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FORMULATION AND EVALUATION OF HERBAL HAIR PACK

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ABSTRACT

This research was aimed to preparation of herbal hair dye and the evaluation of its various parameters such as organoleptic, phytoconstituents, physico-chemical, rheological aspects, various testing for its stability, efficacy and shelf life. Marketed herbal hair dye formations only contain traditional ingredients which are used for the hair growth like indigo, henna, amla, bhringraj, brahmi, neem, shikakai. These traditional ingredients are only having effect on the hair growth and they only provide a colour to grey hair. In the newly prepared herbal hair dye preparation, we used additional ingredient like tea powder, black catechu, hibiscus powder, triphala, jatamansi, neem powder, onion powder. This research was conducted to provide the option for chemical based semi synthetic and synthetic hair dye to address the issue associated with synthetic dye. The work involves the use of some novel natural ingredients with novel combination. However, conventional hair dye may contain potentially toxic and damaging chemicals like ammonia or PPD or paraben should be avoided at all costs. These harmful synthetic substances are tried not to by utilize regular hair colours to diminish harmful impact of synthetic compound.

INTRODUCTION

Herbal hair packs made with natural ingredient. It deeply nourishes,strengthen and colour your hair and take care of all your hair whose naturally. The hair pack improves hair growth, control dandruff and a natural shine to hair. Greying of hair is indicates the reasons like genetics, stress, nutritional deficiency and disease. The primary reason of premature greying of hairs is hereditary and it is observed that at the age of fifty half of the world's population will have fifty percent gray hairs. Hence there is great demand for hair dye in the market. Herbal hair dye are the colours derived from various types of plant, animal without any chemical processing.In the ancient time natural organic substances where mixed with metals such as iron, copper, zinc to produce more lasting shades. Many plants like henna, indigo, brahmi, black catechu, hibiscus, triphala, jatamansi are used as main component in hair dye preparation. Natural hair colours that are currently marketed mainly contain Henna along with other plant material but such preparation have several disadvantages like messy application, time consuming preparation, lack of standard colouring and limited colour shades. Today most of people being about very careful about their beauty and hairs an important role in this. The goal of the current study was to create a powdered herbal hair dye that would color hair from dark brown to black. Closer to natural hair color while having a stronger coloring impact and longer color retention than commercially available herbal hair color.

Most of the marked herbal hair dye formulation contains para-phenylenediamine at 2025% concentration which is the main ingredient of commercial synthetic dye. It may cause allergic skin reaction in many people. Undesirable adverse reactions from using this chemical include skin irritation, allergies, hair damage, skin discoloration, unexpected hair color, and more. When these chemicals are applied often to natural hair, they can have a number of adverse effects, including erythema, dry scalp, hair loss, and skin cancer. Henna has been traditionally used in India to color hair and palms. Henna has been used women's bodies during marriage and other social celebration since the time of Bronze age. It is a hallmark of Hindu and Islamic culture as a colouring and dyeing agent for the purpose of decorating the nails or for the formation of temporary skin tattoos. Drugs from the plant sources are effectively available, are more affordable, protected and proficient and seldom make side impacts. In the present era of eco-conservation, the use of natural dyes has been revived and reviewed for the colouration of textile and food materials. There are basically three types of hairs colours 1. Permanent hair dye, 2. Demi permanent hair dye, 3. Semi-permanent hair dye. This hair dye comes under the category of semi-permanent hair dye.[1, 2, 3, 4, 5, 6]

Advantages:

1. Natural hair colour covers the gray hair with no side effects.
2. Suitable for all hair type.
3. Available in variety of shades.
4. Free from harsh chemicals such as ammonia, peroxide and PPD. (P-Phenylenediamine).
5. Protect from damage of hair.
6. Maintain the acid and alkaline balance on your scalp.
7. Promotes the growths due to anti-bacterial and anti-fungal properties.[7]

Role of ingredient used in the formulation of herbal hair dye:

A. Henna:

Figure 1: Henna powder

Lawsonia inermis, the sole species in the genus Lawsonia and a member of the Lythraceae family, is the botanical name for henna. The leaves of this plant possess a red dye molecule called Lawsone (2-Hydroxy-I-yl-naphthaquinone). Henna prevents premature hair loss and graying of the hair by balancing the p^H of the scalp. One can use henna alone or in combination as a dye. Henna powder is a natural scalp treatment that helps to promote healthy hair. It is made up from the dried and powdered leaves of the henna plant with thick consistency, which adds protection to your hair while prolonging its colour, providing lasting effects.[8]

Chemical constituents:

Betulin, betulinic acid, Hennadiol, Lawsone, Lupeol, Lacoumarin, Esculentin, Fraxetin, Isoplumbagin, Scopoletin etc.

B. Brahmi:

Figure 2: Brahmi powder

Bacopa Monnieri is the botanical name for brahmi, and it is a member of the Umbelliferae family. Also called as water hyssop, thyme-leaved gratiol and herb of grace, is a staple plant in traditional

Ayurvedic medicine. Normal use of brahmi reinforces your hair and keep them very much sustained. There are numerous nutrients in this spice that might benefit your hair. Because of its biochemical organization, it helps in making the hair follicle stronger, thus helping new and denser hair growth. Brahmi helps to heal the split end and prevent more from occurring. It also used as natural conditioner that helps detangle hair and make it smooth and shiny. Also used to control the dandruff and hair fall.

Chemical constituents:

Brahmine, herpestine, hersaponin, pigenin, D-mannitol, cucurbitacin etc.

C. Indigo Powder:

Figure 3: Indigo powder

Botanical name of indica is Indigofera tinctoria which is belonging into the family Fabaceae. It is one of the oldest known dyes that were used extensively as a natural colouring agent and medicine. Anyone who experience hair loss will find that indigo powder works wonderfully effectively. It shields against dandruff. In addition to enhancing hair colour, indigo powder also soothes hair and follicles. It provides a soothing and refreshing sensation that relaxes you and soothes your body and mind. It is natural remedy to reverse premature greying of hair and renders hair natural black colour. Indigo powder forestalls scalp diseases and utilizing it with coconut oil advances the scalp with every one of the supplements and makes hair more grounded and better.[9]

Chemical constituents: Indican, Indirubin, Indigo dye, Indigotin, Flavonoid, terpenoid etc.

D. Hibiscus:

Figure 4: Hibiscus powder

The botanical name of hibiscus is Hibiscus rosa-sinensis which is belongs to the family of Malvaceae. Hibiscus is normally enhanced with calcium, phosphorus, iron, Vitamin B12, riboflavin and niacin which helps to advance thicker hair development and diminishes untimely gray of hair. This blossom is utilized for controlling dandruff. The active ingredient of hibiscus flower and leaves are flavonoids and amino acid that nourishes the scalp and hair root. It helps with keratin production, giving your hair natural shine and texture. It also protects the scalp from sun damage & delays the premature greying of hair. Hibiscus deeply conditions your hair.[10]

Chemical constituents:

Phlobatannins, Glycosides, Saponin, Flavonoid, Thiamine, Riboflavin etc.

E. Black catechu:

Figure 5: Black Catechu powder

The botanical name of black catechu is Acacia catechu belonging to the family of Leguminosae. Katha powder has historically

has been used in hair care remedies to enhance the volume, shine, and colour of the hair. It has astringent, antiseptic, anti-inflammatory properties that cool and soothe scalp providing you relief from scalp itchiness. It is perfect hair conditioning agent who makes you hair soft and silky. It reduces hair breakage and strengthens hair follicles there by reducing hair fall and promoting healthy hair growth.[11, 12]

Chemical constituents:

Flavonoid, Catechin, epicatechin, quercetin, phloroglucinol, alkaloid etc.

F. Tea powder:

Figure 6: Tea powder

The botanical name of tea is Camellia Sinensis is belonging to the family of Theaceae. In particular, black tea contains theaflavins, thearubigins, which gives it its characteristic dark colour. Black tea also used to promote hair growth, as the tea high antioxidant and caffeine are believed to support a healthy scalp and hair .it helps to control the hair falls and enhances the shine of hair.[13]

Chemical constituents:

Catechin, Caffeine, Theanine, theaflavin, epigallocatechin etc.

G. Triphala:

Figure 7: Triphala powder

Triphala is made of three ingredients- Amla (Emblica Officinalis), behada and harada. Triphala contains tannins that make your hair appear dark. It also contains cooper which helps boost blood circulation and melanin production in your hair. It improves the hair growth and maintains black hair. It reduces hair loss and also provides antioxidants.

H. Jatamansi:

Figure 8: Jatamansi powder

The botanical name of jatamansi is Nardostachys jatamansi which is belonging to the family of valerianaceae. Jatamansi is mostly used for hair growth. It increases the size of hair follicles and extends the phase of hair growth. It also controls hair fall and promote hair growth. It helps in darkening of hair & also makes hair soft and silky.

Chemical Constituents:

Patchouli alcohol, Seychellene, Calar.

I. Onion powder:

Figure 9: Onion powder

Allium Cepa is the botanical name of onion. It is belonging to family of Amaryllidaceae. Onions are rich in sulphur; they turn your grey hair into golden brown by nourishing hair follicles. In addition, this will promote your hair growth too. It has anti-bacterial properties which clear the dirt & bacteria

from the scalp. It's also help in controlling dandruff. It acts as a hair toner. It adds volume of the hair & lends a healthy shine.

J. Neem powder:

Figure 10: Neem powder

The botanical name of neem is Azadirachta indica which is belonging to the family of Meliaceae. It has anti-bacterial, anti-fungal property. Neem powder is rich in antioxidant that helps to cover the hair gray like a champ. It strengthening hair follicle & simultaneously reducing hair fall. Regular application of a neem can gives you long and voluminous hair without extra effort. It also treats the dandruff & itchy scalp. Neem leaves improve the health of dry hair end by hydrating them.

Materials:

Sr. No.	Ingredients	Quantity
1.	Henna	25 gm
2.	Brahmi	2 gm
3.	Indigo powder	2gm
4.	Hibiscus powder	2 gm
5.	Black catechu	2 gm
6.	Tea powder	2 gm
7.	Triphala	4 gm
8.	Jatamansi	2 gm
9.	Onion powder	2 gm
10.	Neem	2 gm

Method: For the preparation of herbal hair pack, we have chosen various herbal substance including Henna, Hibiscus, Indigo powder, Triphala, Jatamansi, Black catechu, Tea powder, Onion powder, Brahmi and Neem powder.

These substances were purchased in powdered form from local markets authorised retailer

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Every ingredient was measured and passed though sieve No. 24.

↓

Then homogenous mixture of materials was prepared to create pigment in powder form.

↓

After being weighed, the homogeneous mixture was placed in a plastic bag.

↓

At the time of application, above ingredients were mixed thoroughly with water & make a paste.

↓

Paste where kept aside for 2 hr for imbibition & then applied to hair & leave it for 1 hr & then wash it.[14, 15]

Evaluation tests: The prepared herbal hair pack was evaluated for its various parameters such as organoleptic, physico-chemical, phytoconstituent and rheological aspects.

Organoleptic evaluation: Various organoleptic characteristic like colour, odour, texture and appearance was studied.

Sr. No.	Parameter	Results
1.	Colour	Brown
2.	Odour	Characteristics
3.	Texture	Fine
4.	Appearance	Powder

Physicochemical evaluation:

The physical and chemical evaluation of herbal hair pack were evaluated to determine the P^H, moisture content, and ash value for the purpose of stability, compatibility, and amount of inorganic matter present in that.

Sr. No.	Parameter	Results
1.	P^H	7
2.	Ash value	0.16

Phytochemical evaluation:

Prepared herbal hair pack was subjected to phytochemical screening to exhibit the presence or absence of various phytoconstituents as carbohydrates, lipids, alkaloids, sugars etc.

Phytochemical evaluation:

S. No.	Parameter	Results
1.	Molisch test	Carbohydrates present
2.	Fehling test	Absent
3.	Volatile oil test	Volatile oil present
4.	Mayer's test	Alkaloid present

Rheological evaluation:

Physical parameters like Bulk density, Tapped density, Angle of repose, Hauser's ratio and Carr's index were observed and calculated for the in-house formulation.

Sr. No.	Parameters	Results
1.	Bulk density	0.33
2.	Tapped density	0.41
3.	Angle of repose	1.04°
4.	Carr's index	39%
5.	Hauser's ratio	1.24

Patch test:

This usually involves swabbing the small amount of aqueous solution of hair dye behind the ear on or inner elbow in an area sq.cm and leaving to dry it. The sign of irritation or feeling of non-wellness is noted, if any redness and swelling were checked and noticed for regular interval up to 24 hours if any.

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

Stability test: Stability test is performed for the prepared formulations by storing at different temperature condition for the time period of one month.

S. No	Parameters	Room temp.	Results
1.	Colour	No change	No change
2.	Odour	No change	No change
3.	p^H	7	7
4.	Texture	Fine	Fine
5.	Smoothness	Smooth	Smooth

Results: The laboratory created herbal hair pack is made up of high quality materials. After being tested in the laboratory, it was found to be very safe for the hairs to be used regularly over a long period of time. All assessment boundaries were viewed as inside the cut-off points as recommended for the protected utilization of hair colour.

CONCLUSION:

It is possible to conclude that the herbal hair pack formulation, which is made up of naturally occurring dried herbal ingredients, can be easily prepared on a laboratory scale without the use of sophisticated equipment, making the preparation cost effective. It is free of the negative effect of ammonia based chemical dyes as well as adverse kin reactions. There are no adverse effects or skin infections associated with the prepared herbal hair dye. It sustains the skin on the scalp and hair. Additionally, this herbal hair helps treat dandruff by removing excess oil from the scalp. In the event that such home grown colour is utilized as often as possible or consistently, it will give a sensible, bubble free shaded hair helping human as well as business. The formulation is normal in beginning with compelling advantages contrasted with promoted plan and financially savvy. The technique can be utilized by the cosmetics industry on a small scale due to its simplicity.

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