

FORMULATION OF NATURAL HAIR COLOURANTS FROM HERBS AND DRY-FRUIT HULLS FROM PAKISTAN

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ABSTRACT

In the present investigation attempts were made to make a powder herbal hair dye from dry fruit hulls. Three combinations of hair dyes **H₁**, **H₂** and **H₃** were made from plant materials like henna, peanut hull almond hull, walnut hull, amla and reetha hull were made to obtain brown hair dye. **H₁** dye delivered pale brown, **H₂** dye was medium brown and **H₃** dye gave dark brown color on the natural human hair. These natural herbal hair dyes were excellent colorant for all types of hairs. The results obtained from these dyes were excellent and economical without any side effects.

KEYWORDS: Natural Herbs, Hull, Dyes, Dark Brown.

INTRODUCTION

Hair dye is important cosmetic item for not only men but also for women. Synthetic dye-based hair dye or permanent hair dyes consist of two component-color and developer. The colour component usually contain a range of synthetic dyes and intermediate that such as ammonia, diamino benzene, phenyl diamine, resorcinol and phenol, Ortho Para amino phenol, P-toluenodiamine etc. and their salts (usually HCl, sulphate). Most of them are powerful irritants and have been implicated powerful irritates in several type of allergies and other therapeutic problems.^[1-3] Other irritant ingredients include H₂O₂ and naphthol. Hair dye solid in Europe union containing any of the ingredient need to carry a warning can cause an allergic reaction containing an ingredient that can penetrate your skin has been determined to cause cancer. If we use permanent or semi-permanent hair color dye and hair dye shampoo continuously we are increasing the risk of developing breast cancer.^[1] Prolonged uses of the hair dye generally cause a local irritation and skin toxicity problems.

Natural hair dyes solve the problem of hair cuticle, irritation, scalp hair damaging, which are safe for use and does not have the problems of staining skin, itching and hyper sensitive reaction. The natural brown hair dye possess full penetration to be used as coloring agent and safe hair colorant.^[5] Henna based brown hair dyes that impart natural color to the hair and spreads evenly across the scalp of hair and leave behinds fragrant soft and manageable hair. A systematic scientific approach toward the active constituent of natural dyes can prevent the hair damage caused by photo-oxidation reaction. So, need was felt to design and formulate natural dyes with commonly implied natural hulls and herbs to be an alternative source to the synthetic and semi-synthetic dyes. In the present investigation three formulations were developed to get natural shades by using combination of natural ingredients.

MATERIALS AND METHODS

Collection of plant materials

The plant materials used in this study program were collected from the local herbal market (shah alam market) of Lahore. Henna, reetha, amla, shikakai, walnut hull, peanut hull, almond hull were collected and dried under shade for ten days. The shade dried plant materials were ground and again dried under shade for five days. The dry powdered materials have been stored in a desiccator for further processing.^[6]

General procedure

The fine powder of weighed raw materials were soaked into water.

Weighed quantity of henna was mixed with sugar, amla, reetha, and shikakai and a homogenized blend was obtained. Then hulls from almond, peanut and walnut were mixed and soaked into water. It was then boiled for 30-35 minutes. Then it was filtered and filtrate was added to the powder of henna, sugar, laung, and small quantity of alum with vigorous stirring. The pH of the material was maintained at 7-8. Material was dried at room temperature and powdered. Then it was applied for dyeing hairs and their color properties were studied.^[7] Human un-pigmented hairs were collected and paste made from different dyes was applied and their results were monitored. The influence of pH on the coloring behavior on the human hair was also monitored. Lemon juice was used for pH adjustments.

Table 1. Formulation of H₁ hair dye

| S. # | Hair Dye | Shade | Ingredients | Composition (%) |
|------|----------------|------------|--|--|
| 1. | H ₁ | Pale Brown | Henna Rathee Amala Peanut hull Walnut hull Gram hull Pine nut hull Almond hull Black gram Laung Alum Lemon Black Tea | 30-35 3-7 5-7 8-10 8-12 8-10 8-10 8-12 2-3 3-5 2-3 3-5 2-5 |

Table 2. Formulation of H₂ hair dye

| S. # | Name of Hair Dye | Shade | Ingredients | Composition |
|------|------------------|-------------|---|--|
| 1. | H ₂ | Pale Yellow | Henna Rathee Amala Peanut hull Walnut hull Gram hull Pine nut hull Almond hull Black gram Laung Alum Lemon | 35-40 % 5-7 % 5-7 % 7-10 % 7-10 % 3-4 % 6-9 % 7-9 % 2-3 % 3-5 % 2-3 % 3-5 % |

Table 3. Formulation of H₃ hair dye

| S. # | Hair Dye | Shade | Ingredients | Composition (%) |
|------|----------------|------------|--|---|
| 1. | H ₃ | Dark Brown | Henna Rathee Amala Peanut hull Walnut hull Gram hull Pine nut hull Almond hull Black gram Laung Alum Lemon Black Tea | 25-30 2-5 3-5 5-8 10-12 10-12 10-12 10-12 2-3 5-5 2-3 3-5 3-7 |

Table:4 Herbal Hair dye

| S. # | Hair dye | Shade | Color fastness | Retention of dye | Physical appearance |
|------|----------------|--------------|----------------|------------------|------------------------|
| 1. | H ₁ | Pale Brown | 4/5 to 5 | 2-3 months | Very good to excellent |
| 2. | H ₂ | Medium Brown | 4/5 to 5 | 2-3 months | Very good to excellent |
| 3. | H ₃ | Dark Brown | 4/5 to 5 | 2-3 months | Very good to excellent |

DISCUSSION AND CONCLUSION

Three natural brown hair dyes were prepared that work progressively, better dyeing effect greater retention capacity and long lasting. Brown colour shade are unique has natural characteristic. Immediate results were obtained even from just one time use. Advantages of this brown hair colour is that it does not cause any irritation, itching dandruff scalp strength and give luster the hairs.^[8]

Natural hair dyeing with black walnut powder, almond hull, peanut hull, reetha, amla, siekakai, sugar, black tea, lemon etc are the more potent and powerful. The above mixtures were also beneficial for getting rid of dandruff and increasing hair growth.

In the preparation of brown herbal hair dye with henna, black tea, sugar, lemon, almond peel and walnut peel etc. have no side effect.^[9] The chemical oriented products give quick result but also produces serious side effect.^[10] To overcome these problems, it is suggested that natural hair dyes are better and safer for future use. Further studies on their biological effects on human hair and skin are in process.

CONCLUSION

Three natural hair dyes H₁, H₂ and H₃ were prepared by using various combinations of natural herbs, hulls and other ingredients which are safer to human hair and skin. H₁ dye gave pale brown, H₂ dye gave medium brown and H₃ gave dark brown shade. These results are promising and particularly combination of materials in H₃ dye gave dark brown color with more retention time and fastness.

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