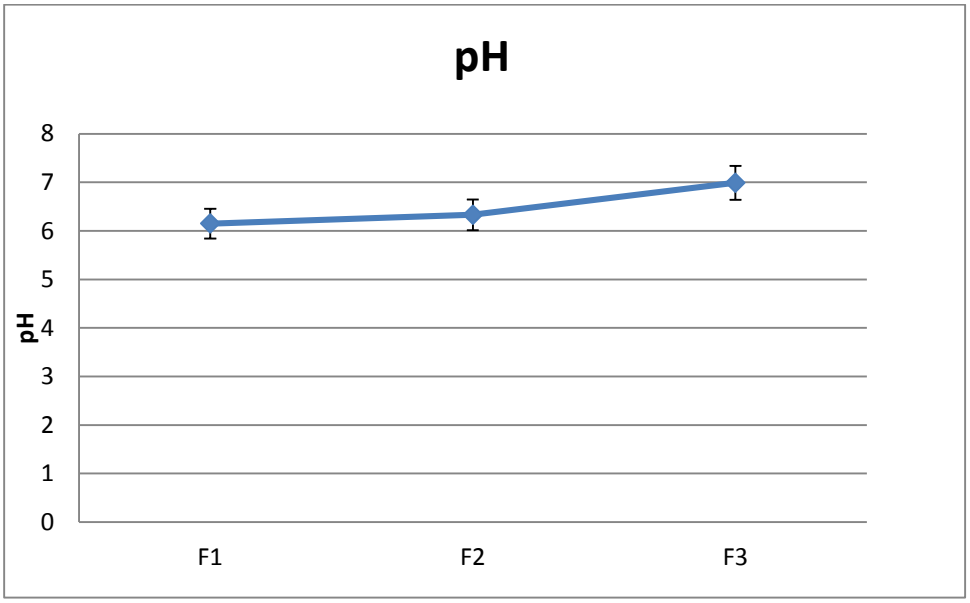


Figure 10. Graphical representation of pH

CONCLUSION:

The present study, we formulated an herbal shampoo containing murrayakoenigii leaves extract which is traditionally used for hair cleansing in India. All the ingredients used to formulate the shampoo are safer than synthetic commercial shampoos and the physicochemical evaluation showed ideal results, but further research is required to improve its quality especially on the conditioning performance and to identify the constituents which are responsible for the performance

ACKNOWLEDGEMENT:

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