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Ethnomedicinal evaluation of medicinal plants of Bir Bara Ban (A conservation reserve in Jind district of Haryana) used for treatment of skin disorders

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Abstract
People of all age group and gender are affected by skin disorders. Skin being largest and vital organ of body acts as an interface between environment and human body. Present study was carried out to document the medicinal flora used for treatment of skin diseases by local people of surrounding areas of Bir Bara Ban in Jind District of Haryana. Study revealed medicinal importance of 48 plants species belonging to 29 families. This documentation of medicinal plants will motivate local people to conserve medicinal flora for future use.

Keywords: Skin disorders, medicinal plants, traditional medicines

Introduction
Plants have intense medicinal properties and herbal plants have a strong potential to be used as drugs for treatment of many diseases. In primary healthcare of local and rural people major role is played by traditional and ethno medicines (Rajiv, 1996; Patil, 2008) [5, 7]. Even after so much enhancement of modern medicines system in India more than 90% of rural people strongly rely on local healers or medicine men for cure of diseases (Yadav and Patil, 2001) [6]. Herbal drugs are used to cure many skin disorders like eczema, scabies, ringworm (Prashantkumar and Vidyasagar 2008) [8]. Skin being largest and vital organ of body acts as an interface between environment and human body (Carman 2009) [2]. Skin ensures wellbeing of body by performing salient functions of disease control, protection and temperature regulation (Abbasi *et al*., 2010) [1]. People of all age group and gender are affected by skin disorders (Grice *et al*., 2009) [3] Skin infections and their symptoms are highly visible to the people and have a negative impact on the wellbeing of the affected people (Carman, 2009) [2]. Recently skin diseases have gained much attention due to association with HIV/ AIDS (Abbasi *et al*., 2010) [1]. Skin diseases occur worldwide and amount to approximately 34% of all occupational diseases encountered. Traditional medicinal resources, especially plants have been found to play a major role in managing skin disorders. They have been employed in the treatment of skin ailments in many countries around the world where they contribute significantly in the primary health care of the population. Main objective of this paper is documentation of medicinal flora of Bir Bara Ban (A Conservation Reserve) used for treatment of skin disorders.

Material and Methods
Bir Bara Ban (Latitude $29^0$19`, Longitude $76^0$ 23`) is located on National Highway 71A, Jind No. 8, in Jind district of Haryana (Fig.1and 2) Geographical area of Jind district is 2777Km^2 which is 6.1% of total area of the state. Prior to the independence, it was the property of Raja of Jind district who maintained it as game reserve. Hitherto, it was also declared as Wild life Sanctuary vides Haryana Government, Wildlife Preservation Department notification no. S.O.152/C.A.53/72/S. 18/91 dated 20 December 1991 but was subsequently denotified and declared as a Conservation reserve vide Haryana Government Gazette (EXTRA) dated 11 October 2007. The climate of the area is sub-tropical with distinct winter, summer and monsoon seasons. Normally, it is cold from months of November to February and hot weather is pronounced from May to June followed by monsoon which generally lasts up to mid-September. From month of March, the temperature starts increasing rapidly reaching maximum and last up to June end. The month of June is generally hottest one. During summer period from month of May to June, the area is characterized by high velocity hot winds (loos) and dust storms followed by decrease in temperature by the mid of September onwards. December and January are the coldest months with temperature dipping to 0 ^{0} C (Kaur, 2016) [4].

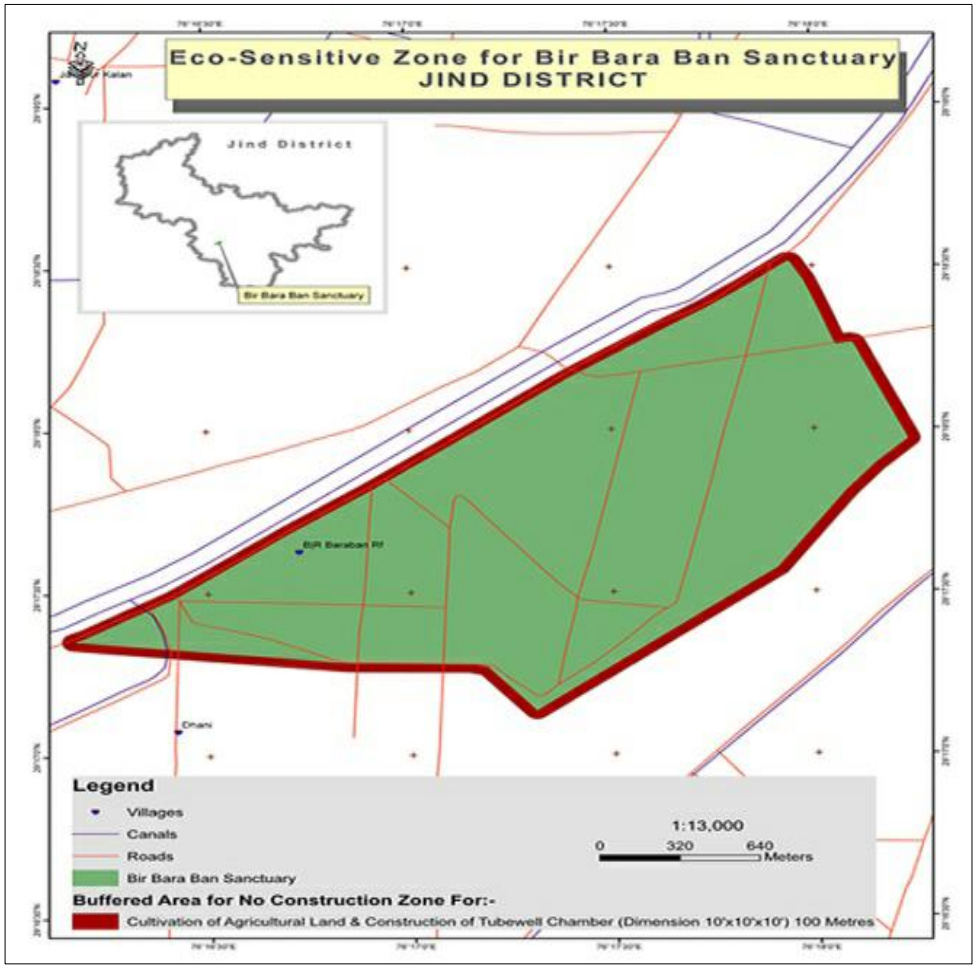

Fig 1: Map of Bir Bara Ban

Fig 2: Bir Bara Ban on NH 71 A

Main objective of present study was to document medicinal flora of Bir Bara Ban to be used for treatment of skin disorders. During study period, trips were organized during winter, summer and rainy seasons. Forest department and wild life department was also consulted about maps and location of study site. There are six villages namely Ramgarh, Ramgarh ki Dhani, Ramrai, Ikkas, Dalalpura and Ghimana surrounding the conservation reserve. Interview was conducted randomly among the people of villages singly as well in group. Information was collected in the form of simple questionnaire which included local name, botanical name and plant part used of medicinal flora (Fig. 3). Field notes were also prepared on the basis of information on medicinal values of plants collected from people by interviewing them. Common names were properly recorded in field notes so that their identification can be cross verified with literature also. Photographs of plants were taken. Then, plant specimens were taxonomically identified using the pertinent literatures and different herbaria. Help of taxonomists was also taken in identification of plants by sending the sample.

Fig 3: Collection of information from local people

Results and Discussion

Present study revealed medicinal importance of 48 species belonging to 29 families that were found to be used for treatment of skin disorders like eczema, inflammation, skin burns, cut, wounds and itching etc (Table 1). Family Moraceae was dominant with 5 species followed by

Mimosaceae with 4 species. Myrataceae and Fabaceae represented 3 species each. Caesalpiniaceae, Euphorbiaceae, Liliacea, Acanthaceae, Cucurbitaceae, Bignoniaceae and Poaceae, Solanaceae, represented 2 species each. Moringaceae, Combretaceae, Asteraceae, Meliaceae, Ulmaceae, Lamiaceae, Convolvulaceae, Asclepiadaceae, Capparaceae, Boraginaceae, Simaroubaceae, Nyctaginaceae, Cactaceae and Tamaricaceae, cuscutaceae, Caricaceae, Apocynaceae each represented 1 species. For treatment of various skin disorders most frequent plant part used was leaves, bark and roots followed by, latex, fruit, seed, whole plant and flower, wood, twig.

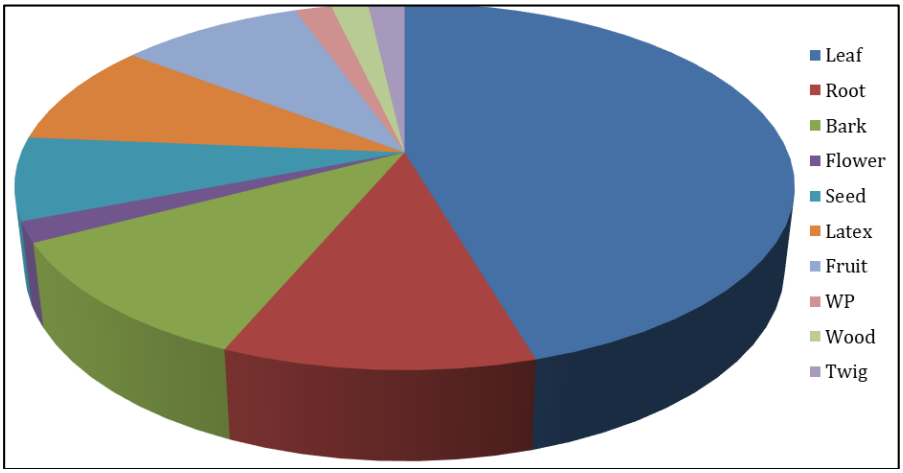

Fig 4: Plant parts used for treatment of Skin disorders

Table 1: Plants used for treatment of skin disorders

Sr. No	Name	Plant part used	Family	Mode of use
1	*Acacia nilotica*	Leaves, Root	Mimosaceae	Paste of leaves used to cure skin wounds. Root paste is used for soothing sensation after burning of skin.
2	*Acacia tortilis*	Bark	Mimosaceae	Bark decoction used for treatment of skin ailments.
3	*Ailanthus excelsa*	Bark, Leaves	Simaroubaceae	Paste of bark and leaves used to remove skin scars and eruptions.
4	*Albizia lebbeck*	Flower	Mimosaceae	Flower paste is used to cure skin eruptions and inflammation.
5	*Asphodelus tenuifolius*	Leaves	Liliaceae	leaf paste is applied externally on skin inflammation and swelling
6	*Butea monosperma*	Seed	Fabaceae	To increase skin glow seeds powder mixed with lemon juice used by people.
7	*Azadirachta indica*	Leaves	Meliaceae	Leaves are boiled in water and from this water bath is taken to cure skin infection.
8	*Callistemon lanceolatus*	Leaves	Myrtaceae	Tea prepared from leaves is used in skin infection
9	*Boerhavia diffusa*	Root	Nyctaginaceae	Paste of root is applied externally on skin inflammation.
10	*Capparis sepiaria*	Leaves	Capparaceae	Leaf paste applied externally on skin in case of inflammation and swelling.
11	*Cassia fistula*	Root, Leaves	Caesalpiniaceae	In case of skin infection root paste is applied. Root paste and leaves used in burning sensation and skin diseases.
12	*Carica papaya*	Latex	Caricaceae	Latex is used to cure eczema and warts
13	*Citrullus colocynthis*	Fruit	Cucurbitaceae	Paste of fruit applied externally on skin to cure pimples.
14	*Calotropis procera*	Latex	Asclepiadaceae	Latex applied in case of skin infection
15	*Cuscuta reflexa*	Whole plant	Cuscutaceae	Whole plant is boiled in water and bath is taken with this water to cure eczema.
16	*Coccinina grandis*	Leaves	Cucurbitaceae	Paste of leaves is applied on skin eruptions.
17	*Cordia dichotoma*	Seed	Boraginaceae	Seed powder along with oil used for skin eruptions.
18	*Datura innoxia*	Leaves	Solanaceae	Leaves are warmed and tied over skin pustules
19	*Dalbergia sissoo*	Seed, Wood	Fabaceae	Wood powder and seed oil is used in skin infection.
20	*Euphorbia hirta*	Whole plant	Euphorbiaceae	Paste of whole plant is prepared and applied on sores and boils
21	*Eucalyptus globules*	Leaves	Myrtaceae	Crushed leaves used to treat skin wounds.
22	*Ficus religiosa*	Bark	Moraceae	In case of skin allergies and infection, skin is washed with bark decoction.
23	*Ficus racemosa*	Latex	Moraceae	Latex used to apply on skin pimples.
24	*Ficus benjamina*	Leaves, Root	Moraceae	Leaves and root are boiled in oil and then this mixture is applied on skin wounds.
25	*Ficus benghalensis*	Fruit	Moraceae	Fruits are eaten to Sooth skin irritation.
26	*Ficus palmata*	Fruit	Moraceae	Fruits eaten to remove skin warts
27	*Holoptelea integrifolia*	Leaves	Ulmaceae	Bath is taken by boiling leaves in water for treatment of skin inflammation
28	*Jacaranda mimosifolia*	Bark, Leaves	Bignoniaceae	Bark and leaves used to cure syphilis and skin infection.
29	*Pongamia pinnata*	Leaves	Fabaceae	Crushed leaves used to cure skin diseases.
30	*Nerium oleander*	Leaves	Apocynaceae	Leaves decoction applied externally to treat scabies and swelling.
31	*Tamarix aphylla*	Bark	Tamaricaceae	Bark is used in treatment of skin infection
32	*Justicia adhatoda*	Leaves	Acanthaceae	Leaves are warmed and applied on wounds and swelling
33	*Cassia obtusifolia*	Leaves, Seed, Root	Caesalpiniaceae	Paste of leaves, seeds and roots is applied for treatment of skin diseases
34	*Euphorbia royleana*	Latex	Euphorbiaceae	Latex is used in skin infection
35	*Ipomoea fistulosa*	Latex	Convolvulaceae	Latex of the plant used to treat skin problems
36	*Opuntia dillenii*	Leaves	Cactaceae	Paste of leaves applied externally on boils and swollen areas of skin.
37	*Syzygium cumini*	Fruit	Myrtaceae	Mixture of dried powdered seed and honey is applied on face as face mask and it helps in removing pimples and spots
38	*Mimosa hamata*	Twig	Mimosaceae	Paste of twigs used externally on swelling.
39	*Kigelia pinnata*	Fruit	Bignoniaceae	Paste of green fruit used for treatment of wounds.
40	*Ocimum americanum*	Leaves	Lamiaceae	Paste of leaves applied externally on wounds, cuts and burns

41	*Tridax procumbens*	Leaves	Asteraceae	Juice of leaves is applied on wounds to stop bleeding
42	*Barleria prionitis*	Leaves	Acanthaceae	Leaf paste is used for wound healing
43	*Cynodon dactylon*	Leaves	Poaceae	Leaves crushed and applied on wounds to stop bleeding
44	*Terminalia arjuna*	Bark	Combretaceae	Decoction of bark is used for wound healing
45	*Moringa oleifera*	Leaves	Moringaceae	Leaf paste applied on skin wounds.
46	*Solanum surattense*	Leaves	Solanaceae	Leaves paste is applied externally to heal pain and burning sensation.
47	*Aloe barbadensis*	Leaves	Liliaceae	Pulp of leaves is applied externally on skin burns
48	*Vetiveria zizanioides*	Root	Poaceae	Oil obtained from roots used for skincare to treat acne

Conclusion

Information was compared with exiting literature and found that use of *Azadiracta indica*, *Tridax procumbens* for treatment of wounds and skin infection was reported earlier. Use of *Vetiveria zizanioides*, *Euphorbia royleana* for treatment of skin infection was not reported earlier (Singh et.al 2012) [9]. Present study revealed that local people surrounding The Bir Bara Ban used various medicinal plants for treatment of skin ailments. The study site was found to be rich in medicinal flora. Present study will provide data base for further researches related to treatment of skin disorders. Study will further motivate people to conserve the medicinal flora for future generations.

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