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# Plant-based Hair Colors as Alternatives of Chemical-based Colors: A review of research work conducted

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**Abstract**

There has been a continuous need in the past few years for more reliable and eco-friendly hair dyeing products including worldwide customer knowledge of the harmful influence of artificial hair coloring products. The concern for health and sustainability advantages has highlighted the interest of research society toward herbal colorants that are used to substitute their fabricated dangerous corresponding chemicals. This article includes the traditional uses of a wide range of herbal hair coloring agents and highlights the achievable pigmentation methods (mordant coloring and direct coloring). A main attention is given to analysis towards new herbal hair color sources in addition to environmentally friendly, durable and budget-friendly approaches for their preparation as well as for practical uses, like designed biotechnological approach for producing colorants, coating methods for securing and improvement of non-organic nanocarriers. Furthermore, for the toxicity tests of herbal hair color products, advanced *in vitro* methods are emphasized.

**Keywords:** Nanocarriers, Herbal Hair dye, *In vitro* methods, Sustainability, Mordant dyeing and Direct dyeing.

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**Review article**
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## 1. Introduction

A numerous of skin and other dermatological illnesses caused by hair coloring chemicals; making plant-based dyes favored currently [1]. Most people are very mindful regarding their charm and hair today plays a primary function in this. For well-nourished hair, plant-based drugs free of bad reactions are employed. Almost 70% of population over 50 years dealing with the issue of losing hair and turning gray [2]. These signs of getting older begin earlier, in some cases. Around 40 years, loss of hair color initiates on the head skin, beginning from head corners, proceeding to the moustache, beard, and finally the chest. Whitening starts at some stage of life is deeply inherited. [3]. Due to their natural benefits and free from adverse outcomes, the increasing demand for plant-based medicines is growing rapidly [4]. For hair colorant and for hair development, famous plant-based herbal remedies are *Hemidesmus indicus* (Sariva), *Eclipta prostrata* (Bhringraj), *Phyllanthus emblica* (Amla), *Hibiscus rosa-sinensis* (Mandara), *Lawsonia inermis* L. (Henna), *Murraya koenigii* leaves (Curry leaves), *Nardostachys jatamansi* (Jatamansi), *Sapindus mukorossi* (Reetha) as well as *Trigonella foenum-graecum* (Methi) seeds (Fig.1) [5]. For hair dye applications in Asia and Europe prior to the production of artificial dyes, various plant-based residues were utilized. To create multiple shades of hair color from light brown to black color, indigo called the first textile dye, could be combined containing henna [6].

Negative reactions, such as skin reaction, allergy, uneven skin tone, hair damage, unusual hair color etc, result by the application of these substances. Several adverse effects like itchy skin, hair loss, dehydrated scalp, redness of skin, allergies, and also skin tumor by regular use of such substances on hair in its natural state. Natural hair dye was historically applied for dyeing hands and hair, in India. There are several herbs and trees such as Henna (L. inermis), Amla (P. emblica), Peppermint (Mentha x piperita), Aloe Vera (Aloe vera), Nilika (Indigofera tinctoria), Bhringraj (Eclipta prostrata), Rose Mallow (Hibiscus), Reetha (Sapindus mukorossi), Shikakai (S. rugata), and Coffee (Coffea arabica; Coffea canephora) that acts as a key component in hair treatment products mostly used for coloring hair fibers [7]. For body art while marriage ceremony and related festivities henna was historically utilized from the time of era of Bronze Era [8]. It belongs to Hindu as well as Islamic traditions that for the goal of nail art or for non-permanent tattoos henna is used as hair dye in addition to coloring agent. Medicines from the herbal sources are readily obtainable, affordable, harmless and useful and rarely have after effects [9]. In the modern times of protecting nature, the use of herbal dyes has been brought back and examined for dyeing cloth and food [10].

## 2. Endorsement of herbal hair colorant in substitute for chemicals applied in man-made hair color

Dye application for herbal-treated hair is partially different obtained from synthetic, artificial hair color (Fig. 2). Organic hair color widely being used all over world because of its rare harmful side impacts [11]. Currently people like plant-based hair dye instead of artificial hair color because of its harmful impacts [12]. Chemical-free hair color consists of plant derivatives such as Giloe, Amla, Aloe vera, Heena, Peppermint, Nilika, Bihi, Hibiscus, Bhringraj, Kikar, Akhrot, Kuth, Narra, Patnag, Jatamansi, jaborandi, Behera, etc.

### *2.1. Function of components applied in preparation*

#### *2.1.1.* **Henna (*Lawsonia inermis* L.)**

Leafy parts carry a purple color molecule known as lawsone (2-hydroxy-1,4-naphthoquinone), that has ability to attach to proteins and peptides**.** Lawsone functions as the functional ingredients extracted from henna leaves. The other ingredients from henna are white resin, gallic acid, xanthones and tannins [13]. pH value of the head skin blocks early hair loss as well as whitening of hair fibers are stabilizes by henna [14].

#### *2.1.2.* **Amla (*Emblica officinalis*)**

Whole fruit serves as a powerful component related to hair care formulations. Amla is richest as well as dense form of vitamin C beside tannins present in several plant species. Fruit liquid is useful for hair development as well as reduce scalp hair fall. Vitamin C found in fruit sticks, containing tannins that protect it from being misplaced utilizing heat and light. Amla includes significant quantities of ascorbic acid and exhibits a sour flavor which may be obtained from concentrated plant tannins, like emblica tannins B, emblica tannins A, pedunculagin and punigluconin. This also includes phyllanemblinin A, punicafolin compound, phyllanemblin and various plant polyphenols, like kaempferol, natural flavonoids, gallic acid and plant-derived ellagic acid [14]. These diverse bioactive compounds offer antioxidants as well as antibacterial compounds that can encourage growth of health in addition to shiny hair fiber. It retains hair dye and prevents premature graying, builds hair roots [15].

#### *2.1.3.* **Peppermint (*Mentha piperita*)**

Mint essential oil's components involve cineole, isomenthone, limonene, menthyl acetate, menthone, menthofuran, menthol, isopulegol, carvone as well as pulegone. It includes plant terpenes as well as natural antioxidants like hesperidine, eriocitrin as well as kaempferol 7-O-rutinoside [16]. Its fragrance is excellence and it could assist with dehydration, irritation or scalp issue [17].

#### *2.1.4.* **Aloe Vera (*Aloe barbadensis* Miller)**

For head skin Aloe Vera is efficient and might be utilized, no more easily for managing hair fall, however, improve hair fiber growth appropriately. Hair fiber growth by encouraging hair fiber roots is improved by Aloe vera which is made up of aloe emodin [18]. It is also helpful in healing the head skin caused by sun damage. It is also employed as the natural dye binder. It also identified because of its moisturizing effect [19].

#### *2.1.5.* **Nilika (*Indigofera tinctoria*)**

Nilika or the true indigo plant is rich in indican, which is the precursor of a natural blue pigment called indigo. It contains also rotenoids, alkaloids, flavonoids, indigotine, terpenoids, indirubin, glycosides, rotenoids. From multi-step way of extracting and detoxification, Indirubin, deep red color dye waste indigo extract [20]. It gives blue color. It functions as top-quality hair moisturizer. It increases hair fiber volume as well as reduces irritation over scalp and controls skin flakes [21].

#### *2.1.6. Bhringraj*

Eclipta prostrate includes bioactive plant compounds like polypeptides, polyacetylenes, coumestans, steroids, triterpenes, sterols, thiophene derivatives and flavonoids [22]. Plant bears alkaloid ecliptine. Various synthetic ingredients detected are wedelic acid, apigenin, wedelolactone, apigenin, b-amyrin, luteolin and similar compounds. It protects us from hair fiber breakage and unexpected fading hair color. It improves the hair fiber growth [23].

#### *2.1.7. Hibiscus*

The compound is premium to promote hair growth. Hibiscus clearly enhanced with diet B1, Phosphorus, Calcium, vitamin C, Niacin, Iron, and Riboflavin that help to increase hair fiber volume and reduce premature fading hair fiber color. Flower consumed because it helps in preventing skin flakes [24]. Hibiscus well-known because of its cell-protecting properties through forming plant antioxidants enriched with anthocyanins in addition to other polyphenols [25]. It could be consumed to renew hair fiber through moisturizing it. Examination of plant compounds derived from hibiscus rosa-sinensis indicated that it included the cardiac glycosides, anthraquinones, phenols, flavanoides, quinines, alkaloids, tannins, terpenoids, saponins [26], alkaloids, free amino acids, protein, reducing sugars, carbohydrates, free amino acids, mucilage, steroids and herbal oils [26].

#### *2.1.8. Reetha*

Reetha, referred to as Indian, ritha, washnut or soapberry. Sapindus mukorossi as washing nuts or soapnuts, perform a central role as chemical-free hair products since ancient times [27]. The key components found in Sapindus mukorossi are sugars, saponins as well as mucilage [28]. Inner seeds of Sapindus mukorossi contains proteins in addition to indicate stable protein building block structure according to the Global Health Organization. Besides sugars, proteins as well as fibres are included. The edible plant product is abundant in vitamin D, A, K, E, saponin, fatty acids, saponin, sugars as well as the mucilage [29]. The

Plant-based Sapindus mukorossi extract is beneficial for enhancing the hair fiber growth as well as controlled scalp flakes. This plant is enhanced with saponins, that generates the smooth, strong, and the glossy hair when applied consistently [30].

#### *2.1.9. Shikakai*

Plant extract derived from its seed shells is employed as a hair care washing product as well as for reducing skin flakes. S. rugata and acacia concinna, contain abundant level of vitamin C, that is healthy for hair fiber [31]. In marketed herbal extracts, when the plant has been processed with water it provides plant sterol, lactone, acacia acid or glucose as a natural sugar, rhamnose as well as arabinose. It includes tartaric acid, oxalic acid, spinasterone, succinic acid, citric acid, hexacosanol, ascorbic acid, and nicotine and plant alkaloid calyctomine [32]. Shikakai decreases on its own the pH value as well as preserve hair's natural oils also maintains them shiny as well as strong [30]. It is productive for improving hair strength in addition to health. Amla, Shikakai and reetha work well together, therefore, they are stirred together to have well-nourished as well as shiny hair fiber [33].

#### *2.1.10.* **Coffee (*Coffea arabica*, *Coffea canephora*)**

Concerning hair pigments, medicinal plants could be consumed as a fine herbal powder, water-based plant extract or its extracted herbal oil influence multiple colors ranging from red-brown to dark brown. Plant-based remedies such as powdered coffee secured from seed are applied for hair color [34]. It supports encouraging hair development. Promotes soft and bright hair. Facilitates hair fiber coloring to provide original texture, due to natural brown pigments, primarily melanoidins, formed during roasting, and potent antioxidants like chlorogenic acids (CGAs) [35].

### 3. Hair Coloring Procedures

For maximum plant-based hair color, there exist two methods for hair dyeing: mordant coloring and direct coloring. In short, the hair coloring method could be classified into two stages: (i) Scattering of pigment molecules from the dye to the hair filamentous structure; (ii) Creation of chemical bond through interactions of hydrogen, ionic, and covalent bonds among hydroxyl and carboxyl categories available in color substances and sulfhydryl/ nitrogen-containing groups in hair protein, including or excluding with the help of supporting mordants, for effective and long-lasting hair dyeing [36]. Scattering is three-step procedure [37]. (1) Initial step is transfer of color molecules interacting with the fiber through a combining of liquid penetration as well as stirring; (2) in step two, coloring agents are attached over the external surface layer of hair; (3) last step is scattering of color substance of low-mass molecules inside hair fibers (cortex and cuticle) and could be identified through the alteration of the cell membrane complex (CMC) available in hair outer layer. CMC is bulk phase within the cell junctions which binds cortical as well as cuticle cells in contact [38]. Research shows that absorption through CMC is chief transfer route for color compounds to move into the inner hair layer [39].

Partially ionized low-weight molecules become more able to pass through as well as scatter on CMC lipid bilayer [40]. Furthermore, hair filaments influence diffusion and absorption of surface coloring agents. For example, practice of hydrogen peroxide present in hair coloring preparation could damage disulfide linkages in hair protein, leading to disruption of the cell membrane complex and harm to cortex as well as cuticle constituents, leading to expanded detached hair strands as well as lifted cuticles, thus assisting stronger bonding and deeper penetration of coloring agents to the outer hair fiber [41]. Direct dye application, as a non-oxidative process, is simple development of color- complex or bond formation among natural dye and hair filamentous units. Dye effectiveness of directly colored hair fiber relies on attraction of color substance to hair outer layer. In general, low-mass coloring agents (with molecular sizes ranging from 1.2–1.3 nm (acidic), 1.4 nm (basic), and 0.95 nm (neutral) [42] quickly enter into outer hair surface. High molecular weight dyes do not enter hair cuticles, but might be bound to hair filament through different kinds of forces, i.e., electrostatic, van der Waals forces along with hydrogen bonding [43].

Within the direct dyes, herbal pigments derived from walnut husks and henna leaves are common examples. For example, henna at pH 4.5–6.0 has the reduced form of lawsone, its primary dye, interacts with charged nitrogen-containing groups found within hair filaments (Fig: 3a) [44]. Moreover, SEM (Scanning electron microscopy) examination demonstrates that natural henna colorants could be able of repairing cuticle injury and supplying a silky moisturized visual aspect on the cuticle layer of colored hair [45]. On colored hair, mordant hair dyeing relates to development of electron-transfer association among dye and color binder [46]. Mordants act as compounds which bind color to hair via associations along with color molecules as well as keratin filaments for enhanced dye stability [47]. Typical dye fixers are metal salts, like cupric sulfate, ferrous sulfate, and alum, as well as act as a connection among hair fiber and dye. Coordinate covalent bonding is potential way in attaching metal-based mordants to color substance with oxygen-bearing categories playing primary function [48]. Figure (3b) indicates coordinate covalent bonding among a polyphenol dye and an iron (II) ion that links to hair filament through hydrogen bonds [49]. Mordant-based dyeing is carried out by means of pre-, meta-, or post- metal-assisted dyeing procedures. Selection of mordants as well as mordanting procedures demonstrates significant impact on shade of hair color in addition to durability characteristics [50]. In case of herbal color, it's hard to guess an ideal mordanting method, as outcomes are strongly based on color plant as well as mordant category. However, handling of metal-based mordants might result in gathering of copper as well as iron within hair fibers, that has been stated to result in UV deterioration of colored hair fibers through Fenton reaction [51]. Regarding this, improvement of plant-based mordants, particularly plants high in metals and tannins, as practical replacements through metallic mordants requires additional research [52]. Aloe vera gel was described as plant-based mordants to enhance hair coloring characteristics [53].Tannin-containing extracts obtained from *Eucalyptus maculata* (eucalyptus), pomegranate (*Punica granatum*) peels, *Emblica officinalis* (amla) and *Rhus coriaria* (sumac) function as bio-mordants commonly utilized in fabric processing as substitutes to metal-based mordants yet are hardly observed for hair dyeing process [54].

## 4. Technological improvements for chemical-free hair coloring

### *4.1. Making hair/color dyes by synthetic biological methods*

Conventional methods of obtaining coloring agents for hair derived from herbs are restricted by reliance on complicated isolation/purification techniques, changing herbal origins, lengthy growth phases and short periods. During recent years, engineered biology methods have introduced latest methods for producing herbal-based dyes through fermentation by microbes. Biochemical processes and genome engineering procedures have shown significant capable to modify or launch genes that make within microbes for improved generation of curcumin, anthocyanins as well as carotenoids [55]. First microbe-based production related to anthocyanins was announced as described by Yan et al [56], during which a four-stage biochemical pathway consisting of foreign plant genes were developed into genetically modified *E. coli* as well as cytosol were capable of absorbing mustard alcohol and naringenin to yield anthocyanin 3-O-glucoside. In the same way, heterologous formation related to curcumin was manufactured inside modified *E. coli* with the help of 4-coumarate-coa ligase (4cl1) from diketideCoA synthase (DCS), 16arp16dopsis thaliana and CURS1 originating from turmeric [57]. Another example of producing pigments by creation of new metabolic pathway in *E. coli*. The cloning of a single gene from *Pseudomonas putida*, which codes for naphthalene dioxygenase, made it possible to create a strain of *E. coli* capable of synthesizing indigo in a medium containing tryptophan. Furthermore, higher-performing biochemical synthesis β-carotene pathway was constructed within microorganisms through metabolic modification methods through increasing the number of copies of carB as well as 16arp genes also highly expressing genes involved in the mevalonate metabolic process [58]. On other hand, despite significant improvements in the fields of bioengineering as well as cellular engineering, improvement of multi-microbe cell factories is cell systems are complex as well as time-requiring. Furthermore, possible biological safety risks in designed bioengineering have served as serious issue in recent times. Thus, it remains difficult for industrial development of these techniques to generate several varieties of plant-based colors as well as utilize them in hair fibers coloring products.

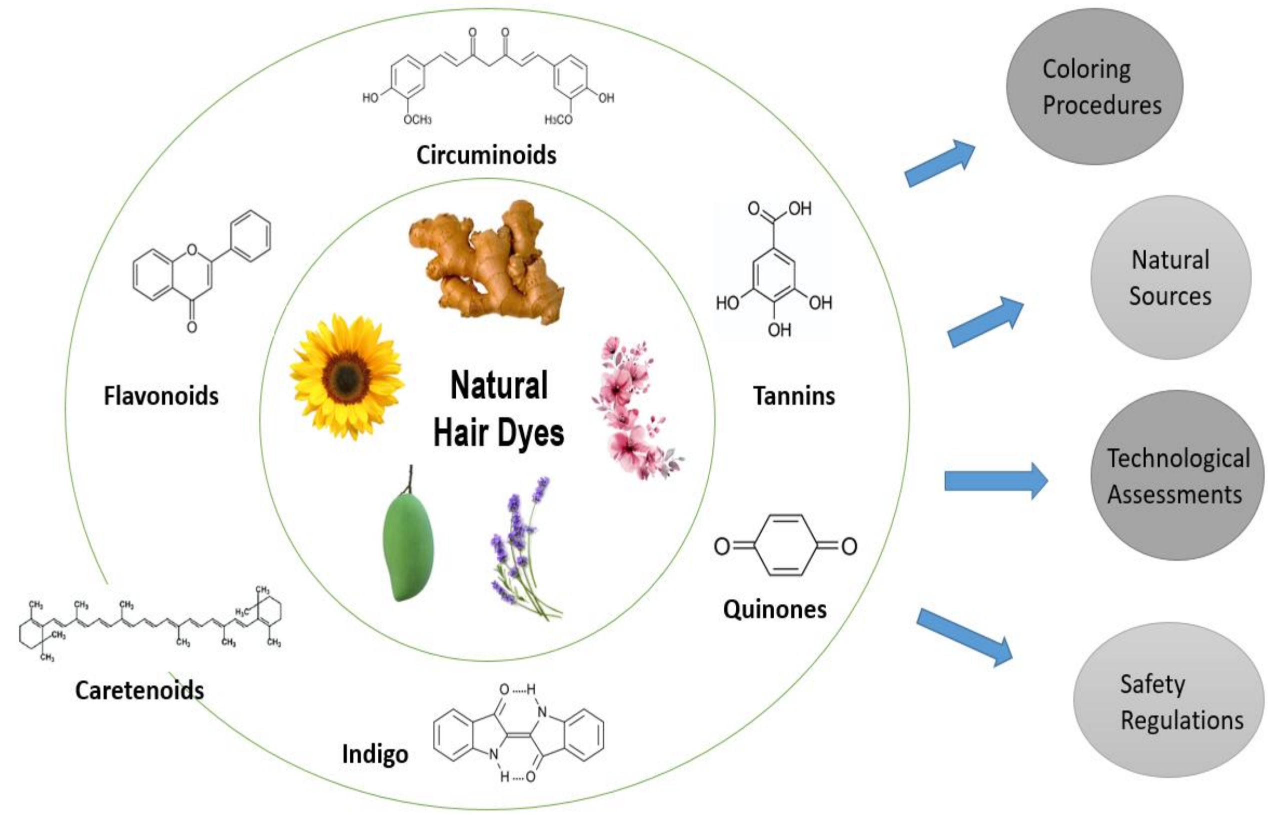


**Figure 1.** Sources of natural hair color


**Figure 2.** Components of natural hair color

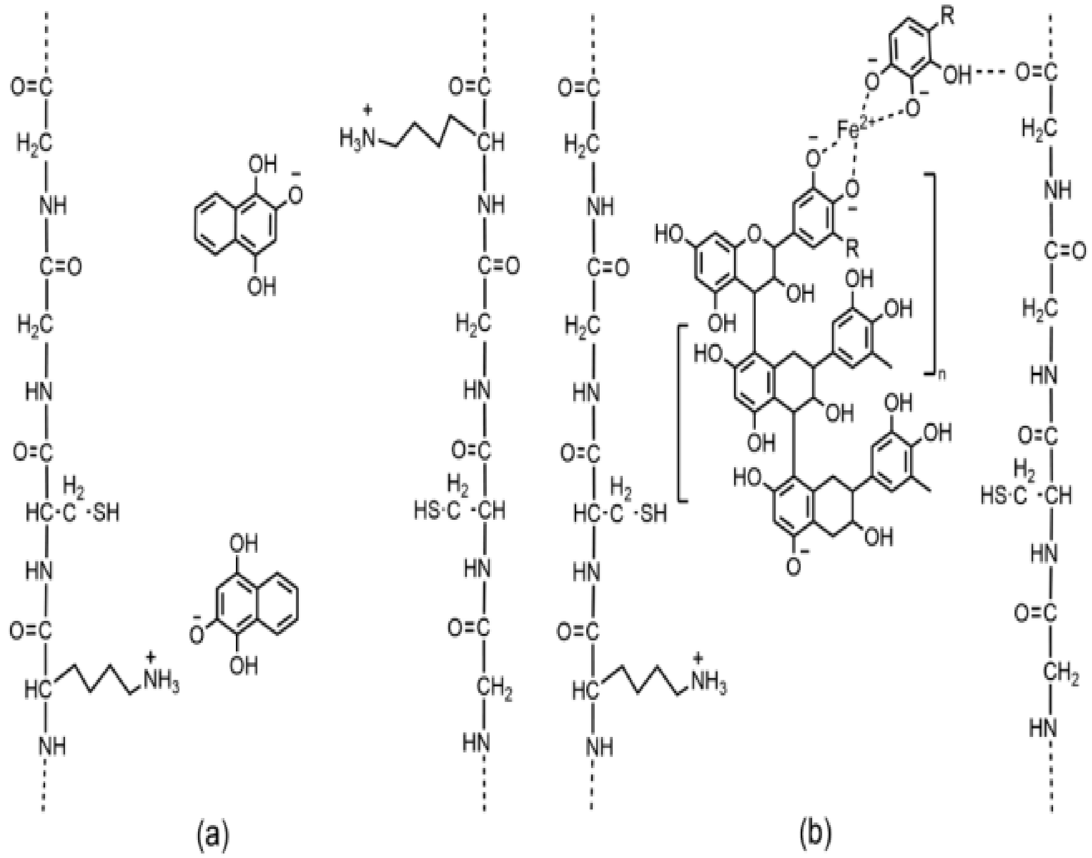


**Figure 3.** Expected associations between lawsone and hair filaments (a); Expected associations between polyphenol dye, hair fiber treated with iron (II) ions as mordants, where R = H CH3, OH (b). Cited with permission from ref. [49].

**Table 1.** Description of the components of the plant-based hair dye

| Sr.No | COMMON NAME | SCIENTIFIC NAME | CHEMICAL COMPONENTS | APPLICATIONS |
|---|---|---|---|---|
| 1 | Henna | *L. inermis* | Lawsone, Xanthones, Flavonoids, | Prevents fungal growth, Coloring agent. |
| 2 | Amla | *P. emblica* | Ascorbic acid, Gallic acid, Punicafolin | Maintains hair colour, Antioxidant. |
| 3 | Peppermint | *Mentha x piperita* | Cineole, Menthofuran, terpenoids | Assist with dehydration, irritation or scalp issue. |
| 4 | Aloe Vera | *Aloe vera* | Polysaccharides, Anthraquinones, Vitamins | Natural mordant nourishes hair health. |
| 5 | Nilika | *Indigofera tinctoria* | Flavonoids, Indigotine, Indirubin | Increases hair volume and reduces irritation on scalp and controls dandruff. |
| 6 | Bhringraj | *Eclipta prostrata* | Phytochemicals, Thiophene derivatives, Alkaloid ecliptine | Protects from hair breakage and untimely fading hair color. |
| 7 | Rose Mallow | *Hibiscus* | Saponins, Free amino acids, Mucilage | Soothing agent, lower blood pressure. |
| *8* | *Reetha* | *Sapindus mukorossi* | Sugars, Saponins and Mucilage | Generates the smooth, healthy, and shiny hair when used consistently. |
| 9 | Shikakai | *S. rugata* | Vitamin C, Spinasterol, nicotine | Improve hair strength and health. |
| 10 | Coffee | *Coffea arabica*, *Coffea canephora* | caffeine, chlorogenic acids, lipids | Promotes soft and bright hair. |

***4.2. Covering of natural colorants for Strengthening and removal of toxins***

Problems with durability (light, heat and alkalinity/ acid stability) should be viewed while using plant-based colors within hair coloring products. Multiple encapsulation methods properly established over recent years to preserve delicate bioactive compounds or plant-based extracts derived from environmental challenges (ultraviolet light, extreme pH levels and heat) [59]. Wrapping provides an effective approach to protect easily affected coloring agents (central element) by wrapping them inside an outer layer (encapsulating material) for ensuring durability as well as ability to take color of plant-based dyes in ready-made hair color products. Microcapsules containing organic colorants might be collected through various wrapping methods, containing together chemical (suspension polymerization, emulsion polymerization as well as interfacial polymerization) and physical methods (spray cooling, atomization-drying or co-extruded process) [60]. Tang et al. employed gum Arabic and maltodextrin as coating substances into microcapsules of obtained coloring agents from henna and Chinese gallnut through atomization dehydration procedures. Covering of extract from gallnuts notably enhanced photo-heat durability along with preparation stability in basic composition while covering derived from henna extract significantly lowered its direct exposure harmful effects without altering hair coloring characteristics [61]. Therefore, coating technology has offered path to overcome durability and interaction problems discussed in herbal coloring with plant-based dyes.

***4.3. Improvement based on inorganic nanocarriers for effective hair fibers coloring***

Advancing obtained from small particle size, huge surface area as well as microscopic structure, and adjustable chemical-physical characteristics, nanomaterials function as perfect carriers for beauty treatments [62]. In past few years, different inorganic nanoparticles (such as nanofibers, nanoparticles along with nanotubes) displayed advantage in strengthening herbal hair dyes and improving coloring result. For example, nanocarbon tubes with short and expanded surface to volume fraction can readily be soaked up onto the outer layer of hair and engage with the hair filament, leading to improved attraction and stable dyeing effects [63]. In same way, gallic acid minimized/modified silver nanoparticles or dyed silica nanosized particles were designed as unique coloring agents for decolorized head hair because of their nano-surface frequency response behavior. Moreover, oxygenation from dopamine to eumelanin -such as polymerized dopamine as well as accumulation on outer layer of hair fiber in shape of nanosized particles was illustrated as an innovative nature-inspired approach to build melanin-like hair colorants [64]. As reported by Panchal et al. that natural nanotubes, if packed in combination with lawsone, were efficient for dyeing involving both colored as well as white hair along with proper hair cleansing and could improve hair fiber via molecular adsorption and self-organization. Additionally, there are statements regarding hair dye uses of numerous as well as simple to get organic clay particles like palygorskite, sepiolite along with kaolin [65]. Collectively speaking, inorganic nanoscale materials integrated/modified with water-loving and water-repelling pigment particles from organic sources offered opportunities for progress of innovative hair dye formulations based on natural colorants.

**5. Toxicological evaluations**

Plant-based sources do not surely mean nonpoisonous or secure. Black-colored henna, fusion derived from henna leaves and p-phenylenediamine (PPD) which is a chemical additive, this later is identified to cause skin inflammation and severe allergic reactions [66]. Various dyes, for example juglone, are biological toxins with toxic effects on cells [67]. Furthermore, the color components and harmful impact of plant extracts employed in hair color formulations could be changeable along with various natural plants, extraction techniques and harvest seasons. The suitability of juglone for use - including walnut shell extract used as a hair coloring agent were examined together *in vitro* as well as *in vivo*, indicating it does not causing skin irritation [68]. Moreover, metal-based mordants, colorants and high-density metal impurities derived from plant-based extracts could be stored within humans with regular dyeing and could pose health risks. For instance, availability of elevated amounts of Fenton metals such as iron can lead to photo-oxidative destruction within hair filament [51]. High-density metals, like chromium, lead along with cadmium, can soaked up in liver, kidney as well as skin, leading to allergic skin reaction [69], genital system abnormality [70], plus other bad health outcomes. Various innovative analysis techniques, like voltammetric analysis using differential pulse anodic stripping has been created for immediate identification of high-density metals [71]. Hence, reliability checks derived from both natural dye constituents along with hair color mixtures are mandatory.

It is also required to determine poisonous record of natural color plants along with their primary dyes because at present most plant-derived extracts applied to hair coloring cosmetics fail to include important toxicity details for example, acute/ repeated exposure harmful effects, irritation, allergic reaction along with genetic toxicity [72]. Previously, the safety of cosmetics assessments were largely performed through animal testing [73]. In modern times, with worldwide adoption of the 3R principles (reduction, replacement, refinement) or EU restriction on testing animals in 2013, more test-tube experiments were designed and practiced in toxic effects analysis of natural hair color components along with composition. Tang et al. examined eye and skin reaction risks from four plant-based hair colors (sappanwood, Chinese gallnuts, henna or walnut husks) through employing various Organisation for Economic Co-operation and Development (OECD) verified test-tube methods, for example, Hen's Egg Test on Chick Chorioallantoic Membrane (HET-CAM), Bovine Corneal Opacity and Permeability (BCOP) assay in union with microscopic tissue analysis as well as experiment on reformed human outer skin [68]. i.e., Human adult Calcium Temperature (HaCaT) keratinocytes-associated Interleukin-18 (IL-18) assay, modified Direct Peptide Reactivity Assay (mDPRA), blood monocyte-derived dendritic cell test, U937 cell activation test (U-SENS)/Interleukin-8 (IL-8) levels, and Genomic Allergen Rapid Detection (GARD) have been described to assess hypersensitivity risk made from henna-based hair coloring products having para-phenylenediamine (PPD) [74].

## 6. Conclusions

Plant-based hair color has been developed. It offers an organic substitute, which can be applied. A natural hair cream, dye hair in an almost peaceful manner. Benefit of plant-derived products is its chemical-free nature. It aids in curing dandruff through elimination of extra oil extracted from head skin. Herbal hair pack, having benefit of powder of various plants, that perfect for hair maintenance. Natural treatments were widely approved without hesitation these days because they are more secure along with small adverse effects as contrasted to synthetic formulations. In this article we identified beneficial effects of natural hair packs as well as additional research required to investigate more valuable benefits of natural hair cream.

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