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Formulation and Evaluation of Polyherbal Antidandruff Hair Oil

[1]SafeeraMayyeri,[2]Fathima Rana Kp, [3]Fidha PC, [4]Fathima Thasnim, [5]Akshara C
[6]Celestin Baboo R.V. and [7]Sirajudheen M.K.

[1-6]*Department of pharmacognosy, jamia salafiya pharmacy college, pulikkal, Malappuram, kerala.*
[7]*Department of pharmaceutics, jamia salafiya pharmacy college.*

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ABSTRACT
Human hair is very important to our personalities,and we use a lot of cosmetics to take care of it. The aim of present study is formulation and evaluation of polyherbal hair oil.Compared to synthetic formulation,the polyherbal hair oil formulations always have action and have fewer or no negative effects. Reviewing the value of Polyherbal hair oil fortreating common hair issues such as alopecia, hair loss, grey hair, dryness, and most types of dandruff was the goal of this study.Anti-fungal activity of polyherbal hair oil was investigated by well diffusion method against Malassezia pachydermatitis.

I. INTRODUCTION

Dandruff is one of the most prevalent and serious hair problems. It is the ailment that causes skin to itch and then flakes on the scalp.The most prevalent dermatological skin ailment affecting the scalp, dandruff is a chronic, non-inflammatory condition distinguished by an extensive variety of scalptissue involvement. Although the primary cause of dandruff is not readily apparent, there are a number of contributing factors, including an oily scalp, poor hygiene that can lead to a fungal infection, and a week without washing one's hair. The usage of unclean water and the high cost of anti -dandruff products in low-income households are commonplace. Dandruff is also caused by ayeast like fungus called Malassezia, which feeds on the oil on most adult scalps. Others skin disorders like psoriasis and eczema,dry skin, sensitivity to hair care products, or contact dermatitis can also cause dandruff. It results in hair loss and public humiliation. Dandruff on the skin in different places indicates an excess of sebum production. It signs include skin discoloration and sudden hair colour changes, as well as redness, flaking, and itching of the scalp and hair breaking.

Protein filaments called hair originate from dermal follicles. one of the most vital parts of our body that enhances a person's overall appearance is their hair.The main issues with hairare falls,dandruff, split ends, and grey hair. We use a lot of make up to get over these issues. The hair care business is aware of this and is providing products that are intended to suit the demand of the customer. Numerous herbal remedies and herbs have been used in traditional Indian medicine to promote higher development and enhance hair quality.

II MATERIALS AND METHODS

Collection of plant part:

Plant materials were collectedfor the preparation of polyherbal hair oil viz,fresh leaves of Eclipta prostrata, Indigofera tinctoria, and Cyanthillium cinereum,Hibiscus rosasinensisfrom a nearby house.Cuminum cyminum,Curcuma zedoaria, and Trigononella foenum graecumfrom a local market in Kottappuram. Tamarindus indica leaf veins were collectedfrom a nearby college.

Authentication of plants:

Ecliptaprostrata,Cyanthillium cinereum, Indigofera tinctoria, Hibiscus rosa sinensis,Ixora coccinea, Aloe barbadensis,Tamarindus indicawas authenticated by senior botanist Dr. A. K Pradeep,Assistant Professor, Department of Botany,University of Calicut and preserved at the Calicut university herbarium,University of Calicut with a voucher of specimennumbers:178284, 178285,178286,178283,178287 respectively.

Standardisation of coconut oil
Determination of acid value:

5g of the oil was weighed and dissolved in 25 ml of equal volume of ether and ethanol mixture, previously neutralised with 0.1N KOH by using phenolphthalein as indicator. Shake well and dissolved in 1 ml of phenolphthalein and titrated with 0.1N KOH solution until permanent pink colour formed.

Acid value= $5.61 \times \frac{n}{w}$

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Determination of saponification value:

2g of the oil was taken in 200ml RB flask and 25 ml of 0.5 M KOH ethanolic solution was added. The mixture was constantly stirred and then reflux condenser was attached to the flask containing the mixture. The mixture was allowed to boil gently for 30 minutes in a water bath. The contents of mixture were frequently rotated and few drops of phenolphthalein indicator was added into a warm solution and titrated with 0.5M HCl into the endpoint until the pink colour of the indicator just disappeared. Then perform blank.

Saponification value= $28.05 \times (b - a)/w$

Preparation and formulation :

- All fresh herbal parts were rinsed in water in order to remove dirt or dust and dried with paper or towels.
- The table lists theall ingredients and their quantities that are used in formulation of polyherbal hair oil.
- The herbal medicines (except Aloe barbadensis,Trigonella foenum graecum, Cuminum cyminum) made into a paste form and filtered through muslin cloth.
- The Aloe barbadensis, soaked Trigonella foenum graecum and Cuminum cyminum were ground separately. Then, they were directly added to the filtrate along with curcuma zedoaria powder and placed in coconut oil on the stove.
- Stir the mixture frequently until the oil boils, and keep it on coal. Follow this process on the second day.
- After cooling,transfer the mixture into a clean, air tight container. label and store it in a cool, dry place.

Sr. No	Ingredients	Quantity
1	Eclipta prostrata	20g
2	Indigofera tinctoria	5g
3	Cyanthillium cinereum	10g
4	Hibiscus rosa-sinensis	10g
5	Trigonella foenum-graecum	5g
6	Tamarindus indica	3g
7	Curcuma zedoaria	10g
8	Cuminum cyminum	5g
9	Ixora coccinea	5g
10	Aloe barbadensis	10g
11	Coconut oil	250ml

III EVALUTION OF POLYHERBAL HAIR OIL

Physical evaluation:

Colour:

Green

Odour:

Characteristic

Skin irritation test:

The prepared herbal hair oil was applied on 1cm of the skin of the hand and exposed to sunlight for 4 to 5 minutes.

Pharmaceutical evaluation:

Determination of pH:

The pH of poly herbal hair oil was determined by using pH meter.

Determination of specific gravity:

The specific gravity container should be tacked, cleaned with distilled water, dried in the oven for 15 minutes, cooled, and then capped and weighed (W1). Now pour the sample into a bottle with the same specific gravity, close it with a cap, and add weight once more (W2). using the formula, find the sample's Weight per millimetre.

Specific gravity=(W2-W1)

Determination of viscosity:

Viscosity was measured at room temperature by using Ostwald viscometer, which was previously cleaned and dried. The viscometer was filled with the oil and sucked up to the point

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1cm above the mark 'A' and the time taken for fall from point A to B was noted. Repeat the procedure thrice and take their mean. Again cleaned, dried viscometer filled with distilled water and determine the time of flow between two marks.
Viscosity, $\eta_2 = d2t2/d1t1 \times \eta_1$

IV. BIOLOGICAL EVALUATION:

The anti-dandruff activity of polyherbal hair oil against the microorganism Malassezia pachydermatis was investigated by well diffusion method and fluconazole as the standard. After 48 hours of incubation at 37℃, the zones of inhibition on the plates were measured and documented in relation to the appropriate concentration.

Anti Dandruff Activity

- Weigh 7.8 gm of potato dextrose agar powder and dissolve it in 100ml of distilled water.
- Filter a small portion of the solution and transfer it to a test tube used as broth.
- Place the remaining solution in a conical flask and heat it in a water bath under its boils.

Sterilisation:

- Sterilize both the test tube and Conical Flask containing a PDA solution in an autoclave at 121ºC for 15 minutes.

Preparation of stock solution:

- Prepare a stock solution by mixing 100µl of fluconazole iv solution with 900µl of distilled water.

Preparation of petriplate:

- Pour the sterilized PDA solution into petriplates to prepare agar plates. Allow them to set.

Marking of petriplate:

- Take a prepared plate and divide them into quadrants.
- Mark the spot for the sample and standard.

Inoculation and well preparation:

- Inoculate the agar plate by streaking them with swab that has been dipped into the culture broth.
- Make four wells on each plate using a well cutter.
- Fill two wells with 50µl with sample (hair oil) and the other two with 50µl of the standard (fluconazole stock solution)

Incubation and observation:

- Place the plate in an incubator and allow them to incubate for 48 hours.
- After incubation, observe the plates for zone of inhibition.
- ➢ It's important to conduct all these steps in an aseptic area to prevent contamination and ensure accurate result.

V. EXPECTED OUTCOME

- ➢ Anti dandruff
- ➢ Promote hair growth
- ➢ Prevent dryness
- ➢ Prevent greying of hair
- ➢ Nourishes hair

VI. RESULTS

Standardisation of coconut oil:

TEST	VALUE
Acid value	0.5
Saponification value	245.5

Pharmaceutical evaluation:

TEST	VALUE
pH	6-7
Specific Gravity	0.906
Viscosity	0.26

Antidandruff activity:

DIAMETER	STANDARD	TEST
	4.2mm	4.1mm

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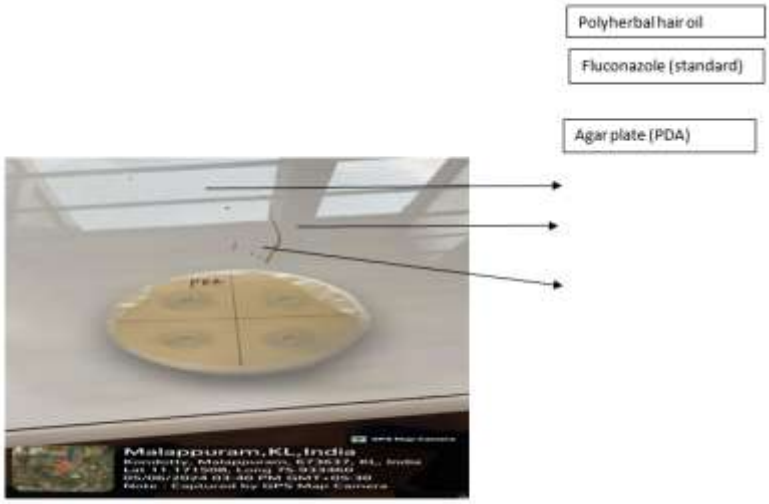
VII.BIOLOGICAL EVALUATION



VIII.CONCLUSION

We hope that this polyherbal hair oil was found to be the most effective in managing dandruff on human scalps in the current investigation. The presence of bioactive constituents in this oil may be the cause of the reported anti dandruff potential.Nowadays,natural herbal oils are widely used all over the world because they are more effective in hair growth, preventing greying of hair and dandruff than that of other hair oil currently available in market. The use of various herbal ingredients, each withunique benefits, in well-balanced combinations can have a positive impact on hair. The finished product remains within acceptable limits and isassociated with minimal or no side effects. The current study concludes that the poly herbal hair oil has anti dandruff activity against Malassezia pachydermatitis.

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