



## FORMULATION AND EVALUATION OF POLYHERBAL HAIR OIL

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**ABSTRACT:-** Polyherbal phrasings always have lower or no sideeffects comparatively with synthetic. The end of present study involves medication of Polyherbal hair oil painting using the herbal constituents like. Hibiscus, Neem, Curry leaves, Tulsi, Fenugreek seeds, Amla, Eucalyptus leaves, Coconut oil painting, and Almond Oil. Grounded on the below compliances, admixture of crude medicines was prepared in the form of Polyherbal hair oil painting by boiling system. We've used Sevan formulas using different herbal medicines and all the expression are showing anti-hairfall property with some of other salutary conditioning like anti-dandruff exertion, improves blood rotation to the crown and roots, reduce hair saturation, anti-fungal exertion, reducing the whitening of the hair. The formulated Polyherbal oil painting was estimated by using colorful parameters similar as Organoleptic parcels, specific graveness, stability, density, Acid value, pH etc. and the value attained from it are set up to be analogous to that of the standard values like there's no sedimentation, no grit and shows satisfying organoleptic parcels and the results were determined and are reported in this work.

**Keywords:-** Hair oil, herbs, formulation, preparation, evaluation, results and discussion.

### INTRODUCTION:-

Expression and evaluation of polyherbal hair oil painting. Preface Hair is an epidermal outgrowth which is one of the vital corridor adding the overall fineness of the body.<sup>(1, 2)</sup> Hair fall, dandruff, lice, spilt ends, slate hair are many problems involved with hair faced by mortal. To overcome these, mortal takes numerous measures by applying numerous cosmetics for each. Hair oil painting is one among them used to break nearly all of these problems. Herbal cosmetics are in high demand due to the adding interest of humanity towards them because they're more effective with o or lower side goods, fluently available constituents etc.<sup>(3)</sup> Hair care cosmetics are now added with sauces and they're well recognised compared with synthetic bones

. Herbal hair oil painting is more favored and is used in numerous affections of hair. They promote hair growth, ameliorate fineness of hair and help hair fall. Hair oil painting not only promotes hair growth they also give necessary humidity to the crown rendering in .The present work was aimed to prepare and estimate a polyherbal hair oil painting containing sauces like curry leaves, neem, hibiscus flower, fenugreek seeds, in coconut oil painting and almond oil painting. All these sauces have well known traditional eventuality in the treatment of hair care.<sup>(4)</sup> Hair loss problem is of great concern to both males & ladies & the main problems associated with hair loss are hair fading, dandruff & falling of hair. Colorful synthetic drugs are available for hair loss which doesn't treat permanently & also shows severe side effects. Herbal hair oil painting not only moisturizes crown but also converse dry crown and dry hair conditions. It provides multitudinous essential nutrients needed to maintain normal functions of the sebaceous gland and promote natural hair growth. Hair canvases are the hair care phrasings applied for cure of hair diseases similar as baldness, greying of hairs, hair falling, and blankness of hairs.<sup>(18)</sup> A plethora of sauces have been employed for .Hair oiling is the practice of pouring oil painting onto hair and puffing it into the crown to increase humidity, luster and shine. Hair oiling may soften the hair and give vitamins and minerals that get stripped from frequent washing. Herbal hair oil painting are natural oil painting products with essential parcels to treat hair problems like thinning of hair and dry or .Various sauces like Neem, Amla, Hibiscus, etal. Can be useful in hair care. Amla is rich in vitamin C, tannins and minerals similar as phosphorus, iron and calcium which provides nutrition to hair and also causes darkening of hair.<sup>(5)</sup> Hibiscus consists of calcium, phosphorus, iron, vitamin B1, riboflavin, niacin and vitamin C, used to stimulate thicker hair growth and prevents unseasonable graying of hair. Neem oil painting is used to nourishes the dry crown, and its antifungal agents help to treat dandruff. Curry leaves oil painting helps to reduce hair fall and prevents early graying of hair. Tulsi helps maintain humidity in your crown and improves blood rotation, reduces itchiness and blankness.<sup>(6)</sup>

**HUMAN HAIR:-**

Human hair has about 65- 95 of its weight in proteins, more 32 of water, lipid colors and other factors. Chemically, about 80 of mortal hair is formed by a protein known as keratin, with a high grade of sulfur. Keratin is a laminated complex formed by different structures, which gives the hair strength, inflexibility, continuity, and functionality. The physicochemical parcels and shape of the hair is the direct result of the association of its colorful structural rudiments, proteins being the most significant. Hair shape is defined in the hair follicle large hair follicles produce “ terminal ” hairs( crown), small follicles produce fine “ vellus ” hairs( body hair), twisted follicles produce curled hair in all races.<sup>(7)</sup>

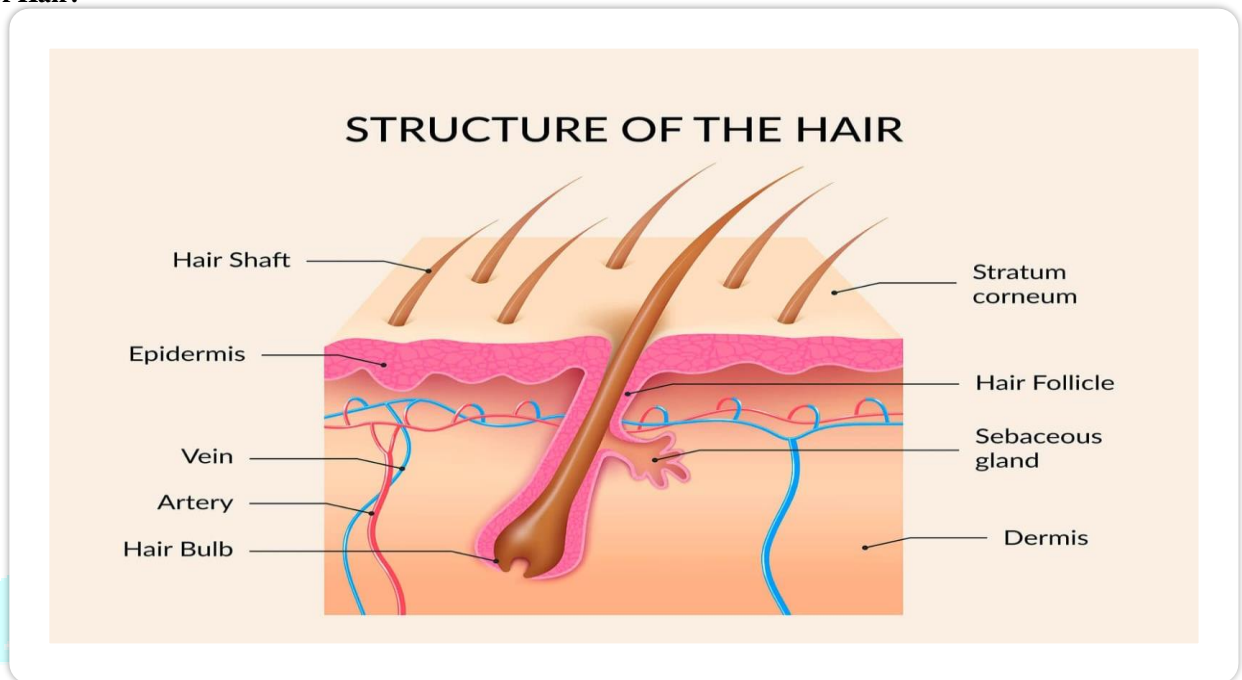
**Structure of Hair:-**

Figure 1, Structure of Hair

Each hair has a hair shaft and a hair root. The shaft is the visible part of hair that sticks out of the skin. The hair roots is in the skin and extends down to the deeper layers of skin. It is surrounded by the hair follicle (a sheath of skin and connective tissue), which is also connected to a sebaceous gland.

- Each hair follicle is attached to a tiny muscle (arrector pili) that can make the hair stand up. Many nerves sense hair movement and are sensitive to even the slightest draft.
- At the base of the hair, the hair root widens to a round hair bulb. The hair papilla, which supplies the hair root with blood, is found inside the bottom of the hair bulb. New hair cells are constantly being in the hair bulb, close to the papilla. □ New cells are constantly forming in the hair bulb. These cells stick together and harden. The full strand of hair develops from this group of hardened hair cells. Because new hardened cells keep on attaching to the hair from below, it is gradually pushed up out of the skin. In this way, a single hair on your head grows at a rate of about 1 cm per month.
- The color of the hair is determined by the amount of melanin in the hardened cells. This can vary a lot from person to person, and it changes over the course of a lifetime. The amount of melanin typically decreases as people get older, and more air gets trapped inside the hair – it then loses its color and turns white. Depending on someone’s original hair color and the number of white hairs that grow, the hair on their head then turns gray or white.<sup>(8)</sup>

**SYMPTOMS OF HAIR LOSS:-**

There are several factors for the hair loss; some of the main factors are given below -

1. Acute illness
2. Autoimmune disorders
3. Chemicals (hair dyes) 4. Chemotherapeutic agents/ drugs. 5. Diabetes
6. Hair loss following childbirth
7. Hair styling products
8. Hair styling techniques
9. High iron deficiency<sup>(9)</sup>

**LITERATURE REVIEW:-**

- <sup>1)</sup> Pushpendra Kumar Jain, etal., assessing Hair Growth exertion of Herbal Hair Oil.( International Journal of Research), 2016. This composition gives information regarding herbal medicines like Emblica officinalis, Bacopa monniera and Cyperus rotundus were named for the phrasings of poly herbal hair oil painting.<sup>(10)</sup>
- 2) Pooja S Banerjee, etal., Preparation, evaluation and hair growth stimulating exertion of herbal hair oil painting.( Journal of Chemical and Pharmaceutical Research), 2009. This composition gives information regarding admixture of crude medicines fruits of Embelica officinalis, flowers of Hibiscus rosa sinensis, leaves of Bacopa monnieri and seeds of Trigonella foenumgraecum were prepared in varying attention in the form of herbal hair oil painting by three different canvases medication ways( direct boiling, paste and cloth system) and were tested for hair growth exertion.<sup>(27)</sup>

- 3) Rahathunnisa begum, et al., Preparation and Evaluation of herbal hair oil painting.( International Journal of Research and Analytical Reviews), 2018. This composition gives information regarding the presence of number of phytochemicals and botanicals in the herbal products have binary stuff, one that they're used as cosmetics for body care and another that phytochemicals amend the natural functions of mortal body naturally results in healthy skin and hairs.
- 4) Debajyoti Das, et al., assessing hair growth eventuality of some traditional sauces.( Asian Journal of Pharmaceutical and Clinical Research), 2015. This composition gives information regarding Centella asiatica, Cyperus rotundus & Emblica officinalis alcoholic and waterless excerpt were prepared and estimated for the hair growth parcels using albino rats.
- 5) Sapna Gautam, et al., Formulation and evaluation of herbal hair oil painting.( International Journal of Chemical lores), 2013. This composition gives information regarding how to formulate herbal oil painting for general purpose( operation in hairs) using colorful sauces. The formulated herbal oil painting was estimated and colorful parameters similar as density, saponification value, pH.<sup>(28)</sup>
- 6) Shazia Anwer Bukhari, et al., disquisition of Nutraceutical Implicit of Herbal Oil Formulated from Parasitic Factory.( African Journal of Traditional, reciprocal and Indispensable drug), 2013. This composition gives information regarding Cuscuta reflexa(C. reflexa) is a parasitic Rambler of medicinal significance. The present study was aimed to estimate the nutraceutical eventuality of C. reflexa stems collected from different hosts and to estimate the part of the herbal expression in dandruff, hair fall control as well as hair growth protagonist.
- 7) R.R. Shah, et al., Preparation and Evaluation of Polyherbal Hair Oil- An Effective Cosmetic.( Asian Journal of Pharmaceutical Research), 2018. This exploration gives information regarding guideline on the use of herbal constituents on the medication of Herbal Hair oil painting having minimum or no side goods.
- 8) Akram Ahmad, et al., Preparation and Evaluation Antioxidant exertion of Mixed Herbal Hair oil painting expression, <http://www.researchgate.net>, 2012. This composition gives information regarding Antioxidants are helpful in adding the blood rotation and therefore help in hair growth as well as in the treatment a lot of conditions. Alopecia is a dermatological complaint with psychosocial counteraccusations on cases with hair loss.
- 9) Ch.Naga Haritha, et al., Preparation and evaluation of poly herbal hair oil painting.( Journal of medicine Delivery and rectifiers), 2019. This composition gives information regarding antimicrobial exertion of the poly herbal hair oil painting was studied by the zone of inhibition system. The Antioxidant exertion of the oil painting was studied by DPPH radical scavenging test.<sup>(29)</sup>

### Aim and objective

#### Aim: Formulation and Evaluation of Polyherbal Hair Oil.

#### Objective of the study:

- 1) The objective of present study involves preparation of polyherbal hair oil using amla, hibiscus flower, Fenugreek seeds and its evaluation for increase in hair growth activity.
- 2) To study how oils help to make hairs silky.
- 3) To study numerous essential nutrients required to maintain normal functions of sebaceous gland.
- 4) To study the importance of hair oil for the treatment of common hair problems such as baldness, alopecia, hair fall, gray hair.
- 5) To study how oils are effective in moisturizing scalp.
- 6) To give luster to the hair.
- 7) To retain them soft and flowing.
- 8) To keep the brain, cool and reduce hair fall.
- 9) To formulate a hair oil for healthier hair with antioxidant, antidandruff and hair thickening properties.
- 10) To formulate hair oil preparation to regrow lost hairs, reduce hair fall, make hairs thick, shiny, bulky, reduce drying of hair and give all nutrient sebaceous gland requires for hair growth.<sup>(14, 19)</sup>

### PLAN OF WORK:-

The present proposed research work is planned as follows:

- 1) Literature Review
- 2) Selection of suitable constituents for preparation of Polyherbal hair oil.
- 3) Collection of constituents from plant parts.
- 4) Preparation of Polyherbal hair oil.
- 5) Evaluation of Polyherbal hair oil.
- 6) Result and discussion.
- 7) Conclusion.



**DRUG PROFILE:****Hibiscus flower**

Figure 2, Hibiscus flower

**Scientific Name:** Hibiscus rosa-sinensis.

**Family:** Malvaceae. <sup>(30)</sup>

**Order:** Malvales

**Genus:** Hibiscus L Rosemallow.

**Species:** Hibiscus-rosa sinensis L.

**Geographical source :** although it has been cultivated in India, China, Japan and the Pacific islands for a long time.

**Biological source :** It is fresh flower of Hibiscus rosa-sinensis

**Characteristics :** It is usually borne singly but sometimes can be seen in clusters. The flowers are trumpet shaped and range in colours of red, orange, yellow, pink or purple. There are five or more petals in a Hibiscus flower.

**Chemical Constituent:** Hibiscus rosa-sinensis contained tannins, anthraquinones, quinines, phenols, flavanoides, alkaloids, terpenoids, saponins, cardiac glycosides, protein, free amino acids, carbohydrates, reducing sugars, mucilage, essential oils and steroids. <sup>(20, 31)</sup>

**Uses:** Hibiscus flowers help to stop hair loss, make your hair look healthy and lustrous, prevent premature graying, thicken hair and add volume, treat dandruff, condition against frizz, dryness, and breakage, prevent split ends. <sup>(11)</sup>

**2)Neem leaves:**

Figure 3,Neem leaves

**Scientific Name:-** Azadirachta indica

**Order:-** Sapindales

**Family:-** Meliaceae

**Geographical source:-** It's set up in India, Pakistan, Sri Lanka, Malaya, Indonesia, Japan, Tropical region of Australia and Africa. Natural source Neem consists of the fresh or dried leaves and seed oil painting of Azadirachta indica J. Juss (Melia Indica or M. Azadirachta Linn.).

**Characteristics:-** Neem leaves are medium to large in size and stretched to oblong in shape, comprising 20- 40 centimeters in length.

**Chemical Constituent:-** The most important active element is azadirachtin and the others are nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinat, gedunin, salannin, and quercetin.<sup>(21)</sup>

**Use:-** Neem is an effective condiment to treat hair loss. Due to its antibacterial, antifungal and anti-inflammatory parcels, neem is an excellent way to check dandruff. It helps the hair follicles to come stronger and also encourages hair growth.

### 3) Curry leaves:



Figure 4. Curry leaves

**Scientific Name :-** *Murraya koenigii* or *Bergera koenigii*.

**Order:-** Sapindales

**Family:-** Rutaceae

**Geographical source:-** South Asia is home to this factory, and it's set up in countries like Sri Lanka, Bangladesh, China and India

**Biological source:-** Curry leaves are richest source of carbazole alkaloids, which have bioactive functions like anti-oxidant, anticancer, antidiabetic, and antiulcer. Curry leaves are a rich source of vitamin A, vitamin B, vitamin C, vitamin B2, calcium, and iron.

**Characteristics:-** Curry leaves are small in size and long, slender, and round in shape narrowing to a point, comprising 2- 4 centimeters in length and 1- 2 centimeters in range.

**Chemical Constituent:-** *Murraya koenigii* is veritably rich source of organic composites with different chemical composition similar as alkaloids, flavonoids carbohydrates, and sterol is present in the factory excerpt prepared in detergents similar as petroleum ether, ethyl acetate, chloroform, ethanol and water.<sup>(22, 32)</sup>

**Uses:-** They're rich in antioxidants and proteins, these antioxidants neutralize the free revolutionaries and keep your hair healthy and strong.<sup>(12)</sup>

### 4) Tulsi leaves:



Figure 5. Tulsi leaves



**Scientific Name:-** Ocimum tenuiflorum

**Order:-** Lamiales

**Family:-** Lamiaceae

**Geographical source:-** It's native to tropical and tropical regions of Australia, Malesia, Asia, and the western Pacific.

**Biological source:-** Tulsi consists of the fresh and dried leaves of Ocimum species like Ocimum sanctumL. And Ocimum basilicumL etc.

**Characteristics:-** Leaves have three main internal regions; the epidermis, the mesophyll, and the nodes. Chemical Constituent The factory and its oil painting contain different phytochemicals, including tannins, flavonoids, eugenol, caryophyllenes, carvacrol, linalool, camphor, and cinnamyl acetate, among others.<sup>(23)</sup>

**Uses:-** Tulsi benefits hair by invigorating the hair follicles and strengthening the roots, which in turn checks hair loss.

#### 5) Fenugreek seeds :



Figure 6, Fenugreek seeds

**Scientific Name:** Trigonella foenum-graecum

**Order:** Fabales

**Family:** Fabaceae

**Geographical source:** Native to southern Europe and the Mediterranean region, fenugreek is cultivated in central and southeastern Europe, western Asia, India, and northern Africa.

**Biological source :** It is Dried seeds of Trigonella foenum

**Characteristics :** characterized by a deep furrow, less than 0.5 cm (0.2 inch) long.

**Chemical Constituent:** The main chemical components of Trigonella foenum-graecum are fibers, flavonoids, polysaccharides, saponins, fixed oils and some identified alkaloid.it isMature seeds mainly contain amino acid, fatty acid, vitamins, saponins and a large quantity of folic acid.<sup>(33)</sup>

**Uses:** Fenugreek seeds have high protein and nicotinic acid content, which helps prevent hair fall and dandruff, and in treating a variety of scalp issues like dryness of hair, baldness and hair thinning. It contains large quantities of lecithin, which hydrates the hair and strengthens the roots or hair follicles.<sup>(15)</sup>

#### 6)Amla:



Figure 7, Amla

**Scientific name:-** Phyllanthus emblica

**Family:-** Phyllanthaceae

**Order:-** Malpighiales

**Geographical source:-** native to India, also growing in Sri Lanka, Uzbekistan, South East Asia, and China.

**Biological source:-** This consists of dried, as well as fresh fruits of the factory *Emblica officinalis* Gaerth( *Phyllanthus emblica* Linn).

**Characteristics:-** Amla fruits are fleshy, round, seductive, deeply ribbed and unheroic green in color.

**Chemical Constituent:-** Fruits contain about 28 of the tannins in the whole factory. This tannin has two hydrolyzable forms.( I) Embricanin A and( ii) Embricanin B are naturally antioxidants. Embricanin A provides ellagic acid, glucose and gallic acid when hydrolyzed, whereas embricanin B is hydrolyzed to form ellagic acid and glucose.<sup>(24)</sup>

**Uses:-** It helps in conditioning crown, promote healthy hair growth, minimize grays, boost volume, reduce dandruff.<sup>(13)</sup>

## 7)Eucalyptus plant leaves



Figure 8, Eucalyptus plant leaves

**Scientific name:-** *Eucalyptus teriticornis*.

**Family:-** Myrtaceae.

**Order:-** myrtales Genus *Eucalyptus* L Jet gump

**Geographical source:-** It's substantially set up in Australia, Tasmania, United States, Spain, Portugal, Brazil, North and South Africa, India, France, and Southern Europe.

**Biological Source:-** Eucalyptus oil painting is the essential oil painting attained by the distillation of fresh leaves of *Eucalyptus globulus* and other species. **Characteristics:-** it's utmost species are evergreen. The flower petals cohere to form a cap when the flower expands.

**Chemical Constituent:-** Eucalyptol forms liquid adducts with hydrohalic acids, o- cresol, resorcinol, and phosphoric acid.

**Uses:-** Stimulates Hair growth. Eucalyptus Oil can help to Stimulate hair growth by adding blood rotation to the hair follicles, It's bettered blood inflow nourishes the hair follicles which in turn helps promote healthy hair growth.<sup>(14)</sup>

## 8)Coconut oil.



Figure 9, Coconut oil

**Scientific name:-** Cocos nuciferaL.

**Family:-** Aceraceae.

**Geographical source:-** Southern India.

**Biological source oil:-** painting deduced from dried fruits of Cocus nucifera. Active element Adipose acid, capric acid, lauricacid.

**Uses:-** used as vehicle, promotes hair growth and moistures the hair follicles.<sup>(16)</sup>

### 9)Almond oil.



Figure 10, Almond oil.

**Scientific name:-** Prunus dulcis.

**Family:-** Rosaceae.

**Geographical source:-** Northern India.

**Biological source:-** Dried kernels of almond tree. Active Constituent Palmitic acid, linolic acid, oleic acid.

**Uses:-** Strengthen the hair, cover the hair from sun, use as crown treatment.<sup>(17)</sup>

### Formulation table :

Ingredients	Quantity (gm)	Uses
Hibiscus flower	15	Prevent Dandruff
Neem leaves	5	Antimicrobial
Curry Leaves	5	Prevent Hair fall
Tulsi Leaves	5	Strengthen the root
Fenugreek seeds	10	Hair Growth
Amla	5	Hair Growth
Eucalyptus oil	10	Hair Growth
Coconut oil	50	Vehicle
Almond oil	25	Vehicle

### Experimental work :

- 1)Collect all the ingredients such as Hibiscus flower, Neem leaves, Curry leaves, tulsi leaves ,Fenugreek seeds, etc in given quantities.
- 2)Add all the constituents in a grinder and mix well.
- 3)Transfer it to cooking pot.
- 4)Put sufficient coconut oil almond oil in it.
- 5)Heat the pot on low flame until the color starts to change.
- 6)Let the oil cool down.
- 7)Pour the oil in a suitable container.



**EVALUATION PARAMETER:-**

The formulated polyherbal hair oil painting containing hibiscus flowers, neem leaves, curry leaves and other constituents was estimated for parameters like acid value, saponification value, refractive indicator, density and organoleptic parameters.

- 1) Organoleptic property Colour, odour, skin vexation was determined manually.
- 2) perceptivity test The set polyherbal hair oil painting was applied on 1 cm skin of hand and exposed to sun for 4- 5min.
- 3) vexation test The set polyherbal hair oil painting was applied on 1 cm skin of hand and exposed to sun for 4- 5min.
- 4) pH test pH of the herbal oil painting was detected using pH cadence.



Figure 11, PH meter

- 5) Specific gravity : Specific gravity of the prepared oil was determined using specific gravity bottle.
- 6) Acid value: 4ml of oil was added with 10ml of ethanol and 10ml of ether. Phenolphthalein was added as indicator and titrated with 0.1M potassium hydroxide solution.



Figure 12, acid value titration

Acid value =  $5.61n/w$

Where, n= Number of ml of 0.1M KOH.

W= Weight of oil

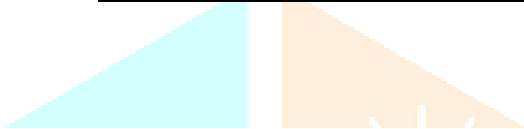
7) Saponification value : 2g of oil was accurately weighed and transferred into a 250ml of iodine flask. 25ml of 0.5M alcoholic potassium hydroxide was added and boiled under reflux on a water bath for 30mins. Phenolphthalein was added as indicator and titrated against 0.5M HCl ('a' ml). Similarly blank was performed ('b' ml) without the sample.

8) Refractive index: It was determined using refracto.<sup>(26)</sup>

### RESULT:

The formulation and evaluation of polyherbal hair oil using Hibiscus flower, Neem leaves, curry leaves, tulsi leaves, fenugreek seeds, amla, and eucalyptus leaves was prepared. The various parameters like color, odour, irritation test, sensitivity test, viscosity, pH, specific gravity, saponification value and acid value of herbal hair oil was evaluated. From the present evaluation it was found that the formulated polyherbal hair oil has optimum standards. The prepared formulation is yellowish in color with pH in accordance with human skin neutral to slightly acidic.

Parameter	Observation
Colour	Black
Sensitivity test	Pleasant
Irritation test	No irritation
pH test	5.18
Specific gravity	0.97
Acid value	1.26
Saponification value	105



### FORMULATION OF POLYHERBAL HAIR OIL

### CONCLUSION:

Based on the results of this study we can conclude that the formulated polyherbal hair oil can maintain normal function of sebaceous glands and promotes natural hair growth. It can also give antimicrobial, hair growth, hair thickness properties. It can help prevent hair thinning, treat scalp infection. It can help to maintain moisture in scalp and improves blood circulation, reduces itchiness and dryness.

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