Cosmetic ethnobotany practiced by tribal women of Kashmir Himalayas

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Abstract

Objective: Himalayan mountain populations have been dependent upon indigenous plant resources for their health care for many years. Tribal women are interested in use of local herbs for cosmetic purposes. The present work is based on the results of research conducted on cosmetic uses of some important plants by the tribal women in District Poonch, Azad Kashmir Pakistan.

Materials and Methods: An ethno botanical survey was carried out during summer 2012. The data were collected from 310 female informants from 16 villages using questionnaire method and semi structured interviews.

Results: A total of 39 plants species belonging to 20 families, being used for various cosmetic purposes were recorded. Indigenous species are traditionally used by the locals for problems including acne (16%), hair growth (11%), bad breath (12%), facial spots (9%), allergy, (9%), fairness (8%), wrinkles (8%), eye and lip care (9%). Seventy different recipes were recorded to be practiced by locals using herbal parts. The major plant parts utilized in herbal recipes included fruit (32.8%), leaves (25.2%), seeds (13.4%) and roots (8.9%). Women of older (>30 years) age group showed greater (67%) response regarding knowledge and practice of cosmetic herbs.

Conclusion: This study was the 1st ever project focusing on cosmetic perspectives of ethno-botany in the area. Our study contributes to an improved understanding of ignored aspect of cosmetic ethnobotany among the local women. Further detailed investigations are recommended to record and preserve precious ethno-botanical knowledge of the area.

Introduction

Human civilizations have developed and relied upon domestication of plant species for forage, medicinal uses, fiber culinary and cosmetic purposes (Kala, 2007). Ethnobotanists aim to document, describe
and explain complex relationships between cultures and plants, focusing primarily on how plants are used, managed and perceived across human societies (Acharya et al., 2008). The field of ethnobotany requires taxonomic, morphological, ecological and anthropological skills to understand the cultural concepts around the perception of plants (Ali and Qaisar, 2009; Everest and Ozturk, 2005). Medicinal plants are globally used to treat a wide range of ailments, infections and disorders. It is estimated that about 70% of Himalayan population is dependent upon ethnomedicine for their primary health care (Shaheen et al., 2012a). The ethnobotanical practices are very popular among the locals due to ease of availability, good results as well as minimum side effects. More than 10% (>600/ 5700) plant species of Pakistani flora are reported to have medicinal importance (Shinwari, 2002; Ajaib et al., 2010).

Herbal recipes had been used by women through years for enhancement and preservation of beauty (Khan and Khatoon, 2007). Apart from traditional ethno-cosmetic applications of local herbs, efforts are in progress to formulate and develop personal care products based on these natural resources, termed as herbal cosmetics (Afzal et al., 2009). There is an increasing demand of these herbal cosmetics due to their natural purity, little or no side effects and impressive results (Hamayun et al., 2006; Khan et al., 2007). Scientific evidence supports the fact that phytochemicals are very effective in smoothening, calming, restoring and healing of skin and hair; as well as perfuming and correcting body odors (Ghimire et al., 2006).

The tribal women population of Kashmira Himalayas is very laborious and dynamic; and by instinct conscious about cosmetic applications of local herbs (Shinwari et al., 2000). In male dominated, conservative religious mountain tribes, women are reluctant, discouraged and shy to discuss their cosmetic problems with doctors or family member (Shinwari et al., 2006; Dar, 2003). A tragedy of the modern time is that the precious cosmetic ethnobotanical knowledge is disappearing quickly. Due to the lack of interest and knowledge the younger generation prefers allopathic medicines and cosmetic products (Uninal et al., 2006). Preservation of the values of plants can only be maintained with the help of the indigenous people who have used this knowledge for centuries (Shrestha and Dhillion, 2003). Although researchers have conducted a lot of work in the field of ethnobotany, yet its cosmetic aspect has never been focused in this area previously. The main objective of this research was to explore the cosmetic value of plants and make the new generation aware about it.

**Materials and methods**

Azad Kashmir forms the lower hills of Himalaya and covers an area of 13, 297 km². Total population of Azad Kashmir is estimated at around 4.5 million with a Population density of 343.5/km². The area of Hajira lies in District Poonch, located at latitude 33°46'16.58"N, longitude 73°53'46.67"E and an elevation of 1545m. The topography is hilly and mountainous with valleys and plains at some places. The total rainfall is about 149.93mm/year. Floristically the study area is located in western Himalayan moist temperate province (Shaheen et al., 2012 a, b).

Field studies were carried out during summer and spring 2012. About 320 women from 16 villages (20/village) were interviewed. Informants were classified in different age groups. One hundred and ten informants were below the age of 30; hundred were in the age group of 30-50 years; and 110 were above the age of 50. Ethno botanical and demographic
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information was gathered from the respondents by using semi structured, open ended questionnaire. The questionnaire focused on informan’s knowledge of the cosmetic herbs, collection, uses and recipe preparation; major infections and disease treated. Local names, distribution of plants, dose preparation, medium of intake and application of cosmetic recipe were also asked from the informants. The data were arranged according to taxonomic identification of plants, their uses and local names. The data were further analyzed for basic categorization of the respondents’ age, literacy, gender, use preferences, parts of medicinal plants used, recipes preparation and mode of administration.

Results

This study provides information on the indigenous uses of 39 important plants belonging to 20 families by the local women for various cosmetic purposes (Table 1, 2).

Table 1. Cosmetic ethnobotanical applications recorded from the study area

| Species                  | Local Name  | Part used | Application         | Recipe                                                                                           |
|--------------------------|-------------|-----------|---------------------|--------------------------------------------------------------------------------------------------|
| Allium sativum           | Thom        | cloves    | Toothache           | Garlic extract is made and cotton is dipped in it. This cotton is applied on teeth. Extra water is released from gums and pain gets reduced. |
|                          |             |           | pimples             | Garlic cloves are crushed and powder is applied over the pimples. It is than washed off with cold water and dried thoroughly. |
|                          |             |           | Nails               | Garlic slices are rubbed on nails. This makes nails stronger.                                      |
| Aloe barbedensis         | Kanwar gandal | Leaves   | Acne                | Aloe leaf gel is pricked out in a glass and this extract is drunk daily for some days.            |
|                          |             |           | Hair growth         | Outer peels of onion are blended and sieved to extract the liquid. This extract is applied on scalp. |
| Allium cepa              | Pyaz        | bulb      | exfoliate dead skin | Flour, onion juice and milk are mixed to form a thick paste. This paste is applied on face and neck for 15 – 20 minutes until it dries. |
|                          |             |           | facial massage      | Fresh onion juice is mixed with fresh yogurt. It is then massaged on entire face in gentle circular movement for 15 minutes every day. |
| Adhatoda vesica          | Baykar      | Leaves   | skin rots           | Leaves are put into the Luke warm water and left for few minutes. Hands are dipped in this water.  |
| Artemisia rotifolia      | Afsanteen   | Leaves, scales | Hand boils          | Dried leaves and stem scales are chipped into a fine powder. It is then used with water for hand boils. |
| Berberis lyceum          | Sumbalo     | Bark      | Pimples             | Bark is chopped into a fine powder. This powder is used daily for the removal of pimples.         |
| Curcuma picta            | kachoor     | Roots     | Pimples             | Root powder is used daily with water to reduce pimples.                                          |
| Cucumis sativus          | kheera      | Fruit     | dark circles        | 1: Cucumber slices are placed on eyes for 5 to 10 minutes. 2: Cotton is dipped in cucumber juice. This cotton is applied on eyelids for 10 to 20 minutes for fairness. |
| Ingredient                        | Part                | Benefit                          |
|----------------------------------|---------------------|----------------------------------|
| Dry lemon peels                   | Tooth tartar        | Grinded up and some quantity of salt is added. This mixture is used daily with brush to remove the tartar of tooth. |
| Lemon extract                     | Wrinkles            | Applied on face wrinkled twice or thrice a day. |
| Lemon juice mixed with Luke warm water | Wrinkles, nails care | A ball of cotton is dipped in this mixture and applied on the nails. This removes the nails dust and gives shiny appearance to nails. |
| Lemon juice and coconut oil mixed | Dandruff            | To get a paste. This paste is applied and massaged on hair. |
| Lemon juice mixed with glycerin   | Hair shine          | To form a mixture. This mixture is applied on hands before sleeping. |
| Lemon juice mixed with mustard oil| Hair shine          | A mixture of lemon juice along with mustard oil is made. This is applied and massaged on hair and then washed. |
| Lemon juice mixed with chick pea flour and milk | Facial hair | This mixture is applied on face daily on night for 10-15 minutes and then washed with Luke warm water. |
| Orange juice mixed with honey     | Skin and nail cracks| Applied on hands for skin cracks as well as shining of nails. |
| Carrot juice extracted            | Fairness            | Extracted and cotton is dipped in it. It is daily massaged on face. |
| Dry roots slices blended to form  | Pimples             | Slices are blended to form a fine powder. This powder is used daily with water. |
| Herbaceous stem juice extracted   | Dandruff            | It is used daily for few days to remove the extra dryness of skin and dead skin layer of dandruff. |
| 1: Funnel seeds chewed twice or   | Dandruff            | 1: Funnel seeds are chewed twice or thrice a day. 2: Funnel seeds are boiled in water. This water is used twice a day. |
| 2: Figs are blended with yogurt   | Freckles            | This mixture is massaged all over the face and neck in a gentle circular movement for 10-15 minutes. Than it is washed with Luke warm water. |
| The fig milk is applied on viral warts present on skin | Viral warts | The fig milk is applied on viral warts present on skin. |
| The leaves are boiled in water for half an hour. Mouth is rinsed daily in the morning thoroughly for 1-2 minutes for freshness. | Mouth freshness | The leaves are boiled in water for half an hour. Mouth is rinsed daily in the morning thoroughly for 1-2 minutes for freshness. |
| Outer bark and leaves are used as a misvak to remove the tartar of teeth. | Tartar              | Outer bark and leaves are used as a misvak to remove the tartar of teeth. |
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| Plant Name                        | Part Used | Use                                                                 |
|----------------------------------|-----------|----------------------------------------------------------------------|
| **Lycopersicum esculentum**      | Tamatar   | Fresh tomato extract is applied on skin daily to prevent face spots. |
|                                  | Fruit     | After washing the face with Luke warm water tomato extract is applied to face and massaged for 10-15 minutes. This proves to be an effective sun block for face. |
|                                  | sun block | Tomato is mixed with honey. This mixture is applied on face and neck. It is washed after fifteen minutes. |
|                                  | skin glowing | Sliced Tomato pieces are rubbed on face and left for fifteen minutes. Tomato has acidic trait and contains vitamin c and K which helps in cleansing. This recovers the open pores and removes black heads. |
|                                  | open pores and black heads | Mint leaves are boiled in water for half an hour. This extract is taken at morning before breakfast about 1/3 cups daily. |
| **Mentha longifolia**            | Podina    | Extract of mint leaves is applied on the affected areas of skin. It proves as an excellent skin cleanser and curing blackheads. |
|                                  | Leaves    | Extract of mint leaves mixed with oat is applied on pimples and washed with cold water after twenty minutes. |
|                                  | Blackheads | Mint leaves are boiled for half an hour. This boiled water is effective in reducing mouth smell. |
| **Mentha longifolia**            | Pods      | Fresh leaves are crushed to get an extract. It is taken daily to remove freckles. |
|                                  | leaves    | Seeds are crushed into a fine powder and applied on eyes to treat swelling of eyes. |
| **Musa paradisiaca**             | Kayla     | Inner pulp of banana peel is taken and mixed with lemon juice. This is applied on lips for five minutes twice a week. |
|                                  | Fruit     | Seeds of *Nigella sativa* are used daily with honey to cure freckle and eyes dark circles. |
| **Nigella sativa**               | Kalongy   | 1: Seeds are crushed in mortar to form a powder. This powder is mixed with the mustard oil and left for few days and then used for dandruff. |
|                                  | Seeds     | 2: The leaves of Olea are boiled in water. The hair are washed with this water. |
| **Olea Ferrugenia**              | kahu      | Apple is crushed with turmeric and equal proportion of rose water and lemon juice to form a paste. This paste is applied daily on face for two weeks for curing unwanted spots. |
|                                  | Seeds, leaves | Apple is mixed with unsalted butter, honey and egg yolk. This mask provides intense moisturizing and antiaging effects when applied for twenty minutes on the face. |
| **Pyrus malus**                  | Saib      | Leaf spots | 1: Seeds are crushed in mortar to form a powder. This powder is mixed with the mustard oil and left for few days and then used for dandruff. |
|                                  | Fruit     | Wrinkles | 2: The leaves of Olea are boiled in water. The hair are washed with this water. |
| **Prunus persica**               | Arhu      | Leaves | Leaves are crushed and applied on the white circles of face. |
| **Pyrus pashia**                 | Batangy   | Fruit | *Pyrus pashia* is eaten in the dried form to remove the dark circles around the eyes. |
Predominant families included Rosaceae and Umbelliferae with 4 members each; Solanaceae, Liliaceae, Zingiberaceae, Rutaceae with three members each. Berberidaceae, Cucurbitaceae and Oleaceae had 2 members each whereas Acanthaceae, Cruciferae, Juglandaceae, Meliaceae, Musaceae, Convolulaceae, Moraceae, Ranunculaceae, Rhamnaceae, Asteraceae, Labiatae had 1 member each (Figure 1; Table 2).

Major plant species having cosmetic applications included *Citrus Limon* with 8 recipes followed by *Lycopersicum*.
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esculentum, Mentha longifolia, Raphanus sativus with 4 uses and Rosa indica, Allium sativum and Allium cepa with 3 uses each (Table 1).

Table 2. List of plants species having cosmetic applications in the area

| No. | Botanical name                      | Local name | Family          |
|-----|------------------------------------|------------|-----------------|
| 1.  | Adhatoda vesica Miller.            | Baykar     | Acanthaceae     |
| 2.  | Allium sativum Linn.               | Thom.      | Liliacaeae      |
| 3.  | Allium cepa Linn                   | Pyaz       | Liliacaeae      |
| 4.  | Aloe barbadensis (L.)Burm          | Kanwar gandal |        | Liliacaeae |
| 5.  | Artemisia rotifolia Spreng.        | Afsanteen  | Asteraceae      |
| 6.  | Berberis lycium L.                 | Sumbalo    | Barberidaceae   |
| 7.  | Citrullus vulgaris (Schrad ex Ecki & Zeyh) | Tarbooz | Cucurbitaceae |
| 8.  | Citrus limon (Linn.)Burm.f         | Limo       | Rutaceae        |
| 9.  | Citrus reticulate Blanco, fl.      | Malta      | Rutaceae        |
| 10. | Coriandrum sativum Linn.           | Dhaniya    | Umbelliferae    |
| 11. | Cucumis sativus Linn.              | Kheera     | Cucurbitaceae   |
| 12. | Curcuma longa Linn.                | Haldy      | Zingiberaceae   |
| 13. | Curcuma picta Roxb.ex.skornick     | KaHoor     | Zingeberaceae   |
| 14. | Daucus carota Linn.                | Gajjar     | Umbelliferae    |
| 15. | Dioscorea deloidea GN             | Kala ganda | Dioscoraceae |
| 16. | Echniopsis mamilosa               | Dhaniya    | Umbelliferae    |
| 17. | Ficus palmate L.                   | Phagwarah  | Moraceae        |
| 18. | Foeniculum vulgare Mill.           | Sounf      | Umbelliferae    |
| 19. | Jasminum officinale Linn.          | Chambayli  | Oleaceae        |
| 20. | Juglans regia Linn.                | Akhrot     | Juglandaceae    |
| 21. | Lycopersicum esculentum Mill.      | Tamatar    | Solanaceae      |
| 22. | Melia azadirachta Linn.            | Derek      | Meliaceae       |
| 23. | Mentha longifolia L.               | Podina     | Labiatae        |
| 24. | Musa Paradisiaca Linn.             | Kayla      | Musaceae        |
| 25. | Nigella sativa L.                  | Kalongy    | Ranunculaceae   |
| 26. | Olea ferrugenia Royle.             | Kahu       | Oleaceae        |
| 27. | Prunus persica (L.) Stokes         | Arhu       | Rosaceae        |
| 28. | Pyrus malus L.                     | Saib       | Rosaceae        |
| 29. | Pyrus pashia L.                    | Batangy    | Rosaceae        |
| 30. | Raphanus sativus Linn              | Mule       | Cruciferae      |
| 31. | Rosa indica Linn.                  | Gulab      | Rosaceae        |
| 32. | Solanum melongen. L.               | Baingan    | Solanaceae      |
| 33. | Solanum nigrum Linn                | Kach mach  | Solanaceae      |
| 34. | Spindus sponaria L.                | Ranthy     | Sapindaceae     |
| 35. | Trachy spermum ammi (L.)Sprague    | Seeds      | Umbelliferae    |
| 36. | Vitis vinifera Linn.               | Angoor     | Berberidaceae   |
| 37. | Zanthoxylum alatum Dc              | Timber     | Rutaceae        |
| 38. | Zingiber officinale L.             | Aderak     | Zingiberaceae   |
| 39. | Zizipus Jujuba Mill                | Bair       | Rhamnaceae      |
The local women were using the plants for various cosmetic purposes in 70 different recipes (Table 1). The prominent problems were pimples, acne (16%); Hair growth, shine and dandruff (11%); Mouth tartar and smell (12%); Facial spots (9%); Allergy, itching and warts (9%); Skin freshness and softening (8%); Skin fairness (8%); Wrinkles and freckles (8%); Eyes care (6%); Lips care (3%); body smells (3%); and facial hair (2%). (Table 1, Figure 3).

The major plant parts utilized in herbal recipes included fruit (32.8%), Leaves (25.2%), seeds (13.4%), roots (8.9%), Bulbs and rhizomes (4.5%), bark (2.9%) and stem (2.9%) (Figure 4).

**Figure 1.** Predominant plant families utilized in cosmetic ethnobotany in the area

**Figure 2.** Locals preferences about cosmetics and availability of health facilities
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Figure 3. Major applications of cosmetic herbs among the locals in the area

Figure 4. Proportion of herbal parts used in cosmetic recipes

Table 3. Age group and literacy level frequencies of the respondents in the area

| Age group | Individuals | %age | Literacy rate | Individuals | % age |
|-----------|-------------|------|---------------|-------------|-------|
| 20-30     | 110         | 35.5 | Illiterate    | 183         | 59    |
| 30-50     | 100         | 32.3 | School        | 78          | 25.2  |
| >50       | 110         | 35.5 | College       | 39          | 12.6  |
|           |             |      | University    | 10          | 3.3   |
Discussion

The respondents of the questionnaire represented a diverse array of tribal women including literate, illiterate, young and elders. Among the 310 informants, the largest (67.9%) proportion was of elderly, above 30 years of age (Table 3). More than half of the respondents were illiterate (59%). Seventy one percent respondents reported unavailability of health facilities, especially for skin, hair and other cosmetic problems which reflect that herbs are the only available choice for cosmetic purposes in the area (Figure 2). The younger age group showed greater interest in synthetic market cosmetic products as compared to that in elder groups. The maximum response (69%) was observed in the older age group i.e. >30 years (Table 3) indicating popularity of cosmetic ethnobotany in elder tribal women (Khan et al., 2011; Shah & Joshi, 2009). These results reflect that indigenous knowledge is well established but seems to be decreasing in the younger generation.

Mode of administration or method of intake was different for different plants. Some plants were used orally or some plants were used externally for the treatment of many skin disorders. The women of the area prefer cosmetic ethnomedicine because in the remote areas, women have no alternative choices, poverty and they have faith in plants and trust in the effectiveness of folk lore herbal remedies (Qureshi et al., 2009). These ethnomedicines are natural and beneficial for the health because there are no impurities in this type of medicines which are prepared by people themselves (Ahmed et al., 2009). Women also prefer ethnomedicine because allopathic medicines are expensive as compared to natural ethno medicine (Bekalo et al., 2009).

Unavailability of the modern health care facilities is another important reason for the tribal women to depend upon the herbal resources as the only available choice. Seventy two percent respondents reported unavailability of modern health facilities regarding cosmetic purposes (Figure 2). Our results revealed that the older generation possessed sufficient knowledge about cosmetic herbs as compared to younger generation. The younger generation seemed to be involved in synthetic cosmetics inspired by intensive media campaigns and advertisements (Kumar et al., 2009).

The results of this research showed that women’s information regarding the medicinal plant used, part used, dose preparation and application was highly credible. However our study was the 1st ever effort focusing on cosmetic utilization of local herbs and there is further need of detailed and intensive investigations with particular reference to herbal cosmetics in Kashmir Himalayas. The rapid socio economic and cultural transformations in Himalayas have brought about changes in ecology and people plant interaction (Khan et al., 2012). The indigenous knowledge about local herbs is declining in several regions (Kassam et al., 2011).

The findings of the present research are in harmony with the results of ethnobotanical investigations of Bekalo et al., 2009 in Ethiopia; Everest & Ozturk, 2005 in Turkey; Kala, 2007 in Indian Himalayas; Kumar et al., 2007 in Jammu and Kashmir, India; and Shaheen et al., 2012 in Azad Jammu & Kashmir, Pakistan. The results of the present study also indicate similar declining trends about cosmetic herbs in the area, particularly in younger generation. Several other research studies also support this fact that there is an urgent need for preserving indigenous knowledge in Himalayas (Jan et al., 2009; Kala & Mathur, 2002; Coopsoomay & Naidoo, 2012). We suggest that young generation should be trained and made aware about importance, sustainable utilization as well as domestication of the precious cosmetic herbs.
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