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Review Article

## A REVIEW ON POLYHERBAL HAIR DYE CREAM

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### Abstract:

Graying of the Hair is the natural phenomenon which attributes to the ageing and frequent use of shampoos which has leads to use of synthetic dyes with the increase of hazardous chemicals in the process of manufacturing Hair dye is one of the oldest, well-known cosmetics that have been used by many ancient cultures for not only women but also men Herbal hair dye is preferred due to their advantages in contrast to synthetic one which has adverse effect on human health because of harsh chemicals. "Herbal" word itself indicates the safety Conventional method of hair dyeing involves use of chemicals which are sometimes hazardous to our health. They cause irritation, breakage of hair, skin discolouration. Herbal based hair dyes are very beneficial over chemical hair dyes. Herbal based hair dyes are being preferred on large seale, due to their number of advantages it exerts to overcome the ill-effects of a chemical-based hair dye. As we know herbal plants are considered to be effective and important for the human health The herbal hair dye has significant uses for our health The aim and objective of present study is to formulate the herbal hair dye. It is prepared by using Indigo, Henna, Hibiscus rosa, amla, blueberry, beheda The sample has been tested for their stability test, open patch test, etc These natural herbal hair dyes were excellent colourant for the hair and it is economical without any side effects. The prepared hair dye resembles natural hair colour with better dyeing effect and greater retention capacity and also ecofriendly on comparison with marketed hair dye formulations.

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**BACKGROUND:**

The use of cosmetics in order to change hair colour, such as hair dye products, occurs with high frequency, mostly among the female population. However, these hair dyes may cause serious damage to the hair fiber structure. Now a days, herbal cosmetics in growing countries like United States, Canada, United Kingdom, Australia, Germany and France as well as in other developing countries like the Philippines, China and India etc. The market for ayurvedic products in India is projected to be worth Rs. 2500 crore annually, of which the natural herbal cosmetics segment accounts for Rs 450 crore. For over 5000 years, people in China and India have been aware of the medical benefits of many plants and herbs. India holds the second position in the global market share of herbal cosmetics, while China is the world's largest exporter of these products. Brazil is now the world leader in hair dye products.

**INTRODUCTION:****Hair**

Hair is an important part of human body. The problems associated with it include hair loss, unruly hair, lack of hair volume, conditioning, immature graying, dandruff, thinning of hair, dullness etc. Hair can vary in shape, length, diameter, texture, and colour. The cross section of the hair could also be circular, triangular, irregular, or flattened, influencing the curl of the hair. All mammals have hair. Its main purpose is to regulate body temperature. It also wants to decrease

friction, to guard against sunlight, and to act as a way organ.

**Hair consists of two parts****Follicle:**

The follicle is a bulb shaped structure in the skin. At the top of the follicle may be a net work of blood vessels that provide nutrients to feed the hair and help it grow. This is called the papilla. Each follicle arises from an interaction between epidermis and dermis.

**Follicle is divided into three segments.****Infundibulum. Isthmus****Inferior segments**

- **Shaft:**

The hair shaft is divided into three layers

- **Medulla:** It is the middle of hair. It's going to be fragmented or segmented and continuous or doubled. It is often a hollow tube or crammed with cells. Most hairs don't contain a medulla, while others have medullas that are discontinuous or fragmented. It forms the middle of the hair shaft. Fine hairs especially tend to lack this layer.
- **Cortex:** It is the largest part of hair shaft which provides the colour to hair i.e. melanin (hair pigment).
- **Cuticle:** The cuticle may be a transparent outer layer of the hair's shaft. It's made from scales that overlap each other and protect the inner layers of the hair. The scales point from the proximal end of the hair, which is closer to the scalp and to the distal end [1]

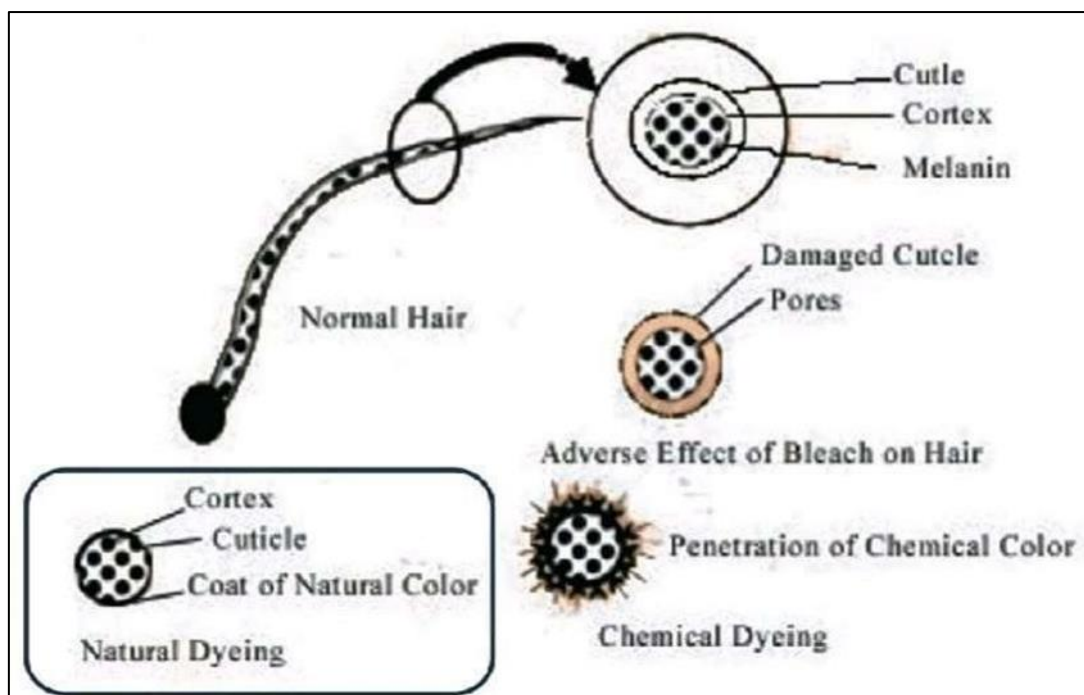


Fig.No.01. Mechanism of hair dye

## MECHANISM OF HAIR DYING

### By Chemical Dye:

Most of the chemical dyes contain bleaching agents such as ammonia and/or peroxide which damage the outer most layer and create capillaries in hair shaft. Then PPD, OPD, MPD like chemical colour fills these capillaries, enter in the inner layer and remain stuck inside, as permanent colour. The next application again does the same on hair shaft. This results in loss of strength, roughness and permanent damage to hair. [2]

### By Natural Dye:

Natural Dye colours hair by coating the hair shaft. It provides thickness to hair and stick as a semi-permanent colour. The next application again does the same and results in increase in strength and shine in your hair [2]

This dyes just sticks to the cuticle and is more like a paint. Temporary dyes have a colour. Temporary dyes colours the hair vibrantly and gives them a shine but they get washed off after just one or two hair washes. [3]

### Semi-permanent dyes

Semi permanent dyes contains a molecule of pigment that are so tiny that they slip between the scale of cuticle and sticks to the cortex. But it doesn't react chemically with anything in the hair. Semi-permanent dyes remains vibrant for atleast 3-4 weeks depending upon the frequency of washing the hair. Semi-permanent dyes can only be used to darken the shade of the hair but you cannot lighten your hair colour. [3]

### Permanent dyes:

As the name suggest Permanent dyes stays with your hair until the hair grow or falls out. The Permanent dyes contains:- a) Dye precursor b) Dye coupler c) An oxidiser d) An alkaline chemical. The alkaline chemical such as ammonia helps in opening the cuticle. For a dye to be effective it needs to access the cortex. The oxidiser then oxidises the melanin present in the cortex to get rid of the existing colour. Thus turning the melanin colourless. But the oxidiser has other 9 important role also. It also causes oxidation of the dye precursor. The dye precursor are generally colourless chemicals that develops colour when oxidised. The resulting Pigmented particle called intermediates are formed that are left in the cortex may get slip off from the cortex like semi-permanent dyes but the dye couplers react with this intermediate to form polymers of pigments that are too big so can't get slip off the cortex easily. Thus the permanent dyes resist fading through multiple washes as it is trapped beneath the cortex [3]

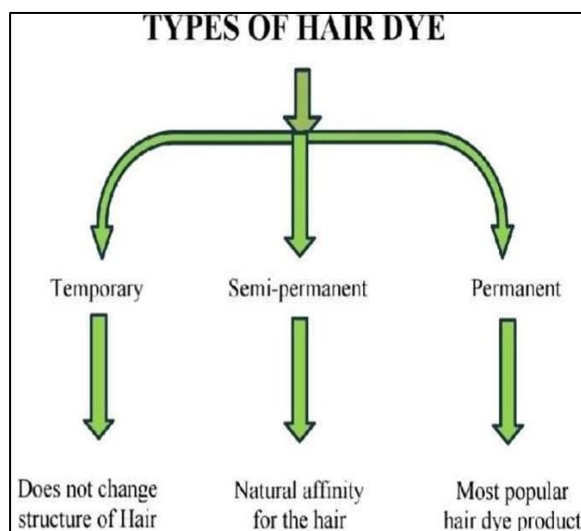


Fig.No. 02. Types of hair dye  
Temporary Dyes

## CONSTITUENT'S PROFILE:

### 1) HIBISCUS ROSA

Synonym- Jaswandi, Hibiscus Boryanus. Family - Malvaceae

Chemical Constituents- Tannins, Anthocyanin, Anthoquinones.

Use Antioxidant, Demulcent, Conditions hair, Reduce grey hair, Moisturizers, Anti hair fall, Prevent split ends.[4]



<p><b>2) HENNA</b>  Synonym- Egyptian Privet Family -  Lythraceae  Chemical Constituents Lawsone.  Use Antifungal property, Colouring agent, Anti-aging  properties, Enhance hair texture, Antigreying property,  Repairs split ends. [4]</p>	
<p><b>3)BLUEBERRY</b>  Synonym- Bilberries Family -Encaceae  Chemical constituents- Anthocyanin, Chlorogenic acid,  Flavonoids, Vitamins. Use- Hair Growth, Repair  damaged hairs, Antigraying property, Antioxidant,</p>	
<p><b>4) BEHEDA</b>  Synonym- Beheda Family-Combretaceae  Chemical constituents- Tannic acid, Ellagic acid, gallic acid,  Mannitol, B-sitosterol.  Use- Antimicrobial, Astringent, Dandruff control, Shine,  Premature graying, Nourishment hair growth,</p>	
<p><b>5) AMLA</b>  Synonym-Adiphala, Aavla. Family-Euphorbiaceae  Chemical constituents Ascorbic acid, Amblicanin A&amp;B.  Ellagic acid, Gallic acid, Quercetin.  Uses-Hair growth, Strengthen hairs, Premature graying,  Reduce dandruff, Conditioning</p>	
<p><b>6) INDIGO</b>  Synonym-Anil Family -Fabaceae  Chemical constituents- Indole alkaloids, Indican, Indoxyl,  Indirubin, Amino acid, Uses- Natural dye, Anti dandruff,  Prevent hair Mamtamed scalp health, Premature graying,</p>	



**Type of experimental procedure**

- Extraction of constituent's
- Formulation of polyherbal hair dye cream

**EVALUATION OF POLYHERBAL HAIR DYE CREAM**

The evaluation of polyherbal hair dye cream as per ICH, IP guidelines & the result are given as follows & following tests are carried out.

**Organoleptic Test**

Organoleptic test should be carried out to see the physical appearance by observing the shape, colour and smell of the preparations that have been made

**Homogeneity Test**

Cream homogeneity test was carried out to determine whether the mixing of each component in the manufacture of cream is evenly mixed. This is to ensure that the active substances contained in it have been distributed evenly. If applied to a piece of glass or other suitable transparent material, it must show a homogeneous Composition[10] The cream was found to be homogeneous.

**pH Test**

The pH test was carried out to see the level of acidity. The test was carried out using a pH paper The formulation was applied on the pH paper & observation was compared with the standard. Preparations must meet the hair dye pH criteria namely in the interval 5.5-6.5[2] The pH of cream was found to be 6

**Irritation Test**

Irritation due to a specific ointment base component is more frequent and more important, hence a number of test procedures have been made to test irritancy level of cream formulation. Area of (1sq cm) was marked on the right-hand dorsal surface. The cream was applied to specified area and after every 15 min the area was checked for redness, irritation, edema and inflammation.

**Effectiveness of Hair Colouring**

The formulated cream was applied to complete white hairs sample. After 15, 30, 45, 60 minutes the hairs were washed and observed for change in colour

**Washing Result**

After 15, 30, 45, 60 minutes the hair were washed and the change in the colour of the hairs were observed.

**CONCLUSION:**

The herbal cream was successfully developed that met the relevant pharmaceutical characteristics form. The cream possessed definite antibacterial activity against the microbes reported to be major cause for various skin manifestations and should be effective in-vivo. The experiments concluded the ability of the cream to suppress inflammation even after the onset of inflammation. The developed herbal cream is a potential candidate for conducting further clinical studies.

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