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Research Article

FORMULATION AND EVALUATION OF POLYHERBAL SHAMPOO CONTAINING EXTRACT OF HIBISCUS, HOLY BASIL AND FENUGREEK

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ABSTRACT

Shampoos has primarily been products that are intended to cleanse the hair and scalp. Herbal preparations always functional and have good activity and very minimal or no adverse effects on performance with synthetic. This study intended to prepare/ formulate and evaluate a complete herbal shampoo containing plant materials used only traditionally. The herbal shampoo prepared containing aqueous extracts of petals of Hibiscus (*Hibiscus rosa-sinensis*), leaves of Holy basil (*Ocimum tenuiflorum*) and dried leaves of Fenugreek (*Trigonella foenum graecum*) prepared by decoction method individually. Various physicochemical parameters such as color, clarity, pH and skin irritability, viscosity, surface tension, foaming ability and stability, and stability studies were studied using suitable procedures. The organoleptic evaluations of the polyherbal shampoo showed good results. The pH of the polyherbal shampoo range to be 5, which was near to skin pH. The viscosity of prepared polyherbal shampoo was found to be 0.0696 poise. The surface tension of prepared polyherbal shampoo was found to be 34.1 dynes/cm respectively.

Keywords: Formulation, Herbal shampoo, physicochemical parameters.

INTRODUCTION

Herbal shampoo is a cosmetic setting where traditional Ayurvedic remedies are used to clean hair and scalp like a regular shampoo. It is a hair care product, usually in the form of a viscous liquid used to clean hair. Shampoos are probably used as a cosmetic agent. There are many different types of ingredients to make herbal shampoo. Each ingredient has a specific function in the composition of the herbal shampoo. Shampoo is a hair care product, usually in the form of a viscous liquid, which is used to clean hair. The shampoo is applied by rubbing it on wet hair and rinsing it off.

Hibiscus rosa-sinensis which is also known as Rose mallow. *Hibiscus rosa-sinensis* is a flower part of plant of family Malvaceae. The different part of the plant used for therapeutic purpose such as, leaves and flowers which have been traditionally used to treat conditions such as cancer and gallbladder attack, to lower blood pressure and also topically on hair.

Ocimum tenuiflorum/*Ocimum sanctum*, which is also known as Tulsi or Holy basil, it is an aromatic perennial plant of family Lamiaceae. Holy basil which possesses antibacterial, antifungal, antipyretic, anticancer, analgesic, antiemetic and antiseptic properties.

Fenugreek that is *Trigonella foenum-graecum* which is also referred as Methi, is an annual plant in the family *Fabaceae*. The fenugreek has anti-fungal, anticancer, anti-diabetic properties[1-3].

MATERIALS AND METHODS

Fresh fenugreek (dried leaves), Hibiscus (petals) and Tulsi / holy basil (leaves) were collected from the market and washed with water to remove foreign materials in it. The washed plant parts dried to remove water in it. After drying stored properly to avoid contamination.

Preparation of plant extract

Plant extracts were prepared by decoction method. About 3gm of Fenugreek (dried leaves), Hibiscus (5-6 petals) and Tulsi (10-15 leaves) were taken in separate 500ml beakers respectively and 200ml of distilled water was added to all 3 beakers and covered. The mixture was kept for boiling until the water reduced to half of its original volume then filter.

Preparation of shampoo

Coconut oil, olive oil and castor oil were saponified with potassium hydroxide along with prepared hibiscus, tulsi and fenugreek aqueous extract using reflux condenser. After complete saponification, filter the contents from reflux condenser, and then cool the filtrate. After cooling of filtrate, glycerin, ethyl alcohol, methyl paraben was added to this filtrate with constant stirring, where ethyl alcohol and methyl paraben are act as preservative and lemon grass oil used for masking the unpleasant odor of extract. Then volume is made up to 50ml with distilled water. (Citric acid was added to the preparation to balance the pH).

Evaluation of Polyherbal shampoo

To evaluate the quality of prepared polyherbal shampoo, several quality control tests including visual examination, physicochemical tests, and other various tests were conducted, which are given below.

Physical appearance/visual inspection: The prepared polyherbal shampoo was evaluated for the clarity, colour, odour and texture. Colour was evaluated by vision and texture was

evaluated by touch sensation.

Determination of pH: The pH of shampoo solution was determined at room temperature using pH paper. The pH was determined by dipping the pH paper in the prepared shampoo solution and the change in the colour of paper indicates the pH of the formulation.

Skin irritation test: A small amount of prepared shampoo was applied on the dorsal side of left hand and kept for 5 minutes and observed for redness of skin and skin irritation.

Viscosity test: The viscosity of the formulated polyherbal shampoo was measured by using Ostwald's viscometer.

Surface tension: The surface tension property of the prepared polyherbal shampoo was determined by using Stalagmometer.

Foam ability and stability: The foaming ability and stability of the prepared polyherbal shampoo was carried by, prepare a shampoo solution by mixing about 10 drops of shampoo in 50 ml of distilled water, then this shampoo solution was transferred to the 250 ml graduated cylinder and initial volume was recorded, then the mouth of the cylinder is covered with lid or hand and shaken 10 to 12 times. The total volume of the foam formed was recorded after shaking. The volume of the foam recorded at 1 minute interval for 5 minutes.

Wash ability: The formulation was applied on the surface of the skin and ease and extent of washing with water was checked manually.

Visual stability: The prepared shampoo was tested for the visual stability for 21 days at room temperature and observed for color change, odour and pH.[4-6]

Table 1: Composition used in formulation of shampoo

Ingredients	Quantity
Hibiscus extract	5ml
Holy basil extract	5ml
Fenugreek extract	5ml
Potassium hydroxide	1.5gm
Sodium lauryl sulphate	1.5gm
Coconut oil	5ml
Olive oil	1.5ml
Castor oil	1.5ml
Glycerin	1ml
Ethyl alcohol	2ml
Methyl paraben	0.01gm
Lemon grass oil	0.05ml
Water	Q.S to

RESULTS AND DISCUSSION

Visual inspection/ study gives positive result. The prepared formulation had good colour and no characteristic smell, its physicochemical property as follows as given in table below,

The maintenance of pH of shampoo is very essential to improve the qualities of hair and also to enhance the hair quality and preventing irritation to the scalp and eyes. From the test using pH paper, the pH of the shampoo was ranged 5-6 which is near to the pH of skin and scalp.

Result of skin irritation test was positive; formulated shampoo did not show any reddened skin or any skin irritation on application; this may be due to the presence of herbal ingredients in the formulation.

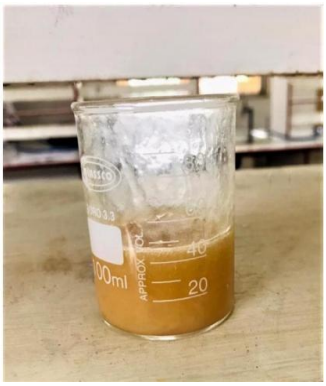

Table 2: Physicochemical property of polyherbal shampoo

Parameter	Observation
Colour	Light brown
Odour	Pleasant
Transparency	Opaque

The viscosity of the formulation was measured using Ostwald's viscometer and the viscosity was **0.0696 poise** which is the indication of great fluidity, the shampoo can be easily applied on hair, and it is easily spread on scalp.

From the study using stalagmometer the surface tension of the formulated polyherbal shampoo was **34.1 dynes/cm**, which indicates the

The foam ability and stability of the formulated polyherbal shampoo were observed, the volume changed from **103** at first minute to **52** in fifth minutes. The formulated polyherbal shampoo showed good foaming ability and retention. Good foaming is very important for the consumer acceptance and satisfaction.

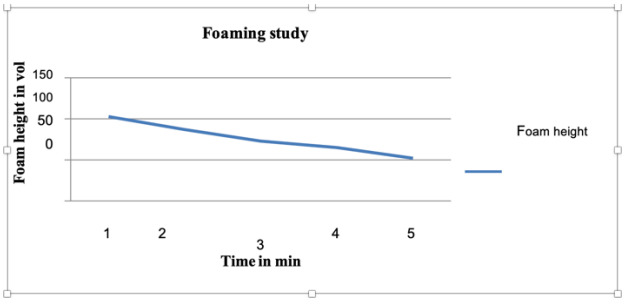

Fig 1: Foaming stability of polyherbal shampoo

There were no observable changes in colour, odour, pH of shampoo in 21 days and no phase separation observed between oil and water phases.

CONCLUSION

The study was aimed to formulate polyherbal shampoo using the herbal ingredients such as hibiscus, fenugreek, and tulsi / holy basil to provide conditioning action to hair and to treat various hair related problems. The formulation was also undergone various evaluation tests using recommended procedures. The prepared polyherbal shampoo shows the ideal properties of a shampoo. The pH of the shampoo was maintained to the pH of skin or scalp (5-6), so there is no chance of irritation to scalp or skin. However, some beauty qualities such as lather, colour, odour and clarity of the laboratory prepared polyherbal shampoo are not comparable with the marketed commercial shampoo products. From the above study it is concluded that all these

evaluation tests which reveals the safety, quality, action of the formulated polyherbal shampoo and shows fewer side effects. The shampoo has no large quantity of harmful chemicals and can be used as an alternative to synthetic shampoos.

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