

## A BUCOLIC REMEDY OF FORMULATION AND EVALUATION OF POLYHERBAL HAIR OIL

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## ABSTRACT

**Objective:** The birth of cosmetics forms an incessant narrative throughout the past of man as they developed. The present study aimed to formulate polyherbal hair oil using various efficient herbs.

**Methods:** Hair oil formulation of *Cocos nucifera* (oil), *Ricinus communis* (oil), *Brassica juncea* (oil), *Trigonella foenum-graecum* (Seeds), *Murraya koenigii* (Leaf), *Hibiscus rosa-sinensis* (Flowers), *Nigella sativa* (seeds), and *Cinnamomum camphora* in the form of polyherbal oil using boiling method. These ingredients are rich in various phytochemicals, vitamins, proteins, antioxidants, and so many other constituents which are important for the growth and rejuvenation of the hair cycle. Evaluation of hair oil carries out by various parameters such as sensitivity test, acid value, saponification value, phytochemical screening, pH, specific gravity, viscosity, and irritation test.

**Results:** All the values of evaluation are within the acceptable limit. As compared to market formulations, this herbal oil having minimal or zero adverse effects.

**Conclusion:** It is concluded that formulated hair oil boost hair growth, decrease hair fall, dandruff, gray hair, and gives lustrous and shiny hairs.

**Keywords:** Hair, Hair oil, Cosmetic, Phytochemicals, Polyherbal, Hair problem, Antioxidants.

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## INTRODUCTION

The phrase cosmetic originated from the Greek term “kosm tikos” senses having the potential and skill in beautifying. Herbal Cosmetics, here noticed as botanomedicine contrived using various permissible cosmetic components to form the suitable base in which one or more herbal ingredients provide defined cosmetic advantages only, shall be called as “Herbal Cosmetics” [1]. When herbs are used for their aromatic and medicinal value in cosmetics, they are known as herbal or green personal care products [2]. Herbal cosmetics are in high demand due to the increasing interest of humanity towards them because they are more effective with nil or minimum after-effects also handy ingredients, etc. Haircare cosmetics are now added with herbs, and they are well-recognized compared with synthetic ones [3]. Herbal cosmetics provide nutrients to applied areas, moreover, they are safe and they combine traditional systems with modern scientific approaches [2]. The advantages of herbal cosmetics are given below Figs. 1 and 2.

## METHODS

## Collection and authentication of plant part

All the required raw materials were collected from the local market of Akluj. tal. Malshiras, Dist. Solapur. Moreover, all the ingredients such as coconut oil, castor oil, mustard oil, hibiscus flowers, fenugreek, curry leaves, black cumin, and camphor. Authentications were done by the Department of Pharmacognosy at SPM's College of Pharmacy Akluj (Table 1).

## Drugs and chemicals

## Formulation of polyherbal hair oil

A variety of ingredients comprises in the formulation of herbal oil are presented in the Table 2.

Accurately, weigh all the dried and fresh herbs such as Hibiscus flowers, Fenugreek, Curry leaves, and Black cumin were ground in the mixture and were mixed in mustard oil. The above content was boiled for

10 minutes. After that add castor oil and coconut oil boil, this solution for 20 min at last add ground Camphor. Keep this solution overnight in the same container. After 12 hrs, oil was filtered through a muslin cloth. To the filtrate, coconut oil was added to make up the volume 100 mL and labeled it.

## Evaluation of herbal hair oil

The formulated polyherbal hair oil was subjected to physical and chemical assessment.

## Organoleptic property

Color, odor, skin irritation was determined manually. Oil was applied on hand and exposed to sunlight for 5 mins to check for any irritation over skin mention as per standard books [20-23].

## Physical evaluation

The various parameters such as specific gravity (density), ph, viscosity, saponification value, acid value are tested using the standards given in protocols [20-23].

## pH

The pH of the herbal oil was detected using a pH meter.

## Viscosity

Viscosity was determined using Ostwald's viscometer.

## Specific gravity

The specific gravity of the prepared oil was determined using a specific gravity bottle.

## Sensitivity test

The prepared polyherbal hair oil was applied on 1 cm skin surface of the hand and exposed to sunlight for 4-5 min, observed that area if any redness or reaction occurred.

Table 1: Crude drugs utilized in polyherbal hair oil

Synonym	Biological source and family	Chemical constituents	References
Coconut oil	<i>Cocos Nucifera</i> Arecaceae	High fat content, protein, triglycerides, albumins, vitamin A, vitamin C,	[4]
Castor oil	<i>Ricinus communis</i> Euphorbiaceae	Saturated and unsaturated fatty acids, Ricinoleic acid. vitamin E, ricinoleic acid. Tocopherols tocotrienols, favonoid	[5]
Mustard oil	<i>Brassica juncea</i> Brassicaceae	Vitamins, glucosinolates polyphenols, volatile components, $\beta$ -carotene and ascorbic acid.	[6,7]
Hibiscus flower	<i>Hibiscus rosa-sinensis</i> Malvaceae	phenols, flavanoides, alkaloids, terpenoids, protein, free amino acids, essential oils, micronutrients,	[8-10]
Fenugreek	<i>Trigonella foenum-graecum</i> Fabaceae	Sapogenins, Diosgenin, trigocoumarin, nicotinic acid, trimethyl coumarin and trigonelline 28% mucilage, volatile oil, proteins, iron, Quercetin, rutin, vitexin, isovitexin.	[11,12]
Curry leaves	<i>Murraya koenigii</i> Rutaceae	Pgurjunene, P-caryophyllene, P-lemene and O-phellandrene. Cinnamaldehyde, and numerous carbazole derivatives.	[13-15]
Black cumin	<i>Nigella sativa</i> Ranunculaceae	Thymoquinone, tannins, flavinoids, essential fatty acids, essential amino acids, vitamins, proteins.	[16,17]
Camphor	<i>Cinnamomum camphora</i> Lauraceae	campher, campherol, cineol, cinnamaldehyde menthol, thymol, phenol, salicylic acid, naphthol	[18,19]



Fig. 1: Benefit's of herbal cosmetics

Hair Loss	Dry Hair	Spit Ends
Oily/Greasy Hair	Dandruff	Frizzy Hair and Dull Hair
Heat Damaged Hair	Gray Hair	Alopecia

Fig. 2: Hair problems

#### Acid value

The acid value is a comparative measure of rancidity while free acids produced during the decomposition of triglycerides. It is measured as several milligrams of potassium hydroxide (KOH) required to neutralize the free fatty acids present in one gram of fat [23].

#### Saponification value

The significance of the saponification value is to identify the amount of potassium hydroxide (in mg) is required to saponify 1g fat, the greater

Table 2: Ingredients used in formulation of herbal hair oil

Common name	Biological source	% Quantity
Coconut oil	<i>Cocos nucifera</i>	35
Castor oil	<i>Ricinus communis L.</i>	10
Mustard oil	<i>Brassica juncea</i>	10
Hibiscus flowers	<i>Hibiscus rosa-sinensis</i>	10
Fenugreek	<i>Trigonella foenum-graecum</i>	10
Curry leaves	<i>Murraya koenigii</i>	10
Black cumin	<i>Nigella sativa</i>	10
Camphor	<i>Cinnamomum camphora</i>	5

Table 3: Physical evaluation of herbal hair oil

Parameters	Result
Color	Dark yellow
Odor	Characteristic
Grittiness	Smooth
pH	5.93
Viscosity at 25°C	32.808
Specific gravity	0.90
Acid value	1.420
Saponification value	196.30
Skin irritation	No irritation

the number of saponification, the more short- and medium-chain fatty acids the fat contains. Saponification values were performed as per standards [23].

#### Phytochemical screening of herbal hair oil preparations

The prepared herbal oils were subjected to qualitative chemical analysis for identification of various plant constituents such as alkaloids, glycosides, flavonoids, tannins, phenols, proteins, amino acids, vitamins, steroids, and saponins using different chemical tests. The chemical test was carried out using standard conventional protocols [20].

#### RESULTS

The polyherbal hair oil was prepared from the above-mentioned ingredients (Table 2). Numerous physical and analytical parameters such as color, odor, grittiness, specific gravity (density), ph, viscosity, saponification value, acid value, and irritation test, of this polyherbal hair oil, were evaluated (Table 3). Polyherbal hair oil was analyzed via qualitative chemical analysis to identify the various plant phytoconstituents (Table 4).

Table 4: Phytochemical evaluation of herbal hair oil

Name of the test results	Results
Alkaloids	+ <sup>ve</sup>
Flavonoids	+ <sup>ve</sup>
Tannins	+ <sup>ve</sup>
Steroids and terpenoids	+ <sup>ve</sup>
Saponins	+ <sup>ve</sup>
Glycosides	+ <sup>ve</sup>
Proteins and amino acids	+ <sup>ve</sup>
Vitamins	+ <sup>ve</sup>
Phenols	+ <sup>ve</sup>

## DISCUSSION

Herbal hair oil is one of the most well-recognized hair treatments; gain certain attention of majority population. Herbal hair oil not only moisturizes the scalp but also overturns dry scalp and dry hair conditions. It provides numerous essential nutrients required to maintain the normal function of sebaceous glands and promotes natural hair growth [24,25]. Oiling of hair at least twice a week is necessary ideally, a night before you plan to rinse your hair. Regular oiling may avert hair from the damage caused by chemicals, pollution, present in the shampoo, it may also increase moisture, luster, and shine, and possibly preventing hair loss. Coconut oil has principal fatty acid is lauric acid. It has a high affinity for hair protein which means it binds to protein and can easily penetrate inside the hair shaft. This makes it one of the best oils to reduce protein loss from both damaged and undamaged hair [26]. Castor oil when massage to the scalp, it's believed to boost the strength of the hair follicles; It promote hair growth as well as shield against hair loss. As contrast to other oil, castor oil can amplify hair growth by up to five times the usual rate. Mustard oil has the precise equilibrium of omega 3 acids and omega 6 fatty acids; it is enriched with Vitamin E and rich in antioxidants which increased its benefits to multifold. Enriched with alpha fatty acids mustard oil is a natural conditioner, massage of hair follicles gives hair's strength and shine, stimulates faster hair growth. Mustard oil has high erucic acid content, ( $\alpha$ -linolenic acid) ALA content, which helps in cleansing your scalp and shows antifungal action. Hibiscus flowers are used to clout premature graying of hairs, prevent hair loss, spilled ends, also aids hair growth from dormant hair follicles helping cover bald patches, and also combats dryness and dandruff [27]. Fenugreek seeds cure hair fall and strengthen your hair from root to tip. It is loaded with protein, ultimately helps to fight baldness. It is prominent a source of Nicotinic Acid, Lecithin which encourages hair growth, and, which energizes hair follicles [28]. Curry leaves are flourished with antioxidants which moisturize the scalp, remove dead hair follicles; the beta-carotene and protein content, in curry leaves worked as instrument in preventing hair loss and thinning of hair. Black cumin seed oil could assist to seal the moisture in individual hair shafts because it's rich in fatty amino acids, high amount of antioxidant and has been worked as hair growth promoter [16,17]. A combination of coconut oil and black seed oil was efficient enough in encouraging hair growth [16]. Camphor has a strong fragrance that helps in killing the lice, help to cure dandruff, and itchy scalp. It is a natural remedy to delay hair graying and improving your hair texture [19].

## CONCLUSION

As nowadays, it is a fast-developing segment with a massive scope of manifold boost in coming years. The use of bioactive ingredients, phytoconstituents in cosmetic formulations has a precious effect on body features and provides nutrients, which are crucial for sustaining healthy, attractive and gorgeous hairs. At last, it concluded that this herbal hair oil formulation has significant quality further standardization and biological screening needed for better understanding.

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## CONFLICTS OF INTERESTS

No.

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