

Review on Herbal Hair Dyes

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ABSTRACT

Hair color is oldest recipes that has been used by ancient lifestyle in world. Today the hair colors available in demand is synthetic which contains ammonia and peroxide which effectuate the damage to structure of hair. Due to increase in environmental and health hazards in the use of stains and its use throughout world is a major problem. Due to so reason it has made possible to work on the volition of the synthetic and semi-synthetic stains. Synthetic oxidative hair stains available in the request contain combination of peroxide and ammonia which damage hair and causes adverse effects. Also, some people using synthetic stains are exposed the threat of quick cancer, urinary bladder cancer and non-Hodgkin's lump. Hair stains are reasoned from workshops to work these problems and are safe to use. A number of these natural herbals are henna, clove, Reetha, tea, walnuts, coffee, butterfly pea, bhringraj etc. Herbal hair colour is used in varicolored maladies resembling dandruff, untimely graying and head lice etc. Natural hair stains work on the problem of the destruction of the poll and hair cuticle, which are safe for use.

I. INTRODUCTION

From child to old all humans desire to look beautiful is human weakness and is as old as the origin of human being itself. In current all the human beings are very careful about their beauty. And to look beautiful humans take care of all parts of body and also various products are available in market to make body attractive^[12]. Products available in market may be natural, synthetic or semi synthetic. To look attractive human hairs play an important role in this. People with 60 to 70% struggle with the problem of balding and graying of hair^[19,20]. The graying starts in people due to vitamin B12 deficiency, thyroid disease or it is due to influenced heredity. In adults premature depigmentation is mainly due to factors such as illness, ultraviolet (UV) rays, emotional factors, alcohol consumption some specific drugs, shock etc. The

hair dyes used which are synthetic in order to change hair colour has high frequency^[16] and due to their mechanism of action it may cause damage to structure of hair^[17]. So Herbal drugs without any adverse effects are used for healthy hair. Herbal medicines are plant derived materials or product obtained from stems, seeds, leaves, flowers, roots use for human benefits which contain either raw or processed ingredients from one or more plants. Herbs such as shikakai, henna, bhringraj and more are used in various cosmetic formulations such as herbal shampoo, herbal tablets, herbal hair dye, herbal toothpaste etc. In ancient times herbal drugs are used the purpose of dyeing carpets, rugs and clothing's by the use of roots, stems, barks, leaves, berries and flowers of various dye yielding plants. The need of herbal based natural medicines is increasing fastly due to their natural goodness and lack of side effects well – known ayurvedic herbal drugs traditionally used as hair colorant and for hair growth are amla, Bhringraj, Henna, Reetha, Methi seed. Natural dyes are environmentally friendly, low toxic and less allergenic^[25]. Catechins, flavonoids, ascorbic acid etc which show natural antioxidant property are involved in structure of herbal dyes. Various disorders such as dandruff, premature graying and head lice etc can be solved using herbal hair dyes. Natural hair dyes colour the hair with no chemical and more natural ingredients also solve the problem of destruction of scalp and hair cuticle, which are safe for use. Carminic acid, chlorophyll, curcumin, riboflavin, carotene (golden), lutein (yellow), anthocyanins (red) etc are pigments available in Natural Hair colors. Many formulations are available in the Indian market. Few of them contain between less than 5 herbal drugs where as most of the formulations contain more than five herbal drugs

Plant-derived dyes

- Catechu or Cutch tree (brown)
- Gamboge tree resin (dark mustard yellow)
- Chestnut hulls (peach to brown)
- Himalayan rhubarb root (bronze, yellow)

- Indigofera leaves (blue)
- Kamala seed pods (yellow)
- Madder root (red, pink, orange)
- Myrobalan fruit (yellow, green, black, source of tannin)
- Pomegranate rind (yellow)
- Teak leaf (crimson to maroon)

- Weld herb (yellow)

HERBAL HAIR DYES

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

HENNA



Common names: Alcana, Cypress shrub, Egyptian Rivet, Henna Tree, Inai, Kokkhau, Krapin, Madayanti, Mehadi, Henna is used as a hair dye since from ancient times. In Henna principle coloring agent is lawsone (a pigment which is red in color) in a concentration of 1 to 1.5% w/w.^[24]

Henna consists of fresh and dried leaves of plant *Lawsonia inermis* belong to family Lythraceae. Other constituents present in henna are

gallic acid, andresin, sugar. It is used as a dye alone or in combination for treatment of hair. It is also used in shampoos, conditioners. Due to presence of carbohydrates in henna the paste has suitable consistency for adherence to hair. Henna imparts orange red color and lawsone which is active compound of henna shows antibacterial and antifungal properties. It also prevents premature hair fall by balancing pH of scalp^[26]. It is also used in jaundice, skin disease, Smallpox.^[25]

REETHA



Its fruit is source of vitamin A, D, E, K, saponin, sugars, fatty acids and mucilage. Reetha passage is useful for the preferment of hair growth and reduced dandruff^[26]. Uproot of fruit pella acts as a natural cleaner

, so is used in herbal cleaners in the form of hair detergent^[27]. Reetha as soapnuts or washingnuts, play an important place as natural hair care products since old times. This soap is improved with saponins, which makes the hair healthy, lucent, and lustrous when used on regular groundwork.^[29]

COFFEE



In hair colors, spices can be used in the form of kohl^[30], dripping excerpt^[31] or their seed canvas to conduct colors of different colour varying from crimson brown to black brown^[32]. The herbal medications like coffee^[33,34] kohl captured from its seeds are used as hair colors.^[35,36]

BUTTERFLY PEA

Common names: Butterfly pea, Blue pea

Scientific name: Clitoria ternatea L.



Butterfly pea flower contains Anthocyanin which is used as a traditional medicine to enhance blood circulation as well as darken hair color.^[37]

SOAP NUT TREE OR SOAPBERRY TREE

Common names: Soap nut tree or Soapberry Tree
Scientific name: Sapindus rarak DC. and Sapindus trifolius. Both herbs belong to SAPINDACEAE family and present the same properties. Its active ingredients are Beta-Sitosterol, Emarginatol, Emarginatol, Emarginatol, Emarginatol.

Quercetin, Quercetin-3-a-A-arabofuranoside, Ortho Methyl-Saponin, Sapindus – Saponin. Its fruit is able to reduce hair loss and can slow down grey

hair. It is used as an ingredient in hair mask products of Mama herb Thai brand which used for darkening hair color.^[37]

TEA



Being rich in polyphenols, selenium, copper, phytoestrogens, melatonin^[38], tea also has been used in traditional Chinese medicine^[39] and in Ayurvedic medicine has been used since long as hair colourant .^[40]

INDIGO



Common name: Indigo

Scientific name: *Indigofera tinctoria*, *I. sumatrana*

Indigo dye is an organic compound with dark blue crystallized powder extracted from plants. It is usually used for cotton yarn for a production of blue jeans and is occasionally used

for hair coloring. Although last of herbal hair colorants rarely exhaust antipathetic reaction, indigo powder was reported as a criminal of antipathetic contact dermatitis together with henna and black tea in a 50-year-old male size case.^[41]

BHRINGRAJ



Treatment with 5% of petroleum ether passage of bhringraj initiates greater number of hair follicles^[42]. The oilbased extract of leaves has been used traditionally for upgrading hair growth and for transmitting natural colour to greyhair.

NeelibhringaadiTailam, mentioned in Ayurveda is suitable for promoting hair growth and for supplying natural colour to steely hair^[43]. From Bhringraj we can prepare variegated painting, soap, hair stain etc.^[44,46]

CLOVE



Clove contain tannins that produce a pusillanimous colour, have a water-resolvable characteristic, does not solidify andmix with proteins from the suspension.A natural hair colouring from cinnamon and clove can be linked

from the thing of the colour that is a brownish pusillanimous colour. The brightness smoothness colour, hair shine, and the most favoured colourate produced by this compositon.^[47]

WALNUT



Juglone (5-hydroxy-1, 4-naphthoquinone) can be uprooted from different region of Walnut

tree. Juglone is an isomer of the more unidentified lawsone (2-Hydroxy-1, 4-naphthoquinone), the

coloring agent of Henna and both are some of the oldest dyes used throughout history for dyeing hair^[48]. Leaves and husks of walnut fruits are used for hair dyeing. Walnuts contain emulsions: Oleic acid, macadamia, linoleic acid, linolenic acid, methionine, cysteine, tryptophan, threonine^[49]. 1,4-Benzoquinone is a small organic compound and, in principle, its low molecular weight makes it suitable for semipermanent hair dyeing. It can be considered a natural brown-dyeing source being it introduced in juvenile shoots of the pear (genus *Pyrus* L.), where it exhibits strong antibacterial activity. Walnut leaves are used in traditional medicine for external uses such as eczema, loss of hair, scalp itching, skinning and dandruff and to treat sunburns.^[50]

Shikakai

It contains Lupeol, Spinasterol, Lactone, Hexacosanol, Spinasterone, Calyctomine, Racimase-A Oleanolic acid, Lupenone, Betulin, Betulinic acid, Betulonic acid. The passage from its husks is used as a hair detergent and for the control of dandruff^[51]. Shikakai or acacia concinna, has a rich quantity of vitamin C, which is good for hair. It has the ability to lower the pH value and retain the natural oils of the hair and keeps them lustrous and healthy and it is also effective in strengthening and conditioning hair. Amla, Reetha and shikakai respect each other, so they are mixed together to have healthy and lustrous hair. All of these members come in two forms, one as a dried fruit and other in powdered form. Amla, Shikakai can be applied for all hair types and help prevent split ends, hair fall, dandruff, greying of hair and other hair-related problems, to make hair soft and silky.^[52]



II. MATERIALS AND METHODS

The plants used in this study are Indigo, Henna, bhringraj, amla, reetha, tea, coffee, walnut, clove and soapberry tree.

Preparation of natural hair colorants:- The leaves of henna, indigo, tea and bhringraj are dried in shade. They were made into powders and used for preparation for hair colorants

Collection of unpigmented hair:-

The human hair was collected from a barbers shop from which white hairs were separated and used for study.

Preliminary preparation of hair colorants

One gram of each indigo, Henna, tea, bhringraj was collected and added to 200 mg of urea in a sample. A smooth paste was made with water separately. Pastes were kept aside for 1h for inhibition. The hair

was kept in above paste for 1h and then washed with water and observed its coloring.

Selection of suitable combination with henna:-

One gram of henna is mixed with same proportion of indigo tea, bhringraj and 20% urea and water is added in order to make smooth paste. The paste was kept aside for 1hr inhibition and hair was kept above paste for 1hr inhibition. After it was washed and observed for colouring.

Application of Hair Dye:-

The pack, which is in the form of mascara, should be used triweekly on wet hair, forming a paste of in water with optimum density. It should be applied alike on the hair with the help of a hassle, covering the roots to the hair tip.

The bean should be covered. It should be left for 2-3 hours on the bean for complete drying. Either it should be removed by washing with plain water.

Evaluation of the Herbal Hair Dye

The prepared herbal hair colorant was checked for its various parameters, such as organoleptic, physico-chemical, phytoconstituents and the rheological aspects.

1. Organoleptic Evaluation

Organoleptic characteristics for varicolored sensuous characters like color, taste, odour etc^[53-55]. The raw remedies and greasepaints were single-handedly studied by organoleptic and morphological characters like colour, odour, texture and appearance.

Table Organoleptic evaluation of herbal dye.

S.No	Parameters	Results
1.	Colour	Greenish brown
2.	Odour	Characteristic
3.	Texture	Fine
4.	Appearance	Powder

2. Physico-Chemical Evaluation

The physical and chemical features of the herbal hair color were rated to determine the pH, its moisture content and its ash value for

the purpose of stability, peace and the volume of inorganic matter present in it. Table reflects the below findings.

. Physico-chemical evaluation of herbal dye.

Sr.No	Parameter	Result
1.	PH	6.7
2.	L.O.D	1.9%
3.	Ash Value	0.19

Phytochemical Evaluation

Prepared herbal hair color was dominated to Phytochemical webbing to reveal the presence or absence of various phytoconstituents as Carbohydrates, Lipids, Alkaloids, Sugars etc. The expression when dissolved separately in 5 ml of water and filtered; the filtrates were used to test the

presence of carbohydrates^[62]. The wet passage of the formulated herbal face pack was checked for the presence or absence of different phytoconstituents as per the standard procedures and ethics^[63]. The results of phytochemical webbing are highlighted in following table

Phytochemical evaluation of herbal dye.

S.No	Parameter	Result
1.	Foam test Present	Present
2.	Molisch test Present	Present
3.	Fehling test Absent	Absent
4.	Hager test Present	Present
5.	Volatile oil Absent	Absent

Patch Test

It usually involves placing a small volume of the aqueous solution of hair coloring behind the

ear on inner elbow in an area of 1sq.cm and leaving it to dry. Symptoms of aggro or feeling of non robustness is noted, if any. Measured and

small measures of ready herbal hair pack were applied to the specified area for a fixed time. Irritancy, color, and swelling were checked and

noticed for regular intervals up to 24 hours if any^[64]. The results of tests for the signs of Irritation are displayed in following table.

Patch test

Sr.No	Parameters	Results
1.	Swelling	Negative
2.	Redness	Negative
3.	Irritation	Negative

3.4. Stability Test

Stability testing of the ready expression was performed by storing it at different temperature conditions for the time period of one month. The packed glass vials of expression were stored at

different temperature conditions viz. room temperature and 35°C and were estimated for the physical parameters like colour, odour, pH, texture, and smoothness as highlighted in table

Stability test.

Sr.no	Parameters	Room temperature	35 C
1.	colour	No change	No change
2.	odour	No change	No change
3.	PH	6.7	6.8
4.	Texture	fine	Fine
5.	Smoothness	smooth	smooth

SKIN SENSITIVITY TEST

Primary irritation testing: The test was conducted on two albino rabbits to detect the potential primary irritants in developed formulation. It was observed that the rabbits doesn't have any skin sensitization or irritation history.

Predictive sensitive testing: Under this the constituents of expression as a whole were tested for any sensitization or irritation. This test is conducted on volunteers. The ingredients is applied on inner surface of forearm. The patch was kept for 24 hrs. If any irritation the volunteer can fluently removed the patch. After junking of patch the test point were observed for 40min, because time interval is necessary to check pressure of certain patch substances.

ADVANTAGES:-

Say NO to Damage

Since the constituents used in herbal hair colors are natural attained from plants and there parts it does not cause any damage to hair which is important benefit. Natural hair color not only color hair but also make hair healthy and aid hair growth. Presence of essential nutrients in coloring condition and nourishes the hair.

Retain your Hair health

Due to presence of conventional hair coloring can affect into breakage, graying and loss

which affects and eventually leads to unhealthy hair. And due to presence of herbal hair coloring it is sure that damage to hair is not possible

Condition your hair

The ingredients present in coloris natural and it has beneficial nutrients for hair which conditions your hair duly. And due to this candescent, strong, healthy and thick hair is guaranteed.

The natural constituents and essential nutrients in Natural Hair Dyes condition your hair. Shiny, strong, thick and healthy hair is guaranteed.

Play with colours

Since the color is not permanent the color is washed out and one who want to play with different hair colors they get occasion to try the different colors, it is most great advantage of natural over chemical.

Minimum Environmental Impact

Since the products attained are Formulated using natural constituents, the colouring's are not dangerous to environment and does not cause any beget on terrain and also it doesn't cause pollution too.

Say YES to Natural Hair Dyes

As per studies synthetic and semi-synthetic hair colouring's cause the threat of many health issues like respiratory problem, skin burns, hair loss, itchy skin, and damage to hair Fibre

structure. Also the threat of bone marrow, breast and blood cancer occurs due to use of conventional coloring as per recent studies. Therefore to say, to protect ourselves against the risky health conditions and to keep our hair healthy we should switch to natural hair colorings.

III. RESULTS:-

The go herbal hair dyestuff contains all the righteousness of natural elements. Shikakai contains vitamins A, C, D and K, which together form a powerful antioxidant. This antioxidant is probably the only thing your hair needs to cleanse the scalp of the sebum build-up, unclog pores, kill infection-causing bacteria and stimulate hair growth. It's also helpful in the junking of superfluous canvas from the pate and conditions the hair well. Reetha helps to recover the health of dull, dry, and damaged hair. Bhringraj aids in meliorating the circulation of blood of blood flow at the root of the hair by handing fresh nutrients to support hair growth. This is an age-old remedy for all those people who have been lumbering for healthy hair that's free from silvery hair. It also contains essential adipose acids, which strengthen hair follicles and provides shine and new life imparts perfect colour to the hair which contain tannic acid and it darkens the hair. And it is also good for the growth of hair and fights against dandruff. Coffee strengthens hair by improving the quality and texture of it by absorbing in to follicles and making shinier easily

IV. CONCLUSION:-

A herbal hair dye colours the hair in combination utmost gentlemanner. The advantages of herbal predicated cosmetics are their nontoxic nature. It nutrifies the skin of the block and hair. This hair utterance provides vital pabulum to the skin. It helps to treat dandruff by jettison of supererogatory canvas from scalp. Pollution, ageing, stress and harsh climates poorly affect the quality of hair. In this. inquisition, we introduce effective plats of the herbal hair pack and farther studies are necessitated to be performed to explore farther useful benefits of this herbal hair pack. Natural remedies are universally accepted with open hands presently as they're safer with minutest side paraphernalia as compared to the chemical predicated products. Herbal utterances are in great in demand to fulfill

the the necessities of the growing world demand. The intents of the formulated herbal hair dyestuff The active factors present in the hair dyestuff are nonthepoisoned and devoid of any side paraphernalia. The sarcastic used is of natural origin and is inferred from the Aloe vera gel with which the active dyestuff is mixed

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