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A Review: Natural Ingredients as Hair Dye



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**Suchita Gokhale*¹, Smita Takarkhede¹, Kunal Patil²,
Mansi Patil²**

*¹Assistant Professor, ²Final year Pharmacy students
Ideal College of Pharmacy and Research, Kalyan, India.
Affiliated to University of Mumbai*

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ABSTRACT

The increase in environmental and health hazards in the manufacture of dyes and their use throughout the world is a major concern. This work was made possible while investigating the alternative to the synthetic and semi-synthetic dyes. The present study focuses on the herbal hair dye which shows permanent dyeing to the applied regions of human hair without causing any hair damage or hair loss or skin irritation when compared to the synthetic and semi-synthetic dyes. The active constituent also prevents the hair from damage caused by Longhair. The manufacturing process is hazardous to the health of the people involved in the process and its applications lead to environmental pollution and also causes potential side effects to the consumers of the product. The fear of side effects from synthetic dyes has limited its use by health-conscious customers throughout the world and has to overcome various regulatory barriers before it reaches its destination.

INTRODUCTION

Synthetic or Chemical hair dyes cause skin or other skin-related side effects. Therefore herbal hair dye is preferred nowadays. [1] Herbal drugs are used for healthy hair. Almost 70% of the population faces the problem of balding and graying of hair. The age at which graying starts is deeply influenced by heredity. But premature depigmentation in adults is mainly due to several other factors such as illness, some specific drugs, shock, *etc.* [2, 3]. People have been using natural dyes since ancient times for many purposes including dyeing carpets, rugs, and clothing's with the help of roots, stems, barks, leaves, berries, and flowers of various dye-yielding plants [4]. The need for herbal-based natural products is increasing day by day due to their natural goodness and side effects free. The most widely used ayurvedic herbal drugs are Amla, Bhringraj, Henna, Mandara, Jatamansi, Reetha, Sariva, Curry leaves, and Methi seeds and are traditionally used as hair colorant and for hair growth [5]. Indigo, known as an initial fabric dye, could be mixed with henna to make different light brown to black shades of hair dye [6]. Use of these chemicals can result in unpleasant side effects, such as skin irritation, allergy, hair breakage, skin discoloration, unexpected hair color, *etc.* [7-9]. Continuous application of such compounds on natural hair causes multiple side effects such as skin irritation, allergy, hair fall, dry scalp, erythema, and also in some cases skin cancer [10, 11]. In India, henna has been used traditionally for coloring palms (Mehndi) and hairs. There are so many herbs like Kikar, Bihi, Bhringraj, Patnag, Akhrot, Narra, Jaborandi, Jatamansi, Amla, Kuth, Giloe, Behera which are used as a major constituent in hair care preparations mainly meant for hair dyeing [12-15]. Henna has been used traditionally for coloring. It is a part of Islamic and Hindu cultures as a hair coloring and dyeing agent for formation of temporary skin tattoos [16, 17]. Drugs from plant sources are easily available and are less expensive, safe, efficient and rarely have side effects [18]. In the present era of eco-conservation, the use of natural dyes has been revived and reviewed for the coloration of textiles and food materials [19, 20].

Role of ingredients used in the formulation

1. Henna



Figure No. 1: Henna

A red-orange-colored compound present in the dried leaves of the plant. Other constituents in henna such as flavonoids and gallic acid act as organic mordants to the process of coloring. Carbohydrates give the henna paste a suitable consistency for adherence to the hair [21, 22]. Natural henna is usually hypoallergenic but allergic reactions occurred in mixed types including black henna. This occurs due to chemical compounds consisting of para-phenylenediamine, 2-nitro-4-phenylenediamine, 4-aminophenol and 3-aminophenol [23]. Henna has also **antifungal activity** against *Malassezia* species (causative organism of dandruff). Henna prevents premature hair fall by balancing the pH of the scalp and graying of hair. Henna leaf paste is used for alleviating Jaundice, Skin diseases, Smallpox, etc. Extract of Henna leaves with ethanol (70%) showed significant hypoglycaemic and hypolipidaemic activities in diabetic mice [24, 25].

2. Amla

Berries obtained from amla enhances the absorption of calcium, helping to make healthier bones, teeth, nails, and hair. It maintains the hair color and prevents premature graying,

strengthens the hair follicles [26]. Amla is the richest and concentrated form of Vitamin C along with tannins found among the plants. Whole fruit is used as an active ingredient in hair care preparations. The Vitamin C found in the fruit binds with tannins that protect it from being lost by heat or light [27, 28]. This fruit is also rich in tannins, minerals such as Calcium, Phosphorus, Fe, and amino acid. The fruit extract is useful for hair growth and reduces hair loss [29]. Amla has **antibacterial** and **antioxidant** properties that can help promote the growth of healthy and lustrous hair [30].



Figure No. 2: Amla

3. Reetha

Its fruit is rich in vitamin A, D, E, K, saponin, sugars, fatty acids, and mucilage. Reetha extract is useful for the promotion of hair growth and reduced dandruff [31]. Extract of fruit coat acts as a natural shampoo, therefore is used in herbal shampoos in the form of hair cleanser [32]. Reetha as soapnuts or washing nuts plays an important role as natural hair care products since older times. This plant is enriched with saponins, which makes the hair healthy, shiny, and lustrous when used on regular basis [33].



Figure No. 3: Reetha

4. Shikakai

It contains Lupeol, Spinasterol, Lactone, Hexacosanol, Spinasterone, Calyctomine, Racimase-A Oleanolic acid, Lupenone, Betulin, Betulinic acid, Betulonic acid. The extract obtained from its pods is used as a hair cleanser and for the control of dandruff [34]. Shikakai or acacia concinna, has a rich amount of vitamin C, which is beneficial for hair. Shikakai naturally lowers the pH value and retains the natural oils of the hair and keeps them lustrous and healthy. It is also effective in strengthening and conditioning hair. Amla, reetha, and shikakai compliments each other, therefore, they are mixed to have healthy and lustrous hair. All of these ingredients come in two forms, one as dried fruit and the other in powdered form. Amla, Reetha, and Shikakai suit 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 [35].



Figure No. 4: Shikakai

5. Coffee

In hair colorants, herbs can be used in the form of powder [36], aqueous extract [37], or their seed oil to impart shades of different colors varying from reddish brown to blackish brown [38]. The herbal drugs like coffee powder [39, 40] obtained from its seeds are used as hair colorants [41, 42].



Figure No. 5: Coffee

6. Tea

Being rich in polyphenols, selenium, copper, phytoestrogens, melatonin [43], tea also has been used in traditional Chinese medicine [44] and Ayurvedic medicine has been used since long as a hair colorant [45].



Figure No. 6: Tea

7. Hibiscus

It is excellent for an increase in hair growth activity. Hibiscus is naturally enriched with Calcium, Phosphorus, Iron, Vitamin B1, Vitamin C, Riboflavin, and Niacin, which help to

promote thicker hair growth and decrease premature graying of hair [46]. This flower is used for controlling dandruff. Hibiscus exhibits **antioxidant** properties by producing flavonoids such as anthocyanins and other phenolic compounds. It can be used to rejuvenate the hair by conditioning it [47].



Figure No. 7: Hibiscus

8. Bhringraj

Petroleum ether extract of bhringraj initiates a greater number of hair follicles [48]. The oil-based extract of leaves has been used traditionally for improving hair growth and for imparting natural color to grey hair. NeelibhringaadiTailam, mentioned in Ayurveda is suitable for promoting hair growth and for providing natural color to grey hair [49]. Bhringraj is used in the preparation of various oil, shampoo, hair dye , *etc.* [50-52].

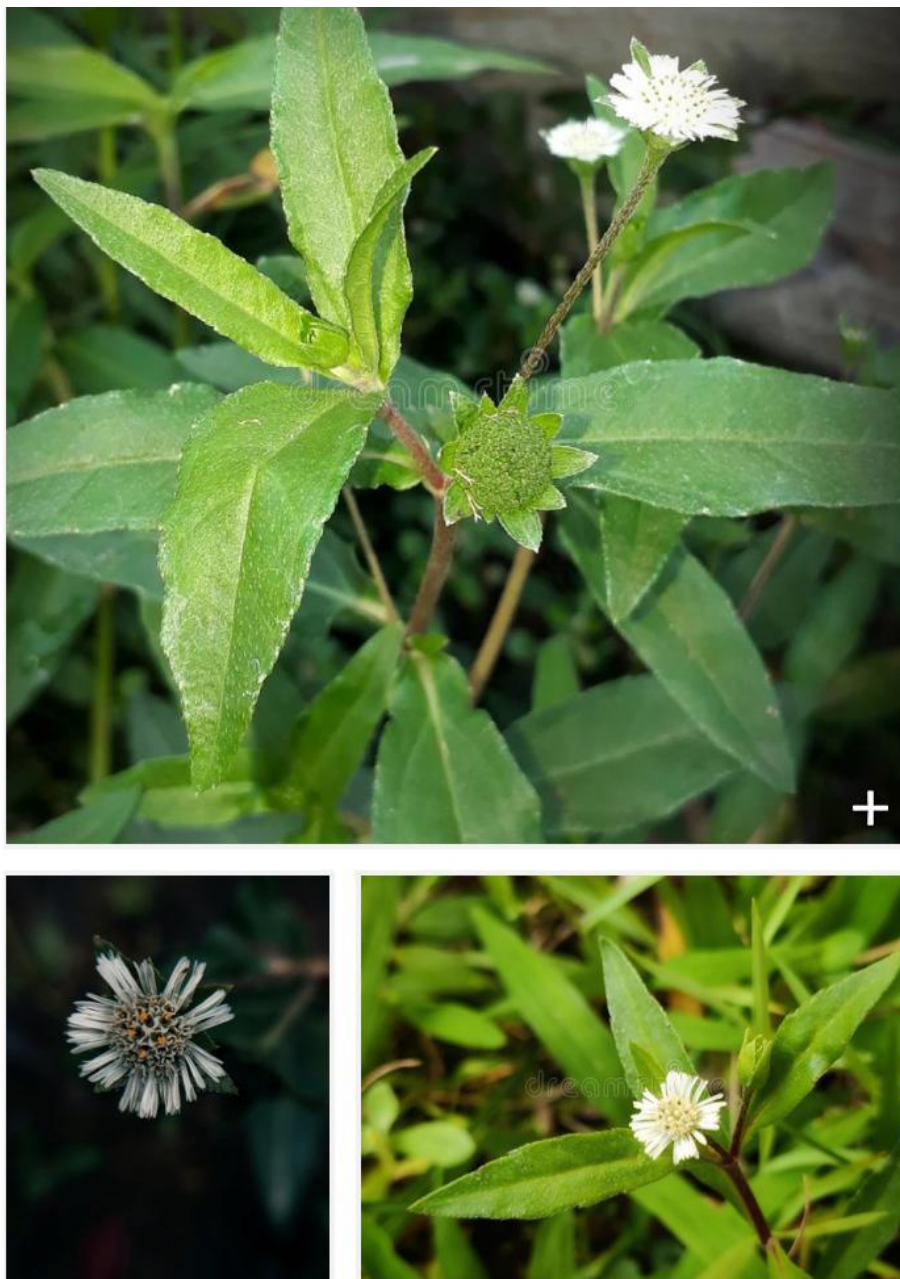


Figure No. 8: Bhringraj

9. Jatamansi

Nardostachys jatamansi is an important drug of Ayurveda and is used in different traditional systems of medicine such as Ayurveda, Unani, Siddha, *etc.* [53]. Its rhizomes and roots are used as a **tranquilizer**, **laxative**, **cardiac tonic**, for curing vertigo, nervous headache, low and high blood pressure, *etc.* [54]. The rhizomes as well as roots of the plant are medicinally rich and therefore, have been the focus of chemical studies [55].



Figure no.9: Jatamansi

USES OF HAIR DYE

The herbal hair dye contains all the goodness of natural ingredients. Apart from acting as a hair dye, because of the perfect blend of herbals, also acts as a hair growth promoter, hair nourisher, conditioner, and anti-dandruff agent as well. Henna acting as the base powder, acts as the universal hair dye as it is used for its coloring properties throughout the globe. It is also beneficial in the removal of excess oil from the scalp and conditions the hair well. Reetha restores the health of dull, dry, and damaged hair. Bhringraj aids in improving the circulation

of blood flow at the root of the hair by providing more nutrients to support hair growth. The extract of jatamansi is helpful in the growth of hair. It is beneficial for smooth, silky, and healthy hair too. Shikakai is packed with 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 buildup, unclog pores, kill infection-causing bacteria and stimulate hair growth. Regular use of hibiscus flower juice can easily restrict hair fall control, dandruff, and graying of hair even when you are touching 50 years of age. This is an age-old remedy for all those people who have been struggling for healthy hair that is free from grey hair. It also contains essential fatty acids, which strengthen hair follicles and provides shine and new life. The sufficient amount of vitamin C in amla helps to halt pre-mature greying. It is a great hair conditioner and also remover of dandruff. Tea imparts perfect colour to the hair in combination with other herbs. It is good for the growth of hair and fights against dandruff. Coffee for hair strengthens hair by improving the overall quality and texture of it.

CONCLUSION:

It offers a natural alternative, which can be used, irrespective of any side effects. The results can be incorporated while developing the pharmacopoeial standards.

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