



PREPARATION AND CHARACTERIZATION OF SOME POLYHERBAL FORMULATION FOR EVALUATION OF HAIR COLORANT EFFECTS.

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ABSTRACT

The Indian subcontinent is enriched by a variety of flora- both aromatic and medicinal plants. Herbal drugs constitute a major part in all the traditional systems of medicine. There are approximately 1250 Indian medicinal plants, which are used in formulating therapeutic preparation according to Ayurveda and other traditional system of medicine. Traditionally *Eclipta alba*, *Hibiscus rosa sinensis*, *Lawsonia innermis*, *Embllica officinalis* and *Acacia catechu* were used as a main ingredients in hair care preparations mainly for dyeing hair. In present studies an investigation had been made on these plants in terms of its formulation by using different extracts was to develop the effectivty in terms of quality for better colorant action on sheep wool threads. Result of present studies shows that three hair colurant formulations viz. KT-7, KT-5, KT-3, out of eight dried formulation of both aqueous and alcoholic extract, blackened better colorless sheep wool threads. The black colouring capacity of the formulation KT-7 was maximum. The black colour remained for the longest duration of period when the threads kept at room temperature. In sun light and on treatment with natural detergent, the order of blackening wool threads by both the herbal formulations was- KT-7 >KT-5 >KT-3 >KT-4 >KT-6 >KT-2 >KT-8 >KT-1. The colorant action of alcoholic extract formulation was significantly higher then that of aqueous extract formulation.

Keywords: *Eclipta alba*, *Lawsonia innermis*, Hair care, Colorant, Sheep wool threads.

INTRODUCTION

Domestication of plants by man started since the dawn of civilization to meet its basic needs of food, shelter and clothing's. Besides these requirements nature has provided plants for health care, healing and other comforts¹. With the emerging interest in the world to adopt and study the traditional system and to exploit their potentials based on different health care systems, the evaluation of the rich heritage of the traditional medicine is essential². Now a days, herbal extracts, and herbal powders are used in the preparations to enhance beauty and increase the attractiveness of the person. These herbal preparations are used as sunburn, complexion brighter, hair remover etc. Herbal cosmetics can be classified on the basis of Dosage Form like- cream, powder, soaps, solutions etc. and

according to part or organ of the body to be applied for like- cosmetics for skin, hair, nail, teeth and mouth etc³. In India, henna has been used traditionally for colouring palms and hair, there are so many herbs like Kikar (*Acacia arabica*), bihi (*Cydonia oblonga*), bhringraj (*Eclipta alba*), patnag (*Haematoxylon campechianum*), akhrot (*Juglans regia*), narra (*Petrocarpus inducus*), jaborandi (*Pilocarpus jaborandi*), jatamansi (*Nardostachys jatamansi*), amla (*Phyllanthus emblica*), kuth (*Saussurea lappa*), Giloe (*Tinospora cordifolia*), behera (*Terminelia belerica*) which are used as a main ingredients in hair care preparations mainly for dyeing hair⁴. Now a day there are so many herbal plants used as ingredients in many skin care preparations, e.g., *Calendula officinalis* as an emollient, *Hemamelis virginiana* as an astringent, *Arctium lappa* as

a depurative (tighten the skin), *Prunella vulgaris* and *Symphytum officinalis*, aid the healing of cuts, wounds and abrasion. During 1900 and 1920's many books on cosmetics, perfumery, cosmetology and related subjects were written in German or French language. Gradually with the advance of science standardized herbal cosmetic preparations came into existence⁵.

MATERIALS AND METHODS

Preparation of aqueous and alcoholic herbal extracts from powdered drugs

2 X 250 gm powder of each i.e. whole plant of *Eclipta alba*, leaves of *Hibiscus rosa sinensis*, leaves of *Lawsonia innermis*, fruits of *Emblca officinalis*, leaves of *Coffea*

Arabica and whole plants of *Acacia catechu* were extracted separately with distilled water and then again procedure is repeated for fresh powder with 95% ethanol for 72 hrs by cold maceration⁶. All the obtained extracts were dried on steam bath under vacuum to get dark colored powder masses (5-10%).

Preparation of hair colorants formulation

The quantities of above mentioned dried extracts of all in gm were taken as mentioned in Table 1. All the extract of above mentioned plants were mixed in sufficient quantity (25 ml) of subsequent solvent (water for aqueous extractive and alcohols for alcoholic extractives), to prepare uniform viscous pastes.

Table 1 : Ratio of extracts in gm for hair colourant formulations

Formulations*	EEA	EHR	ELI	ECA	EAC	EEO
KT-1	1	1	2	-	-	-
KT-2	-	1	2	1	-	-
KT-3	-	-	2	1	1	-
KT-4	-	-	2	-	1	1
KT-5	1	1	2	1	-	-
KT-6	-	-	2	1	1	1
KT-7	1	1	2	1	1	1
KT-8	-	-	2	-	-	-

* All the extracts were mixed according to above mention ratio separately for aqueous and alcoholic extractive based formulation.

Where EEA – Extract of *Eclipta alba*; EHR- Extracts of *Hibiscus rosa*, ELI-Extracts of *Lawsonia innermis*, ECA- Extracts of *Coffea Arabica*, EAC-Extracts of *Acacia catechu*, EEO-Extracts of *Emblca officinalis*.

Characterizations of formulation on sheep wool pieces

The sheep wool (natural) coil procured from Local market of Saharanpur, Uttar Pradesh, India, was cut into small pieces and washed with petroleum ether four times to remove fatty materials. The wool pieces were dipped into each formulation placed in a china dish for 2 hours. Then they were divided in three categories to observe the affects of room

temperature, sunlight and natural detergent as follows Kar *et al* 2008⁷⁻⁹.

Effect of room temperature on colored wool pieces

The colored wool pieces were pasted on a white paper sheet covered with transparent cellophane sheet and then kept for 30 days at room temperature. The photographs of pieces were taken on 0th, 15th and 30th days.

Effect of Sunlight on colored wool pieces

The colored wool pieces were pasted on a white paper sheet covered with transparent cellophane sheet and then kept in sunlight for 2 hours daily for 30 days at the interval of 0, 15 and 30 days photographs were taken.

Effect of Natural detergent on colored wool pieces

A 10 % w/v aqueous solution of Reetha (*Sapindus mukorossi*) was prepared. The colored wool pieces were washed with Reetha aqueous solution for one minute on alternate days and their photographs were taken on 15th and 30th day.

Patch test

A small quantity of paste was applied on the ear back. After 15 minutes this paste was removed and the area was washed carefully. There was no irritation/allergic reaction, if there was irritation/allergic reaction, the application of that formulation was avoided.

RESULTS AND DISCUSSION

The black colour retaining power of the threads by both the formulations retained for 30 days at room temperature (Fig. 1). In sun light, the colour stain faded gradually. After fifteen days, the stains remained half of the

original stain. It indicated that UV rays present in sun light affected the hair stain/hair dye (Fig. 2 and 5). Washing of the colored threads with natural detergent on alternate days affect the stain of the threads. The black colour of the thread dipped in formulation KT-3 completely faded within 30 days. In other cases the colour started fading after 8 days. The colour intensities of thread dipped in formulation KT-5 became half after fifteen days (Fig. 3 and 6). Five hair colorant formulations viz. KT-7, KT-6, KT-5, KT-3 and KT-2, out of eight of both formulations, blackened better colorless sheep wool threads. The black colouring capacity of the formulation KT-7 was maximum. The black colour remained for the longest duration of period when the threads kept at room temperature. In sun light and washed with natural detergent, the order of blackening wool threads by herbal formulations was-KT-7 >KT-5 >KT-6 >KT-3 > KT-8 > KT-2 > KT-4 >KT-1.

Formulation prepared by alcoholic extract shows higher intensity as well as longitivity of retaining color in compare with that of aqueous extracts based formulations.



Fig. 1 : Photographs of wool pieces treated with formulations containing aqueous extract on (a) zero day (b) fifteen day and (c) thirty day at room temperature.



Fig. 2 : Photographs of wool pieces treated with formulations containing aqueous extract on (a) zero day (b) fifteen day and (c) thirty day in sun light.



Fig. 3 : Photographs of wool pieces treated with formulations containing aqueous extract on (a) zero day (b) fifteen day and (c) thirty day when detergent washed.

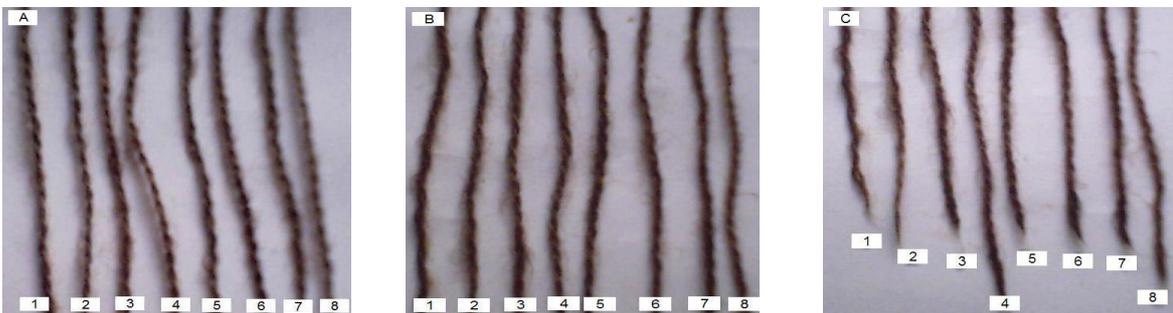


Fig. 4 : Photographs of wool pieces treated with formulations containing alcoholic extract on (a) zero day (b) fifteen day and (c) thirty day at room temperature.

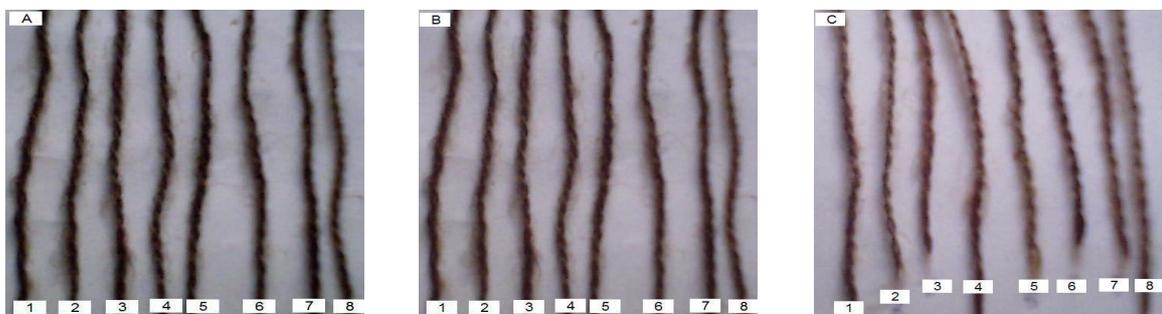


Fig. 5 : Photographs of wool pieces treated with formulations containing alcoholic extract on (a) zero day (b) fifteen day and (c) thirty day in sun light.



Fig. 6 : Photographs of wool pieces treated with formulations containing alcoholic extract on (a) zero day (b) fifteen day and (c) thirty day when detergent washed.

CONCLUSION

From present study it has been concluded that the maximum colorant action of KT-7 was due to synergetic effect of each plants extract. The hair colouring activity of alcoholic extract was better than that of aqueous extract was due to its high affinity towards solubilization of plant derived chemicals.

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