



FORMULATION AND PHYSICO CHEMICAL EVALUATION OF HAIR OIL WITH *PUNICA GRANATUM* L. AND *MURRAYA KOENIGII* (L.) LEAVES EXTRACT

¹Shruti Bisen , ²Aishwarya Rahangdale, ³Achal Sukare, ⁴Sejal Khandait, ⁵Mangesh Lilhare

¹Student, ²Student, ³Student, ⁴Student, ⁵Guide
Gondia College Of Pharmacy Chulod road, Gondia, India

Abstract: Hair plays a vital role in the personality of human which are the eruptions from the skin. Herbal formulations always have lesser or no side effects comparatively with synthetic. The aim of present study involves preparation of herbal hair oil using the herbal ingredients like, Pomogranate (Leaves), Hibiscus(leaves), Curry Leaves (Leaves), Coconut Oil. Based on the above observations, mixture of crude drugs was prepared in the form of herbal hair oil by boiling method. We have used two formulas using different herbal drugs and all the formulation are showing hair promoting activity with some of other beneficial activities like antidandruff activity, improves blood circulation to the scalp and roots, reduce hair pigmentation, antifungal activity, reducing the whitening of the hair. The main ingredient which we have used in hair oil is *Punica granatum* L. leaves. And the leaves extract of *Punica granatum* is rich in biotin which is very beneficial for our hair. And other efficient herbs we have used like Hibiscus leaves, Curry Leaves (Leaves) coconut oil in the form of Herbal oil using boiling method. These ingredients are rich in various sulphur content, vitamins, proteins, antioxidant and so many other constituents which are important for promoting Hair growth.

The main objective of this work is to develop such an herbal hair oil formulation which can resolve the problem related to the hair growth & other hair diseases. The formulated herbal oil was evaluated by using various parameters such as organoleptic properties, specific gravity, stability, viscosity, Acid value, pH etc. and the value obtained from it are found to be similar to that of the standard values like there is no sedimentation, no grittiness and shows satisfying organoleptic properties and the results were determined and are reported in this work.

Keywords: Hair oil, *Punica granatum*

INTRODUCTION :

Ayurveda is an oldest system of medicine bestowed on humanity by great rishis (sages) of India, which has influence all other system of medicines either directly or indirectly, the term Ayurveda is composed of two words; Ayur meaning life, and Veda meaning science. Thus, Ayurveda is the “science of life”. In Ayurvedic medicine, Herbs are used as a integral part of healthcare system. The main objective of Ayurveda is maintenance and promotion of positive health and cure of diseases through medicine, dietary restrictions and regulated lifestyle. Herbal drugs obtained from plants are believed to be much safe in the treatment of various diseases. The history of herbs and spices is as the long as the history of mankind. People have used these plants since earliest times. Some herbs have the power to change our physiological functioning, they have revolutionized medicine, and created fortunes for those who grow, process and treat them, and in many cases have assume social and religious significance. Herbs have change the course of history and in economics terms have greater importance as ingredients in food, medicine, perfumery, cosmetics and garden plants.

Many medicinal herbs are also grown for a range of purposes.⁵ Medicinal plants have been a major source of cure for human diseases since time immemorial. Medicinal plant contain numerous biologically active compounds which are helpful in improving the life and treatment of diseases. Compounds such as carbohydrates, proteins, enzymes, fats, oils, terpenoids, flavonoids, sterols simple phenolic compounds etc. Natural products are the source of synthetic and traditional herbal medicine and are still the primary healthcare system. The presence of various life sustaining constituents in plants made scientists to investigate these plants for their uses in treating certain infective diseases and management of chronic wound.⁶ Hair plays an important role in human life. Human hair is made up of protein called keratin, which has high sulphur content. Hair is an important part of the body originated from ectoderm of the skin and acts as protective appendage on the body which are filamentous biomaterial made of a protein called keratin. In the present study the selected medicinal plants were examined for sulphur content and based on the highest and lowest sulphur content the herbal oil was prepared and evaluated for physico chemical properties. Physico-chemical properties of oil like colour, odour, acid value, iodine value, saponification value indirectly influence the quality of oil.⁷ Natural hair oils are the hair care products which are rich in Vitamins, Minerals and Fatty acids which are the vital elements in the human cells and these elements are also present in the skin and hair of our body.⁸

Botanical Description

(1) Punica Granatum (Leaves)



Common name :- Anar, Dalimb , *Punica multiflora* Hort.

Family: -Lythraceae, Punicaceae .

Plant part used:- Leaves.

Medicinal properties: -Antidandruff, Antioxidant , Digestion , Cardiovascular protection , Increase Hair Strength , etc.

Medical use:- The leaves of *Punica granatum* contains Antioxidant for protection against the damaging effect of oxidative stress and prevent the accumulation of dirt on the scalp. Through the stimulation it improves blood flow to the scalp , thus promoting , healthier hair growth .

Chemical constituent :-

- 1) Flavonols and flavones
- 2) Catechin
- 3) Kaempferol
- 4) Quercetin
- 5) Apigenin

(2) Murraya koenigii (Leaves)

Common Name- Karipatta, Curry leaves, Daunkari

Family-Rutaceae

Plant part used- Leaves

The species name commemorates the botanist Johann König. The genus Murray commemorates Swedish physician and botanist

Johann Andreas Murray who died in 1791. Hence the botanical name of the curry leaves is *Murraya Koenigii*.

Medicinal properties: Antioxidant

Medicinal use: promote hair growth and premature graying of hair

Chemical Constituents :

- 1) Allo-ocimene
- 2) Geranyle acetate
- 3) Terpinene
- 4) Linalool
- 5) Myrcene

(3) Hibiscus rosa-sinensis

Common Name: Chinese Hibiscus, China Rose, Orhul

Family: Malvaceae

Plant part used: Flower

Medicinal properties: Anti-inflammatory, Antioxidant and Anti-bacterial

Medicinal use: Hibiscus is a rich source of hydroxy acids that can make your skin healthy and beautiful. Here are some amazing hibiscus benefits for skin and hair, hibiscus is widely accepted in India for hair growth and is often used in herbal hair oils. Herbal hair oils are typically a combination of herbal extracts, such as hibiscus, mixed with a carrier oil base, such as almond oil, coconut oil, etc.

Chemical Constituents:

- 1) Tannins
- 2) Saponins
- 3) Flavonoids
- 4) Terpenoids
- 5) Phenolic acid

(4) Coconut oil:



Coconut Oil used to relieve dandruff, restore luster to dry and damaged hair, tame frizz, and protect hair against styling damage. It is used moisturizes the hair, avoid breakage of hair, blood flow and blood circulation, antibacterial agent. It is packed with fatty acids (especially lauric acid) that can improve hair health.

Coconut Oil can be highly beneficial for growing hair longer. It helps to moisturize the hair, which prevents breakage. Furthermore, it helps prevent protein loss and offers protection against wind, sun, and smoke. Coconut Oil can be used as a Natural Shampoo.

Table 01. Taxonomical Classification of Coconut Oil

Rank	Scientific name & Common Name
Kingdom	Plantae
Clade	Tracheophytes
Family	Arecaceae
Genus	Cocos L.
Order	Arecales
Species	C.nucifera
Biological name	Cocos nucifera
Other names	Fossil oil. Grease. Lubricating oil. Calamus oil. Chinese wood oil.
Use	Moisturizers dry hairs. To prevent dandruff.

Material and methods :

Collection of Plant material :-

Punica granatum leaves, *Murraya Koenigii* leaves, *Nigella sativa* seeds, and *Hibiscus rosa-sinensis* leaves, were collected from the local area of the Gondia District. Coconut oil is available in Gondia college of pharmacy chulod, Gondia District. Herbarium sheet of plant specimen is certified by Department of botany, D.B. Science Gondia.

Drying of plant material

The collected plant parts were dried in the shade for around 5-7 days so as to completely remove their moisture content. The dried plant parts were subjected to the next step grinding. Following grinding, the plant parts in powder form are sieved through a cheese cloth. The ingredients for the oil formulations, were stored in air tight plastic bottles.

Physico-chemical Evaluation of formulated hair oil

Organoleptic properties

Color, odour, skin irritation was determined manually. Oil was applied on hand and exposed to sunlight for 5 mins to check for any irritation over skin.

pH

The pH of hair oil was determined using pH meter.

Acid value: Preparation of 0.1 molar solution

Weight 0.56g KOH pellets and dissolved in 100 mL of distilled water and stirred continuously. The prepared 0.1 molar KOH solution was filled in the burette.¹²

Saponification value

To accurately weighed 1mL of oil in a 250 mL of conical flask, 10mL of ethanol: ether mixture (2:1) was added. To this, 25 mL of 0.5 N alcoholic KOH was added and was kept undisturbed for 30 mins. And the flask was cooled. This solution was titrated against 0.5 N using phenolphthalein indicator. Similarly, the blank titration was performed without taking oil (sample). Amount of KOH in mg used was calculated using phenolphthalein indicator.

Amount of KOH in mg used was calculated using formula,

Saponification value = $56.1(B-S) N/W$

Where,

B= Volume in mL of standard Hydrochloric acid required for the blank.

S= Volume in mL of standard Hydrochloric acid required for the sample.

N= Normality of standard Hydrochloric acid.

W= Weight of the oil taken in gram for the test.

Viscosity: The viscosity was determined using Ostwald's viscometer.

RESULT

The prepared formulation of hair oil is dark green in color. This oil is medicated oil which is beneficial for hair growth and it does not have any side effects. From the study it was found that curry leaves showed the maximum presentation of sulphur content while *Punica granatum* showed minimum percentage of sulphur content. The oil was prepared with different kinds of herbs, all the herbs which have specific role in the formulation like antidandruff, antibacterial, hair growth stimulants, and to promote the hair growth this all the properties which help to regrowth and prevent the graying of hair. The prepared formulation of oil is used to hydrate the hair and prevent frizz.

CONCLUSION

Hair oil is one of the most well recognized hair treatment. Hair oil is not only moisturizes scalp but also reserves dry scalp and hair condition. It also provides numerous essential nutrients required to maintain normal function of sebaceous gland and promote natural hair growth. It was concluded from the study that sulphur present in the plants play a significant role in helping the growth of the human hair as a sulphur is the basic chemical for building up of amino acids. The hair oil which was prepared with *Murraya* was better in all the parameters compared to the oil with *Punica granatum*.

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