

## “Formulation and Evaluation of Herbal Hair DYE”

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### ABSTRACT :-

Hair dye is the oldest recipe used by the ancient lifestyle in the world. Medicinal plants are considered effective and most important for human health. It is known to cause allergic skin reactions in many people. Countless of these natural herbs are henna, clove, Reetha, tea, walnuts, Coffee, butterfly pea, bhringraj etc. Herbal hair color is used for multi-colored conditions like dandruff, premature graying and lice etc. Natural hair stains affect the problem of destruction Cuticle and hair cuticle, which are safe to use. Main goal composition and evaluation Herbal hair color is intended to minimize side effects synthetic and semi-synthetic hair dyes. Current research was focused on the preparation of herbs hair color and evaluation of its various parameters such as organoleptic, physicochemical, phytoconstituents, rheological aspects, patch test and stability testing for its efficacy and durability Values of various evaluations justified the use of hair dye in this investigation, attempts have been made to make a powdered vegetable hair dye that gives a dark brown to black color color Hair color reminiscent of natural hair color with a better coloring effect and greater durability Comparison with vegetable hair dyes on the market. Vegetable hair dye shows permanent coloring in applied areas Made from human hair without damage or hair loss or skin irritation compared to synthetic and semi-synthetic dyes.

**Keywords:** - Formulation, Evaluation, herbal hair dye, Antiseptic property.

### I. INTRODUCTION

Using hair shade is not new. The artwork of hair dyeing was utilized by Egyptians from vegetables dyes from the early 5000 years BC<sup>[1]</sup> the first artificial dye was synthesized in 1856, and permanent hair colorants had been used commercially for over a hundred years. Henna changed into the most famous and continues to be one of the popular dye. but as an alternative of having black color, purple to copper red colour turned into acquired. Lack of natural hair colour is

because of varied reason like genetic influence, impact of environmental factors.<sup>[2]</sup> compared to the chemical based totally hair dyes, which cause pores and skin associated sicknesses, herbal herbal dyes are being preferred these days. natural pills with none detrimental outcomes are used for wholesome hair. nearly 70% of people above 50 years conflict with the hassle of balding and graying of hair.<sup>[3]</sup> Many unique extracts from plant had been used for the reason of hair dyeing in Europe and Asia before the invention of modern hair dyes. Indigo, called initial fabric dye, may be blended with henna to make specific mild brown to black sun shades of hair dye. Use of these chemical compounds can bring about ugly aspect effects, together with pores and skin irritation, allergic reaction, hair breakage, pores and skin discoloration, sudden hair color etc.<sup>[4]</sup> natural dyes are derived from herbal sources; these are widely categorised as plant, animal, mineral, and microbial dyes. natural dyes can be used for dyeing nearly all styles of natural fibers.<sup>[5]</sup> With the arrival of widely available and less expensive synthetic dyes in 1856, the usage of natural dyes with bad to slight wash and mild fastness declined drastically and was changed via more slight to outstanding color fastness properties of synthetic substances.<sup>[6]</sup> although the everlasting and semi-permanent artificial hair dyes are to be had in various colorations and stages maintain natural luster, they have the leader drawback of producing allergic reactions in a few people. a few hair dyes advertised as natural dyes consists of 1% to 3% Phenylenediamine which is a artificial hair dye (carcinogenic) and stain skin and garments for the duration of use.<sup>[7]</sup> continuous utility of such compounds on natural hair reasons a couple of facet effects along with skin inflammation, allergic reaction, hair fall, dry scalp, erythema and additionally pores and skin most cancers. In india, henna has been historically for coloring hands and hairs. there are so many herbs like bhringraj, jatamansi, amla, methi, reetha, shikakai, are used as some predominant parts in hair care preparations particularly meant for dyeing hair.<sup>[8]</sup> In India, henna has traditionally been used to shade hands and hair.

there are various herbs, along with henna, Bhringraj, reetha, shikakai, hibiscus, Amla, espresso, jatamansi, and methi, which are extensively utilized in hair care preparations, primarily for hair dyeing functions.<sup>[9]</sup> Medicinal products derived from flowers are readily to be had, fee-effective, safe, efficient, and seldom have side consequences. In the modern-day generation of eco-conservation, there was a resurgence of interest in and exploration of herbal dyes for coloring textiles and meals products.<sup>[10]</sup> Henna has been part of Islamic and Hindu cultures because the Bronze Age, used for coloring hair, adorning nails, and creating temporary skin tattoos throughout marriages and other social celebrations.<sup>[11]</sup> earlier than the invention of current dyes, various plant extracts had been used in Europe and Asia for hair dyeing. Indigo, an preliminary material dye, might be combined with henna to create sun shades ranging from light brown to black.<sup>[12][13]</sup>

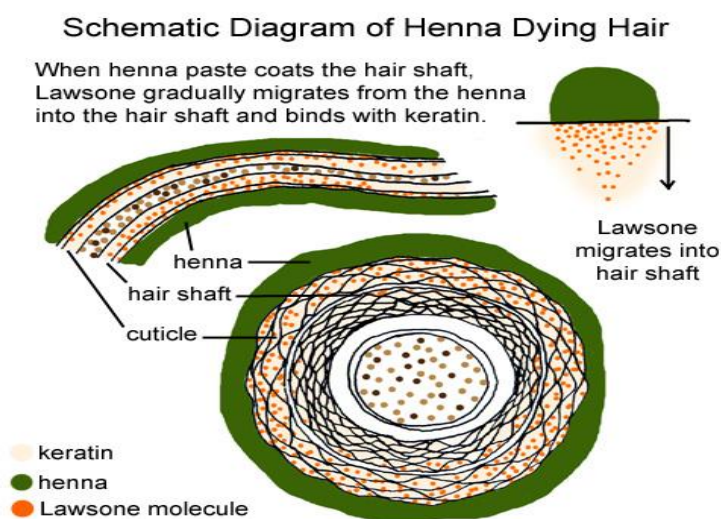
**OBJECTIVES :-**

2. To formulate herbal hair dye via using herbs which includes Henna, Amla, Reetha, Shikakai, Hibiscus, Neem, Jatamansi, Bhringraj, Tea, Tulsi, Black catechu, Lohbhasma, Brahmi, Methi, Orange peel powder and so forth.
3. To check organoleptic, physicochemical, rheological factors of drug present inside the formulation.
4. To avoided the common aspect outcomes of chemical substances used in artificial hair dyes
- 5.To make hairs vivid,lustrous, gentle,and colorful.
6. To conduct one of a kind evaluation exams for natural hair dye.

**HERBAL HAIR DYES**

There are many herbal plants used for hair coloring. Some herbs are available worldwide, but some are traditionally planred and found only in Thailand or neighboring countries.

**II. MECHANISM OF HAIR DYE**



**Fig no1. HENNA**

The botanical name of Henna is Lawsonia inermis that's the simplest species of the

genus.Lawsonia and belongs to the FamilyLythraceae. The leaves of this plant posses

of a pink dye molecule called lawsone [2-Hydroxy-1-naphthoquinone], which has the potential to bond with the protein. It is also used in shampoos, conditioners. It also prevents premature hair fall by means of balancing pH of scalp. It's also used in jaundice, skin disease, smallpox.



**Fig no 2 .Hibiscus**

Consist of plant life of plant hibiscus rosasinesis. own family-malvaccae us united states-hair growth pastime , anti oxidant, anti- dandruff, phenolic compound. Hibiscus is certainly enriched with calcium, phosphorus, iron ,diet B1, diet C, riboflavin, which assist to sell thicker hair growth and decreas premature graying of hair.



**Fig no 3. Amla [Indian Gooseberry]**

Its botanical name is the dried powder of emblica officinalis. Family -euphorbiaceae. Next to tannins, Amla is the most extravagant and concentrated type of vitamin C found among plants. The vitamin C found in the natural product is incompatible with tannins which protects it from loss by intensity or light. Amla powder is also abundant tannins, minerals such as calcium, phosphorus, Fe and amino corrosive substances. Natural product to extract it is valuable for hair development and reducing baldne



**Fig no 4. REETHA**

Consists of the dried fruits of the Sapindus mukorossi plant. Family- sapindaceae Sapindus mukorossi, commonly known as Indian soap berry, wash or ritha, reetha as soap nuts or washing nuts, have played an important role as natural hair care products since ancient times. Its fruits are a source of vitamins A, D, E, K and saponin, sugars, fatty acids and mucilage. It is used to promote hair growth and reduce dandruff, hair cleaner.



**Fig no 5. SHIKAKAI**

Shikakai is a wonderful spice commonly found in the tropical forests of India. They consist of the dry fruits of Acacia conicinna. Family – Leguminosae Shikakai contains highly cleansing properties, this way it works best as a cleanser substitution. shikakai is rich in cell strengthening and nutrients such as A, C and K which it has a major effect on making hair healthy and shiny. Used - good cleanser, against dandruff.



**Fig no 6. BHRINRAJ**

The botanical name of Bhringraj is *eclipta alba*. The family is Asteraceae. Chemical component; the plant contains the alkaloid ecliptine. Other identified chemicals are wedelolactone, wedelic, apigenin, luteolin, b-amyrrin, etc. It is used - it will save you hair and premature graying. It also stimulates hair growth.



**Fig no 7. Curry leaves**

The hypothesis is that the wealthy vitamins in curry leaves can help to save you thinning hair or hair loss. The leaves may additionally assist eliminate useless hair follicles, that can intrude with hair increase. Curry leaves are generally known as kadipatta. It's miles one of the most common family substances that are effortlessly determined in maximum Indian kitchens. It's miles just any other spice that provides flavour to dals, chutneys, soups, and stews. However you realize what they have got a lot extra to offer than simply delivered flavour on your meals.



**Fig no 8. BRAHMI POWDR**

Regular use of Brahmi strengthens your hair roots and keeps them very well maintained. This spice is full of supplements that can help your hair. Thanks to its biochemical organization, yes successful in the treatment of short baldness. It's about hair growth.



**Fig no 9. Jatamansi**

Dried roots of the *Nardostachys jatamansi* plant. Family- Caprifoliaceae. Jatamansi root are converted into a paste and apply to the scalp to promote hair growth. Jatamansi is an important drug in ayurveda and other traditional systems of medicine like ayurveda, unani, siddha, etc. is used. Beneficial for smooth, silky and healthy hair.



**Fig no 10. COFFEE**

In hair colorants, herbs can be used inside the form of powder, aqueous extract or their seed oil to effect shades of distinct coloration various from reddish brown to blackish brown. The natural medicines like coffee kohl captured from its seeds are used as hair.



**Fig no 11. TEA**

Tea is rich in polyphenols, selenium, copper, phytoestrogens, melatonin. Traditional Chinese medicine in Ayurvedic medicine has been used as a hair dye since ancient times. Leaves: leaf buds of tea, *Sinensis*. Family- Theaceae.



**Fig no 13. Indigo powder.**

Indigo powder conditions and nourishes the hair base and makes each strand of hair more grounded. Indigo powder prevents scalp diseases and uses it with the advances of coconut oilscalp with each of the supplements and makes the hair stronger and smoother.

### III. MATEERIALS AND METHODS

Henna, Amla, Reetha, Tea, espresso, Tea, Orange Peel, Bhringraj, Hibiscus

### IV. FORMULATION OF HERBAL HAIR DYE

**Table No.1**

Sr.no	Ingredients	Quantity
1	Amla	2gm
2	Henna	3gm
3	Reeth	2gm
4	Shikakai	3gm
5	Hibiscus	2gm
6	Jatamansi	2gm
7	Bhringraj	2gm
8	Coffee	2gm
9	Tea	2gm

#### Application of Hair Dye

The %, that is within the form of powder, need to be used weekly on moist hair, forming a paste of in water with most fulfilling consistency. It have to be carried out flippantly on the hair with the assist of a brush, covering the roots to the hair tip. The scalp ought to be included. It ought to be left for two-three hours at the scalp for entire drying. Then

shekakaitTatamansi. They have been made into powders and used for practise. for hair Colorants. Processing of Plant materials

1. Plant series The leaves, end result and whole plant of herbs collection turned into carried out inside the month of January -2019 in Kumarapalayam and diagnosed by means of pharmacognosy branch in JKKU university of pharmacy.

2. Plant Drying and size discount A bulk amount of leaves of henna& indigo, end result of amla&myrobalan and entire plant components of bhringraj became collected and cleaned.2. Plant Drying and size discount A bulk amount of leaves of henna & indigo, end result of amla & myrobalan and entire plant components of bhringraj became collected and cleaned three. The plant material are dried at room temperature for approximately 15 days four. After thoroughly dried, the plant fabric are powdered and powder turned into saved in air tight contenor.

it must be removed with the aid of washing with plain water<sup>[14]</sup>

#### Types of Hair Dye

Depending upon the deposition of various dyes for appropriate time the dyes are labelled into four classes they are:

1. Permanent Hair dye
2. Demi-Permanent Hair dye
3. Semi-Permanent Hair dye

4. Temporary Hair dye



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V. EVALUTION OF HERBAL HAIR DYE

The prepared natural hair colorant became checked for its various parameters, along with organoleptic, physico-chemical, phytoconstituents and the rheological component.

1] Organoleptic evaluation

Organoleptic traits for numerous sensory characters like coloration, flavor, odour and many others. As illustrated in table 2 The uncooked capsules and powders have been one at a time studied by using organoleptic and morphological characters like shade, odour, texture and look

Table No.2

Sr .no	parameter	Results
1.	Colour	green
2.	Odour	characterstics
3.	texture	fine
4.	Appearance	Powder

2] Physico- chemical Evaluation

The bodily and chemical features of the herbal hair dye were evaluated to determine the pH,

its viscosity and lawsone awareness for the reason of balance, compatibility effects present in it. desk three displays the above

Table No.3

s.no	parameter	Results
1.	pH	6.8
2.	L.O.D	2.1%
3.	Ash value	0.18 %

3] Phytochemical evaluation.

Prepared herbal hair shade became ruled to Phytochemical webbing to expose the presence or absence of various phytoconstituents as Carbohydrates, Lipids, Alkaloids, Sugars and so forth. The expression when dissolved seperately in five ml of water and filtered; the filtrates were used

to test the presence of carbohydrates [15]. The moist passage of the formulated natural face percent became checked for the presence or absence of various phytoconstituents as in line with the usual strategies and ethics. The consequences of phytochemical webbing are highlighted in following desk.

Table No.4

Sr.no	parameter	Results
1.	Foam test .	present
2.	Molisch test	presents
3.	Fehling test	absrnt
4.	Hager test	prsent
5.	Volatile oil	Absrent

### 3] Rheological evaluation;

For the in residence - method, physical characteristics consisting of untapped or bulk density, tapped density, perspective of repose, hausner ratio, and carr's index were measured and computed. physical parameter like untapped or bulk density, tapped density, the perspective of repose, Hausner ratio and carr's index were discovered and calculated for the inhouse system. Bulk density symbolizes the

adjustment of particle or granules together inside the packed shape. The formulation for the dedication of bulk density, (D)  $D=M/V$  in which M is the mass of the particle and V is the total volume occupied them. that is decided taking graduated cylinder. Weighing the formulation became added to the cylinder with the assist of a funnel. The preliminary extent was cited and the sample changed into then tapped completely

**Table No.5**

Sr. no	parameters	Results
1.	Bulk density	0.33
2.	Tapped density	0.5
3.	Angle of repose	1.03
4.	%Carr's index	34% (Poor Flow)
5.	Houseners ratio	1.5 (Poor Flow)

### 4] Patch test

This generally entails dabbing a small amount of the aq. solution of hair dye behind the ear or on internal elbow in a place of one sq.cm. and leaving it to dry. signs and symptoms of

inflammation or feeling of nonwellness is stated, if any measured and small quantities of prepared hair % have been carried out to the required region for a hard and fast time.

**Table No.6**

Sr. no	parameters	Results
1.	Swelling	Negative
2.	Redness	Negative
3.	Irritation	Negative

### 5] Stability testing

Balance checking out of the prepared method was achieved by using storing it at extraordinary circumstance for the time period of one month. The packed glass vial of system were at

specific temperature situations room temperature and evaluated for the bodily parameter like colour, odour, pH texture and smoothness as given underneath desk no 7.

**Table No.7**

S.No.	Parameters	Room Temperature	30
1.	Colour	No change	No change
2.	Odor	No change	No change
3.	pH	6.7	6.8
4.	Texture	fine	fine
5.	Smoothness	smooth	smooth

## VI. USE OF HERBAL HAIR DYE

That is an age-vintage remedy for all the ones people who have been suffering for healthful hair that is unfastened from gray hair. It also includes important fatty acids, which reinforce hair follicles and presents shine and new life natural materials are diagnosed for his or her non-poisonous, non-addiction forming traits, and the percent includes no chemical compounds, preservatives, artificial colours, or scents. it's also useful to having smooth, silky, and heathy hair. Shikakai is high in vitamin A, C, D and okay, which combine to make a strong antioxidant. Irritancy check found out negative outcomes for irritancy, redness and swelling as the herbals in their herbal shape with out use of artificial additives were observed to be well matched with the proteins of hair balance exams performed at distinctive temperatures over a everyday length of 1 month disclosed the inert nature of the % inside the phrases of shade, odour, look, texture, and pH. The prepared herbal hair dye carries all of the goodness of herbal substances.

## VII. CONCLUSION:-

In end, this observe correctly evolved a method for comparing and characterizing a equipped-to-apply natural hair dye system. conventional with open hands presently as they're safer with minutest facet paraphernalia as compared to the chemical predicated merchandise. the necessities of the growing global demand. The intents of. The blessings of herbal based totally cosmetics are their nontoxic nature. on this studies we discovered effective properties of the herbal hair p.c. and in addition research are had to the preformed to discover greater beneficial benefits of this herbal hair p.c. herbal medicines are commonly recognised these days considering they're safer and have much less damaging outcomes than chemical-based solutions. The formulated henna dye established favorable physical and chemical properties, including a perfect shade, consistency, and appearance. This components, in addition to operating as a hair colour, additionally features as a hair growth booster, hair nourisher, conditioner, and anti-dandruff agent due to the finest mixture of herbals. henna, because the fundamental powder, serves as a global hair dye because it is utilised for its colouring skills all over the world.

**Result:-**The prepared herbal hair dye contains all the goodness of natural ingredients .This

antioxidant is probably the only thing your hair needs to cleans the scalp of the sebum buildup unclog pores, and hair growth. Shikakai contains vitamins A, C, D and K, Which together form a powerful antioxidant.

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