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FORMULATION AND EVALUATION OF ORGANIC POLY-HERBAL HAIR OIL

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ABSTRACT

Humankind uses various products known as cosmetics to enhance elegance, to look young and charming. Thus, cosmetics play a keen role in human life. Cosmetology is defined as the science of alteration in appearance. Herbal cosmetics have burgeoning demand and in the world market and are inestimable gift of nature. There are wide spans of herbal cosmetic products to satisfy beauty regime and have less side effects when compared with synthetic drugs. Hair plays a very important role in enhancing the personality of humans as well as it acts as a protective appendage. The presence of number of phytochemical and natural constituents in the organic poly-herbal hair oil have dual work, one that the formulation is used as a cosmetic for hair-care and the other that the presence of phytochemical amend the hair care and protection, which naturally results in healthy hair. The present work is aimed to develop effective organic poly-herbal hair oil for daily use and to prevent various hair problems, including alopecia and scalp psoriasis. Four formulations were prepared using different types of oils, along with various herbs/parts of herb. These oils were subjected to evaluations for organoleptic properties, chemical and analytical basis. All four formulations were compared based on the result of evaluations and the effective one was selected as the best.

KEYWORDS: cosmetics, phytochemical, hair-care, organic poly-herbal hair oil.

I. INTRODUCTION

Nature is always a golden sign to show the prominent phenomena of coexistence. Natural products from plants, animals and minerals are basis for treating human diseases. Medicinal plants are presently in demand and their acceptance is increasing progressively. Undoubtedly, plants play an important role by providing essential services in ecosystems. Without plants, humans and other living organisms cannot live in a way living should be.[35]

A medicinal plant is any plant which, in one or more of its organs contains substances that can be used for therapeutic purposes, or which are precursors for semi-synthetic compounds. When a plant is designated as 'medicinal', it is implied that the said plant is useful as a drug or therapeutic agent or an active ingredient of a medicinal preparation

II. SIGNIFICANCE OF MEDICINAL PLANTS TO HUMAN BEINGS.

Many of the modern medicines are produced indirectly from medicinal plants, for example aspirin.

Plants are directly used as medicines by a majority of cultures around the world, for example Chinese medicine and Indian medicine.

Many food crops have medicinal effects, for example garlic.

Medicinal plants are resources of new drugs. It is estimated that there are more than 250,000 flowering plant species.

The cosmetic body art is argued to be the earliest form of a ritual in the culture of human-being. Humans always have used the cosmetics without any knowledge. For hunter gatherers in olden days, it meant to apply the mixture of urine and mud over the skin or using the ash which was made by burning shells of snails in order to colour their faces. Over the years, production processes, formulations and ingredients gave birth from small scale using natural ingredients, to huge production and inclusion of synthesis.

Hair oils are the cosmetics products which are applied on hair which promotes the luxurious hair growth, treatment of baldness, aggression of hair. Hair oil containing herbal drugs are usually called as hair tonic. Hair care products are categorized into two main categories, hair tonics and hair grooming aids. These are basically the extracts of medicinal plants in an oil base.

In this present study, a comparative study was attempted to formulate effective poly-herbal hair oil using indigenous and organic medicinal plants/parts based on the literature study. Various oils were selected for formulation using various organic herbs/parts and evaluate them and finally select the best of all.

III. MATERIALS AND METHOD

Table 01: Materials For The Formulation of.

S. No.	Name Of The Drug Source	Image	Essential Natural Constituents	Medicinal Uses
1.	**Bhringraj** (false-daisy) *Ecliptaprostrata*		Iron, calcium, proteins, Vitamins D E, Magnesium, polypeptides, steroids, sterols, flavonoids, Coumestans, triterpenes, glucosides, alkaloid	Increases blood circulation, Hair growth (due to alkaloid eclipta) Nourishment, Anti-Dandruff
2.	**Amla** (Indian gooseberry) *Phyllanthus emblica*		Vitamin C, Anti-oxidants, amino acid, citric acid, carbohydrates, proteins, minerals, tannins, Flavonoids.	helps in Hair growth, Treats scalp ailments (Due to presence of protein called collagen), Anti-dandruff, helps to get rid of follicle debris (due to Vit C)
3.	**Henna /Hina** *(Egyptian privet) Lawsoniainermis*		Lawsone, gallic acid, tannins, flavonoids, alkaloids, glycosides, anthraquinones.	Strengthening of hair, Natural colorant, Increase hair volume, Conditioner, Prevents dandruff / itchy scalp, anti- fungal
4.	**Aloe vera** *Aloe barbadensis*		anthraquinone glycosides, vitamins (vit B12), minerals, enzymes, polysaccharides, flavonoids, tannins sterols, saponins.	Moisturizer, treatment of psoriasis. anti- oxidant and antibacterial, Anti-hair fall (due to vit B12)
5.	**Neem leaves** (Indian lilac) *Azadirachta indica*		triterpenes, beta sitosterol tri and tetra sulphides, alkaloids, tannins, steroids, glycosides.	Prevents premature greying, Anti-dandruff, Anti-scalp itching, Conditioner, Treatment of lice.
6.	**Fenugreek seeds** *Trigonella foenum graecum*		folic acid, vitamins A, K & C, potassium, iron calcium, protein, flavonoids, tannins, glycosides, saponins, lecithin.	Hair replenishment (due to iron, protein, flavonoids) Hair smoothening, Prevents dandruff, Anti- fungal, Anti- inflammatory (flavonoids, saponins)
7.	**Hibiscus leaves and flowers** *Hibiscus rosa sinensis*		tannins, flavonoids, cardiac-glycosides, carbohydrates, proteins, alkaloids	Prevents hair loss by root-strengthening of hair (due to flavonoids) Increase hair volume, Prevents premature graying, Dandruff, Frizz, Split ends, Dryness, Breakage
8.	**Brahmi** (water-hyssop) *Bacopa monnieri*		Alkaloids (Brahmin, herpestine) betulinic acid, stigmasterol, saponins (Bacosides A&B)	Hair thickening, promotes hair growth, (due to bacoside A & B)
9.	**Curry leaves** *Murrayakoenigii*		Vitamins A, B2 A C, Monoterpenes, Flavonoids, anti- oxidants	Prevents hair fall and premature greying, Stimulates growth of hair follicles

10.	**Sweet Almond oil** *Prunus dulcis.*		fatty acids, carotenoids, procyanidins, tocopherol, vitamins B7 and E.	anti-oxidant, anti-inflammatory, anti-microbial, moisturiser, heat protection
11.	**Rosemary oil** *Salvia rosmarinus.*		anti-oxidants, triterpenoid acid, flavonoids, alpha- pinene, 1,8 cineole, camphor.	stimulates hair growth, prevents premature greying and dandruff, moisturizes dry and itchy scalp, antifungal
12.	**Coconut oil (Pure)**		Saturated fats- lauric acid (47%), myristic and palmitic acids, vitamins, minerals, plant sterols	Moisturises hair and scalp, reduces and prevents symptoms of scalp psoriasis

IMAGES OF DRIED HERBS/PARTS

CRUSHING OF HERBS/PART USING MORTAR AND PESTLE

IV. CLOTH - POUCH METHOD[6]

1. Collected all the organic herbs/parts required to develop the organic poly-herbal hair oil from MIPER Medicinal-garden.
2. shade-dried the collected herbs/parts individually in order to remove moisture content in them. Preferred shade drying over sun drying/ artificial drying to prevent the loss of active constituents by evaporation and also to prevent rancidity of formulation due to the presence of moisture.
3. Left the materials to dry till they lost all the moisture and were capable of being converted into dry powder.
4. After completion of drying in shade, we collected the dried herbs/parts individually and crushed them into individual coarse powders using mortar and pestle.
5.The prepared powders were passed through sieve no:16 and collected individually We placed the sieved individual coarse powders in clean muslin cloths and made them into small pouches individually by tying a knot, enclosing all the powder inside the muslin cloth as shown in Fig. No:32
6.The muslin cloth pouches containing coarse powders were hung in the sweet almond oil **(F1)** of 100ml, which was divided into equal volumes (100 ml of pure sweet almond oil was divided into 9 equal parts i.e., 11.1ml placed in each of 9 sterilised beakers). The oil was let to be heated at a temperature of 60ºC on a heating mantle as shown in the Fig.
7. The small pouches were allowed to hang in the oil, till the coarse powders, which were present in the pouches, were observed and believed that they released all their extracts into the oil or by observing if there is any change in colour of oil.
8. Mild temperature was preferred for the heating process so as to prevent the degradation of active constituents.
9. This process of extraction from each herb/part completed in 15min (depended upon the herb)
10. After the extraction process, all the oils infused with the extracts of herbs/parts were allowed to reach room temperature, collected and mixed together. Few drops of Rosemary oil were added for essence and mixed.

HANGING OF MUSLIN POUCHES IN OIL

11. Transferred the formulated organic poly-herbal hair oil into a clean, disinfected container. This oil was labelled as **F1**.
12. Similarly, **F2, F3** and **F4** were prepared, where **F2** was formulated using almond oil purchased from store, **F3** was formulated using pure coconut oil and **F4** was formulated using aloe vera enriched coconut oil, keeping the other ingredients intact.

POLY HERBAL HAIR CARE OIL

V. RESULTS AND DISCUSSION

Table No-02: Results of Phytochemical Evaluation.

S.NO	TYPE OF PHYTOCHEMICAL EVALUATION	F1	F2	F3	F4
1.	Test for Alkaloids	✓	✓	✓	✓
2.	Test for Glycosides	✓	✓	✓	---
3.	Test for Tannins	✓	✓	✓	✓
4.	Test for Proteins	✓	---	✓	✓
5.	Test for Starch	---	---	---	---
6.	Test for Carbohydrates	✓	✓	---	---
7.	Steroids and Triterpenoid	✓	---	✓	---
8.	Test for Flavonoids	✓	---	✓	✓

1. The organic poly herbal hair oil is one of the well-recognised hair treatments. The oil not only moisturises scalp but also reverse the condition of dry scalp and dry hair conditions. The oil provides numerous essential nutrients required to maintain the normal function of sebaceous glands and promotes hair growth naturally. In this dissertation, four hair oils were enriched using various herbal extracts of amla, aloe, almond oil, Bhringraj, brahmi, curry leaves, coconut oil, fenugreek, hibiscus, henna, neem and rosemary oil and evaluated so as to choose the best.
2. Formulation (F1) was prepared using sweet almond oil which is less viscous and has a burning point of 200 degree Celcius approximately, All the mentioned ingredients were bound to extraction and their active constituents were mixed with the oil. By the phytochemical evaluations performed, it is observed that all the phytochemical constituenrs have remained intact, except starch.
3. Formulation (F2) was prepared using almond oil purchased from local market. It is slightly viscous than pure sweet almond oil (F1). After performing phytochemical evaluations, it is observed that proteins, steroids, starch, flavonoids and triterpenoids were absent.
4. Formulation (F3) was prepared using pure coconut oil. Coconut oil has a burning point of 170 degree

Celcius approximately. After phytochemical evaluation, is has been observed that starch and carbohydrates were absent.

5. Formulation (F4) was prepared using aloe vera enriched coconut oil. Absence of starch, glycosides, carbohydrates, steroids, triterpenoids was observed after performace of phytochemical evaluation.

Table no-03: RESULTS.

S.NO	EVALUATION PARAMETER	F1	F2	F3	F4
1.	Colour	Greenish brown	Light- greenish brown	Greenish brown	Greenish brown
2.	Odour	Characteristic	Characteristic	Characteristic	Characteristic
3.	Texture	Smooth, non-gritty	Smooth, non-gritty	Smooth, non-gritty	Smooth, non-gritty
4.	Spreadability	Excellent	Good	Moderate	Moderate
5.	pH	6.85	6.98	6.97	6.89
6.	Primary skin irritation	No irritation	No irritation	No irritation	No irritation
7.	Skin sensitivity	No irritation	No irritation	No irritation	No irritation
8.	Specific gravity	0.52	0.781	0.9731	0.8661
9.	Acid value	1.26	2.97	2.1	1.789
10.	Saponification value	210	228	253	231
11.	Viscosity	0.685 poise	0.75 poise	0.912 poise	0.98 poise
12.	Refractive index	1.451	1.396	1.512	1.44
13.	Kries test	No rancidity	No rancidity	No rancidity	No rancidity

1. Various evaluation parameters like colour, odour, skin sensitivity, viscosity, pH, primary skin irritation, acid value, saponification value, rancidity test and anti-microbial activity were performed on all the formulations.
2. The results of Kries test have shown no appearance of pink colour in all the formulations of organic poly herbal hair oil. Hence there is no incipient rancidity.
3. By the results of evaluation, it is confirmed that formulation F1 is effective as it is less viscous, has excellent spreadability, and has expected values for viscosity, refractive index, acid value, saponification value and other parameters.

VI. CONCLUSION

In last decades, there has been an increase in the usage of herbal cosmetics by human kind. Compared to the other beauty products, natural cosmetics are safe to use. In the present experimental study, it has been proved that we can formulate effective organic poly herbal hair oil using several herbal ingredients which can treat various hair issues like hair fall, scalp psoriasis, lice treatment, alopecia, and dandruff. When compared to other 3 formulations, the F1 has shown more effectiveness. Hence F1 was chosen as best of all. The evaluations for hair growth and anti microbial activity will be performed in further study.

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