



FORMULATION AND EVALUATION OF POLYHERBAL HAIR OIL

Mr. Kiran R. Gore , Mr. Rohan S. Khote , Miss. Manisha K. Pakhare
Student , Student , Assistant Professor

Mahadev Kanchan College Of Pharmaceutical Education And Research
Uruli Kanchan, Tal.Haveli Dist.Pune, 412202, Maharashtra, India.

Abstract:-

Hair plays a very important role in the personality of humans and for their cure by using lots of cosmetic products. Herbal formulations always have activity and comparatively lesser or no effects with synthetic. Hair formulation of Emblica officinalis (Fruits), Eclipta alba (Leaves), Trigonella foenumgraecum (Seeds), Murraya koenigii (Leaf), Hibiscus rosasinensis (Flowers) in different concentrations in the form of herbal oil were studied for their hair growth, refractive index, acid value, saponification value. In medicine, herbs are used as an integral part of health care system. Besides, herbs are also used for the body for preparation of various colors. The formulated herbal oil was evaluated and various parameters such as viscosity, saponification value, pH etc.

Keyword:-

Herbal Hair Oil , Anti – Dandruff, Hairfall, Hair growth, Evaluation.

Introduction:-

Ayurveda literally means "science of life", and is considered to be the traditional medicine of India. In Ayurvedic medicine, herbs are used as an essential part of health care system. The synthetic chemical compounds have replaced many Ayurvedic plant products, the safety and efficacy of the natural products could not find suitable match. Herbal drugs obtained from plants are believed to be much safer in the treatment of various diseases. Hair is a protein that grows from follicles found in the dermis. Hair is one of the most important of our body that improves the overall appearance of a person. The hair fall, Dandruffs, split ends, grey hair are the major problem associated with hair.[1] To overcome these problems, we use lots of cosmetic products. Among these, hair loss (alopecia) is a universal problem having affected both sexes of all races to different extents for as long as mankind has existed. The hair care industry has become aware of this and delivering active products directed towards meeting this customer demand. In traditional Indian system of medicine many plants and herbal formulations are used for hair growth promotion as well as improvement of quality of hair.[15]

Minerals and vegetable oils are used to make a variety of commercial and traditional hair oils. Coconut oil is a common ingredient. Other vegetable sources include almond, argan, babassu, burdock, Castor, and tea seed.

Natural oils are used more commonly as cosmetic products on the scalp. Natural oils come from natural resources that are very high in nutrients such as vitamins and fatty acids.

Coconut oil

oil has properties that reduce protein loss in hair when used before and after wash.[7] Coconut oil is known to have lauric acid, which is a type of fatty acid that may penetrate the hair shaft due to a low molecular weight and linear conformation.

Argan oil

Argan oil originates from Morocco and is known for a conditioning effect that leaves hair soft and relieves frizz.

Avocado oil

Avocado oil is rich in nutrients. It has a high concentration of vitamin E, which is an antioxidant that may decrease hair loss and encourages hair growth.

Other oils

Oils including almond oil, grapeseed oil, jojoba oil, olive oil may promote hair elasticity and help prevent dryness and hair damage.

Oils on the hair can reduce the absorption of water that damages hair strands through repeated hygral stress as hair swells when wet, then shrinks as it dries. Oils also protect cuticle cells in the hair follicle and prevent the penetration of substances like surfactants. Saturated and monounsaturated oils diffuse into hair better than polyunsaturated ones.

The hair fall, dandruffs, split ends, gray hair are the major problem associated with hair. Hair loss is distressing condition for an increasing number of men and women. Hair loss is or alopecia, is a common patient problems/complaint.

Objective :-

To prevent the dandruff, spit ends, and dull hair.

To promote the hair growth and smoothness that is req for beautifying and attractions of the hair.

To supplement the hair with vital nutrients such as vitamins, and materials.

To prevent hair from damage and loss caused by pollution.

Identification of ingredient:-

1. Eclipta alba:-

Kingdom	Plantae
Subkingdom	Viridiaeplantae
Division	Tracheophyta
Subdivision	Spermatophytina
Class	Magnoliopsida
Order	Asterales
Family	Asteraceae
Genus	Eclipta
Species	Alba

Table no. 1

Biological source :-

Eclipta alba family composite.

Chemical Constituents:-

The principal constituents of Eclipta alba are coumestan derivatives like wedololactone[1.6%], demethylwedololactone, desmethyl-wedololactone-7glucoside and other constituents are ecliptal, β -amyrin, luteolin-7-O-glucoside, hentriacontanol, heptacosanol, stigmaterol.

Plant part used - leaf

Uses:-

- Eclipta hair oils is indicated in hair fall, premature greying and various dermatological disease of scalp.
- Eclipta alba stimulates the formation of hair follicles.

2. Amla:-

• Kingdom	• Plantae
• Division	• Magnoliphyta
• Class	• Magnoliopsida
• Order	• Euphorbiaceae
• Family	• Euphorbiaceae
• Genus	• Phyllanthus L
• Species	• Phyllanthus EL
• Botanical Name	• Emblica Officinalis

Table no. 2

Biological source:-

- Dried fruits of phyllanthus embilica.

Chemical Constituents:-

It is highly nutritious and is an important source of vitamin C, minerals, and amino . The edible fruit tissue contains protein 3-fold and ascorbic acid 160-fold compared to that of the . The fruit also contains considerably higher of most minerals and amino acids apples. The pulpy portion of fruit, dried and from the nuts contains: gallic acid 1.32%, , sugar 36.10%; gum 13.75%; albumin ; crude cellulose 17.08%; mineral matter ; and moisture 3.83%.

Plant part used – fruit**Uses:-**

- Strengthen the scalp and hair.
- Reduce premature pigment loss from hair, or greying.
- Stimulate hair growth.
- Reduce hair loss.

3. Neem:-

• Kingdom	• Plantae
• Subkingdom	• Tracheobionta
• Super division	• Supermatophyta
• Division	• Magnoliophyta
• Class	• Magnoliopsida
• Subclass	• Rosidae
• Order	• Sapindales
• Family	• Meliaceae
• Genus	• AzadirachtaIndica A. Juss

Table no. 3**Biological source:-**

Neem consists of the fresh or dried leaves and seed oil of AzadirachtaIndica Indica.

Chemical Constituents:-

Main chemical components are nimbin, azadirachtin, azadirachtol, azadirachtol, desacetynimbinene,nimbandiol, quercetin,beta- sitosterol, n- hexacosanol,nimbiol and nimocin.

Plant part used – leaf

Uses:-

- Stimulates hair growth.
- Helps with dandruff and itchiness.
- Condition dry hair.

4.Hibiscus flower:-

• Kingdom	• Plantae
• Subkingdom	• Tracheobionta
• Division	• Magnoliophyta
• Sub division	• Spermatophyta
• Class	• Magnoliopsida
• Sub class	• Dilleniidae
• Order	• Malvales
• Family	• Malvaceae
• Genus	• Hibiscus L- Rosemallow

Table no.4**Biological source:-**

Dried Leaves of hibiscus flower.

Chemical Constituents:-

Approximately 15%-30% of the plant is made up of acids, including citric, malic, tartaric acids allohydroxycitric acid lactone—i.e. hibiscus IPacid, which is specific to this plant. Other chemical Constituents are many, including alkaloids, L- ascorbic acid, anthocyanin, Beta-carotene, Beta-sitosterol, citric acid, polysaccharides arabin and arabinogalactans, quercetin, gossypetin and small amount of galactose, arabinose, glucose, xylose, mannose and rhamnose.[16]

Plant part used - flower leaf**Uses:-**

- Stops hair loss.
- Makes your hair look healthy and lustrous.
- Hibiscus hair growth from dormant hair follicles helping cover bald patches and also combats dryness and dandruff.

5. Curry Leaves:-

Kingdom	Plantae
Subkingdom	Tracheobionta
Division	Magnoliophyta
Super division	Supermatophyta
Class	Magnoliopsida
Order	Sapindales
Family	Rutaceae
Genus	Murraya j. Koenig ex L
Species	Murrayakoenigii spreng

Table no.5

Biological source:-

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 Murrayakoenigii.

Chemical Constituents:-

Murrayakoenigii is very rich source of organic compounds with different chemical composition such as alkaloids, flavonoids carbohydrates, and sterol is present in the plant extract prepared in solvents such as petroleum ether, ethyl acetate, chloroform, ethanol and water.

Plant part used - leaf.

Uses:-

- Curry leaves used as hair mask gives you bouncy and shiny hair.
- Anti dandruff Curry leaves when used regularly remove dead hair follicles, which is one of the reason behind dandruff.

6. Fenugreek seeds:-

Kingdom	Plantae
Phylum	Tracheopvtes
Subphylum	Angiosperm
Class	Eudicots
Subclass	Rosids
Order	Fabales
Family	Fabaceae
Genus	Trigonella
Species	T.foenum – graecum

Table no.6

Biological source:-

Methi consists of dried ripe seeds of trigonellafoenumgracum.

Chemical Constituents:-

Trigogenin, neotrigogenin, diosgenin, yamogenin, 4-hydroxyisoleucine, vitexin, isovitexin, saponaretin, homoorientin, vicenin-1, vicenin-2 and two flavonoid glycosides quercetin and luteolin and steroidal saponins have been isolated from seeds.

Plant part used – seeds.

Uses:-

- Fenugreek - or methi - seeds are frequently used as a natural home remedy for thinning hair and other related condition, such as dandruff or a dry, itchy scalp.
- Beauty publication and other popular media sources claim that they're the secret to growing thick , shiny hair.

7. Coconut oil:-

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivison	Spermatophyta
Division	Magnoliophyta
Class	Liliopsida
Subclass	Aresidae
Order	Arecales
Family	Arecaceae
Genus	Cocos L

Table no. 7

Biological source:-

Coconut oil is the oil expressed from the dried solid part of endosperm of coconut, *Cocosnucifera L.*, Belonging to family *Palmae*.

Chemical Constituents:-

Coconut obtained from the hard, dried endocarp consists of a mixture of triglycerides of saturated fatty acids. The oil contains about 95% of

saturated fatty acids with 8 and 10 carbon atoms. It shows the presence of caprylic acid, 2%; capric acid, 50–80%; lauric acid, 3%; and myristic acid about 1%. [10]

Plant part used - fruit.

Uses:-

- Coconut oil is used to improve hair and scalp health.
- It helps to get rid of some types of fungal infections.
- Helps to heal or prevent dandruff and other fungi on the scalp.

Formulation of Polyherbal hair oil:-

For formulation of herbal hair oil following all ingredients taken in given amount. Precisely all the dried and fresh herbs such as hibiscus flower leaf, amla, neem leaf, *Eclipta alba*, Fenugreek seeds, Curry Leaves and Coconut oil were weighed and taken. Those Ingredient boiled for 30 min of continuous heating and filtered through dry clean cloth. and placed into the dry plastic bottle and labelled.

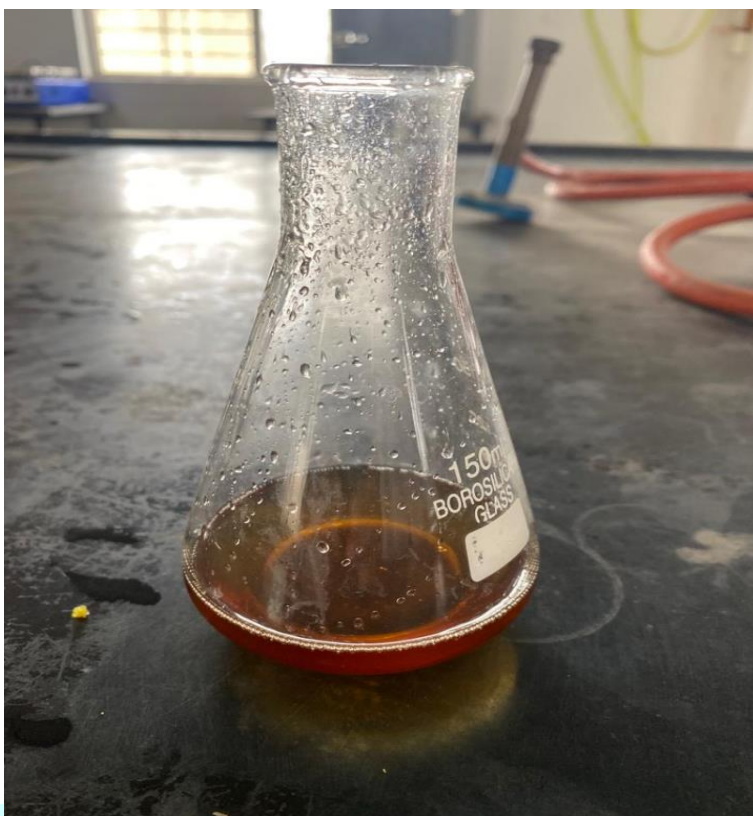


Fig :- formulation of Polyherbal hair oil

Formula for herbal oil:-

Sr.no.	Ingredients	F1	F2	F3
1.	Hibiscus flower leaf	5gm	10gm	20gm
2.	Eclipta alba leaf	3gm	5gm	10gm
3.	Amla	3gm	5gm	10gm
4.	Curry leaf	2gm	4gm	8gm
5.	Fenugreek seeds	3gm	5gm	10gm
6.	Neem leaf	2gm	3gm	5gm
7.	Coconut oil	10ml	50ml	100ml

Table no. 8

Evaluation of Polyherbal hair oil:-

Sensitivity Test:-The prepared herbal hair oil was applied on 1 cm skin of hand and exposed to sunlight for 4-5 min.

Saponification Test:-Accurately weighed 1 mL of oil into a 250 mL of conical flask and 10 mL of ethanol : ether mixture (2 : 1) was added. To this flask 25 mL of 0.5 N alcoholic KOH was. Kept the flask for 30 min. and the flask was cooled. The cooled solution was titrated against 0.5 N HCl using phenolphthalein indicator. Similarly the blank titration was performed without taking oil (sample). Amount of KOH in mg used was calculated.

PH:-The pH of herbal hair oil was determined using pH meter.

Sensitivity Test:-Take the specific gravity bottle, rinsed it with distilled water, dry it in oven for 15 minutes, cool, closed it with cap and weigh it (a). Now fill the same specific gravity bottle with the sample and closed it with cap and again weigh it (b). Determine the weight of sample per milliliter by subtracting the weight (b-a).

Viscosity:-Viscosity was determined using Ostwald's viscometer.

Result and Conclusion:-

The prepared Polyherbal hair oil using the above mentioned ingredients was evaluated for the following parameters and the results are tabulated.

Physical Evaluation parameter:-

Sr.no	Parameter	F1	F2	F3
1.	Colour	Yellowish brown	Yellowish brown	Yellowish brown
2.	Odour	Characteristic	Characteristic	Characteristic
3.	PH	5.95	5.78	5.53
4.	Acid value	9.452	14.366	16.85
5.	Saponification value	18.659	27.368	24.785

Table no.9

This research provides guideline on the use of herbal ingredients on the preparation of Herbal Hair oil having minimal or no side effects. Herbal formulation provide best vitamins, antioxidants, essential oil, and also provides nutrients of hair growth. These formulation maintaining good hair growth of hairs, stopping hair loss, reduces dandruff of hairs, also shining of hairs.

Reference:-

1. T.Usha Kiran Reddy, S.Rajesh, G. Sindhi, B. Aruba; Herbs used in Formulating poly herbal Hair oil – A Review ; IAJPS ; 2017; 4 (06) ; 1527 – 1539.
2. Satish Chand Saini, and Dr.Gopu Bala Show Reddy; A Review on Curry Leaves (*Murraya Koenigii*) versatile Multi – potential Medicinal plant ; AJPCT; 2015; 3 (04) ; 363 – 368.
3. Muthulingam Nissan , Partisan Subramanian ; *Murraya Koenigii* (Curry Leaves) – A review on its potential ; International Journal of pharma Tech Research ; 2015 ; 7 (4) ; 566 – 572.
4. Aradhana Chaudhari, Aaditya Singh ; Review on Multipotential Medicinal Plant *Murraya koenigii* (Linn. Spreng) ; Journal of pharmaceutical sciences and Research ; 2019 ; 11 (7) ; 2670 – 2675.
5. Ahmad Eid , Nidal Jaradat , Nagib Elmarzugi ; A Review of chemical Constituents and traditional usage of Neem plant (*Azadirachta Indica*) ; PMPJ ; 2017 ; 2 (2) ; 75 – 81.

6. Santosh Kumar Srivastava , Babita Agrawal , Akhilesh Kumar and Archana Pandey ; phytochemicals of AzadirachtaIndica source of Active Medicinal Constituents used for cure of various Diseases : A Review ; Journal of scientific Research ; 2020; 64 (1) ; 385 – 390.
7. Asmaa Mission ; An update review on Hibiscus Rosa sinensis phytochemistry and Medicinal uses ; Ayurvedic and Herbal Medicine ; 2018 ; 4 (3) ; 135 – 146.
8. Yadav Kapil Deo , Reddy KRC ; Critical review on pharmaceutical properties of Brahmi ; International Journal Of Ayurvedic Medicine ; 2013 ; 4 (2) ; 92 – 99.
9. Budhaditya Ghosh , Indrani Chandra , Sabysachi Chartered ; Fenugreek (Trigonella Foenum – graecum L.) and it's necessity (Review paper) ; Fire Journal Of Engineering and Technology ; 2015 ; 1 (1) ; 60 – 67.
10. Nasiruddin Khan , Multi – It – Rehman and Khurram Wazir Khan ; A study of chemicals composition of Cocos Nucifera L. (Coconut) water and Its usefulness As Rehydration fluid ; Pak. J. Bot ; 2003 ; 35 (5) ; 925-930.
11. Adekunle Amoo ; Effect of roasting on the chemical composition of coconut (cocos nucifera) seed flour and oil ; Journal of food , Agriculture and Environment ; 2004 ; 2 (3 & 4) ; 18 – 20.
12. Aher RR, Belge SA , Kadam SR , Kharade SS , Nidal AV and Yeole PT ; Therapeutic Importance of Fenugreek (Trigonella Foenum – graecum L..) : A Review ; Journal of plant science and Research ; 2016 ; 3 (1) ;2349 – 2805.
13. Sandip Kumar Khurana , Ruchi Tiwari , Khan Sharun , Mohd.qbal Yattoo , Mudasir Bashir Gugloo , and Kuldeep Dhama ; Khurana et all. J pure Appl Microbiol ; 2019 ; 13 (4) ; 1995 – 2012.
14. Prof. Dr Ali Esmail Al – Snafi ; Chemical Constituents , Therapeutic Importance of Hibiscus rosa – sinensis – A Review ; ISOR Journal of pharmacy ; 2018 ; 8 (7) ; 101- 119.
15. Kripa Adhikari , Sandip Bhandari , Dikshya Niraula and Tiban Shrestha ; Use of neem (AzadirachtaIndica A. Just) as a biopesticide in agriculture : A review ; Journal of Agriculture and Applied Biology ; 2020 ; 1 (2) ; 100 – 117.
16. Kakali Datta, Anand C. Birdman ; Eclipta alba extract with potential for hair growth promoting activity ; 2009 ; 124 (3) ; 450-456.
17. Neha N. Jagatap ; Formulation and Evaluation of Polyherbal Oil ; International Journal of Scientific Research In Science and Techolo ; 2021 ; 8 (4) ; 690-697.
18. Pushpendra Kumar Jain, Debajyoti Das, Puneet Jain ; Evaluation Hair Growth Activity of Herbal Hair Oil ; International Journal of Pharm Tech Research ; 2016 ; 9 (3) ; 321-327.
19. K. Sudheer Kumar, S.Gomathi, S. Seetaram Swamy ; Formulation and Evaluation of Polyherbal Hair Oil - An Economical Cosmetic ; International Journal of Advanced Research In Medical and Pharmaceutical Sciences ; 2016 ; 1 (2) ; 2455- 6998.
20. Mr.Saurabh Rajkumar Jadhav. Mr. Bihar nitin katkar Mr hrishikesh waman sawant Miss.ruchita arun bhoir Miss. Kadambari arun jogale ; Evaluation and Preparation of Herbal Hair Oil with Some Fresh Herbs ; International Journal of Pharmaceutical Research and Application ; 2021 ; 6 (3) ; 906-916.