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S Hota

Laboratory of food chemistry & microbiology, food & nutrition division, department of home science, university of Calcutta, Kolkata, India.

A Chatterjee

Laboratory of food chemistry & microbiology, food & nutrition division, department of home science, university of Calcutta, Kolkata, India.

Traditional and indigenous uses of plants for treatment of skin diseases by the tribes in Paschim Medinipur district of West Bengal

S Hota and A Chatterjee

Abstract

This study was carried out in order to determine which plants and the ways in which these plants are used for the treatment of skin diseases among the tribal people of villages located in the district of Paschim Medinipur of West Bengal. During the field trips, the information was collected through interviews, including various data obtained from local healers and traditional medicine men, herbalists, shepherds, patients and elderly persons. A total of 37 plants belonging to 26 families were documented for their therapeutic use. Further analysis on the families of medicinal plants has shown that family Euphorbiaceae and Solanaceae are represented by the highest number of species. Also, it was determined that skin disorders for which the folk medicinal plants used are mostly eczema, Leucoderma, wound and inflammations. This survey illuminates that the tribal people still actively use plants for the treatment of skin diseases.

Keywords: Herbal medicine, Tribal people, Eczema, Leucoderma, Inflammations

Introduction

From the dawn of human civilization, plants are playing most important role for the source of medicine. Many studies have shown that over 80% of people in developing countries depend on the traditional medicines for their basic primary health [1]. Exploitation of natural sources for the development of traditional medicinal preparations, and also of bioactive molecules, leads and therapeutic agents has acquired a time-tested reputation [24]. Of the various natural sources examined, plants proved to have high potential and yielded maximum number of commercially viable therapeutic agents [17]. Biodiversity has been realized to be the key driver in natural source based drug discovery [5]. Screening of plant sources in consonance with ethno pharmacological information of various geographical regions of the world is therefore expected to yield newer and more useful therapeutic principles [19]. India is one of the 12 mega diverse countries of the world with 16 agro climatic zones, 12 vegetative zones, 15 biotic provinces and 426 biomes with 15,000 medicinal plants, out of which 7,000 are used in *Ayurveda*, 700 in *Unani* and 600 in *Siddha* systems of medicine [26]. With varied climatic zones and abundant biodiversity, the plants of Indian origin have the potential to elaborating interesting bioactive molecules. In India there are many ethnic groups with rich cultural heritage still using the traditional herbal medicine for treating various diseases [23, 28, 30].

Skin, the outermost covering of the body, is the largest organ in the human body which is unique in nature. Skin, provides the first line defense, act as the regulator, protect internal organs from external risks. Skin is mainly consists of the three layers like epidermis, dermis and the hypodermis. Each layer plays a specific role in the homeostasis of the skin. The thickness of different layer of the skin varies from person to person [34]. From the ancient times various types of Skin diseases like eczema, leucoderma, ringworm, and scabies are treated completely with plant origin medicines. Elaborate studies have demonstrated that skin diseases are treated by herbal remedies from a variety of plant parts such as leaves, bark, stem, root, or fruit. These medicinal preparations are administered topically and may be applied in the form of cream, lotion, gel, soap, sap, solvent extract or ointment, and have also been established to possess antimicrobial properties [8, 9, 14, 18, 20, 21, 22, 32, 36]. Hundreds of plant species worldwide are used in the traditional medicine as a treatment for skin diseases caused by bacteria, fungi and viruses [25]. The succulent gel from the Aloe species has been used for centuries in the treatment of skin disorders such as psoriasis [16]. Application of Aloe vera gel helped in the

Correspondence

A Chatterjee

Laboratory of food chemistry & microbiology, food & nutrition division, department of home science, university of Calcutta, Kolkata, India.

improvement of partial thickness burns^[15]. Aloe vera cream is used to reduce the skin “plaques” associated with psoriasis^[33]. Tea-tree oil, an essential oil which is extract from *Melaleuca alternifolia* in gel form, was reported to reduce skin acne^[2]. The leaf extracts and oils from the seed kernels of *Azadirachta indica* A. Juss (Neem) have antifungal properties. It is effectively used against bacterial skin diseases, as well as ringworm, eczema and scabies^[4]. The bark extract of *Terminalia Arjuna* had been successfully evaluated and reported to possess wound healing activity^[27]. *Thevetia peruviana* Schum (Yellow oleander) extracts showed antifungal activity against *Cladosporium cucumerinum*^[8]. The paste obtained from onion and garlic might be promising in treatment of fungal-associated diseases caused by the pathogenic genera like *Candida*, *Malassezia* and the dermatophytes^[31]. Green tea (*Camellia sinensis*) can rejuvenate old skin cells to start reproducing again, keeping the skin younger looking^[29]. Juice of *Euphorbia walachii* is effective against warts and skin infections^[35]. Bark powder obtained from *Ficus recemosa* is effectively used against pimples, itches and scabies and *Ficus bengalensis* L. bark powder is also used to cure scabies^[13].

There is no specific written documentation on the traditional treatment methods to cure different types of skin diseases by tribal communities like Sabar and Santal in Paschim Medinipur district. This paper presents and highlights the first hand information on traditional methods to cure skin diseases by different tribal communities in western parts of Paschim Medinipur district.

Methods

Present work is based on extensive field survey in the dry deciduous forest areas in the Jhargram subdivision for gathering ethnomedicinal value of different plants used by the different ethnic tribes like- Santals, Lodhas, Sabar, Mundas etc. for treating various skin diseases. Methodologies as suggested by Jain and Ford^[7, 10, 11, 12] have been followed for

collecting information by conducting structured questionnaire based interviews of such knowledgeable informants like traditional healers (the local medicine men i.e. Ojha, Baidya, Kaviraj), middle-aged housewives, senior wise men (Figure 2). Concerned plant specimens were identified on the basis of taxonomic work-out and consultation of literatures^[10, 12] and authentic specimens^[28]. Extensive field survey from the remote areas in this district was carried out during June 2015 to Jan 2016. Jhargram subdivision is a unique subdivision of the Paschim Medinipur district in the state of West Bengal, India. It is situated in the western part of Paschim Medinipur. It consists of Jhargram municipality and eight community development blocks like Binpur-I, Binpur-II, Jamboni, Jhargram, Gopiballavpur-I, Gopiballavpur-II, Nayagram and Sankrail. For the present study, three blocks including Jhargram (22°26'59" N latitude and 87°00'4" E longitude), Binpur-II (22°41'10" N latitude and 86°36'56" E longitude, Kankrajhore forest: - 22°42'13" N latitude and 86°36'24" E longitude) and Jamboni (22.4510° N latitude, 86.8790° E longitude Chilkigarh: - 22°27'11" N latitude and 86°53'02" E longitude) were selected (Figure 1).

The general ground configuration is having gentle slope towards east. Hilly terrain occurs in the north-western portion of the Division. Kankrajhore area is having the highest altitude of around 300 m and Gopiballavpur is having the lowest altitude of around 65 m. The altitude of Jhargram town is around 78.5 m. There are local variations in the slopes of the land within the division.

The average annual rainfall of Jhargram is about 1400 mm. The rainy season spreads over June to September due to south-west monsoon and highest rainfall occurs in July and August. The maximum temperature during project was 43 °C and minimum was 19 °C. The soil is red, laterite, shallow depth gravels, low in organic matter, nitrogen and high in phosphorus and potassium. The climate in this region is sub-humid and dry.

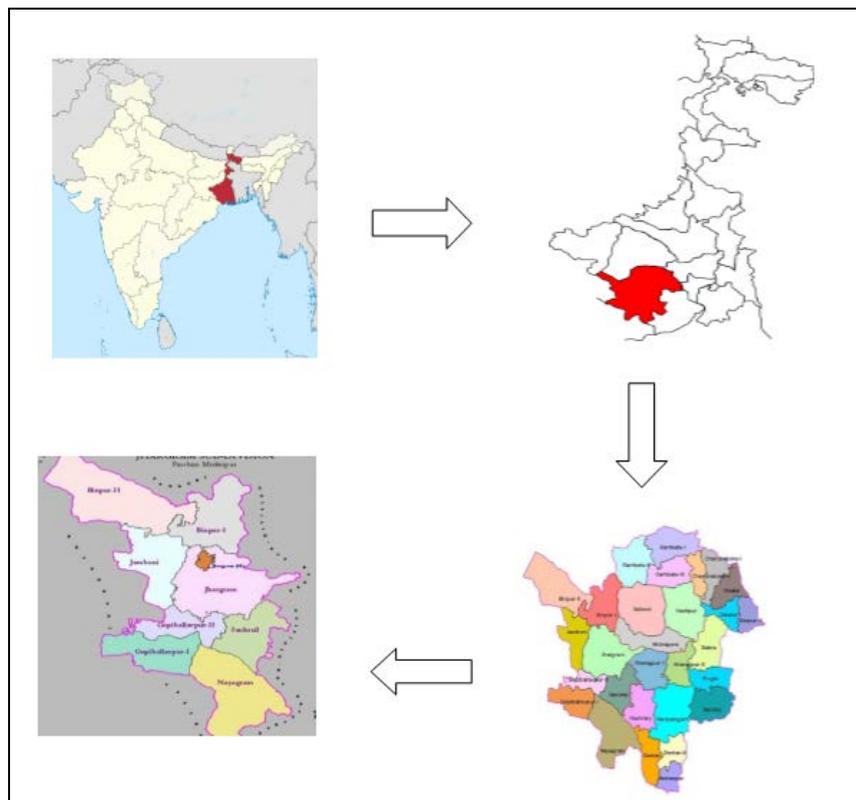


Fig 1: Map of west Bengal showing the study area in different blocks in Paschim Medinipur district



Fig 2: Data collection from the ethnic people

Results and Discussion

In the present investigation 37 species of medicinal plants belongs to, total 36 genera and 26 families were used for the treatment of skin diseases (Table 1). Out of the 26 families, 6 were belongs to monocotyledons and 19 families were dicotyledons (Figure 3). Among the different plants employed for medicinal preparations, herbs are dominated followed by

tree, shrub and climber (Figure 4). Out of the different plant parts, the leaves were most frequently used for the treatment of diseases followed by bark, fruit and roots (Figure 5).

The plants used are found growing and are available in the vicinity and in most of the cases immediately available as therapeutic.

Table 1: Enumeration of different plant species is as follows

S. no.	Local name	Scientific name	Family	Parts	Uses
1	Muktajhuri	<i>Acalypha indica</i> L	Euphorbiaceae	Whole Plant Leaf	Leaf juice is used for Rheumatoid arthritis and skin infections and eczema Leaf paste is also use for treating burn
2	Pianz	<i>Allium cepa</i> L	Amaryliidiaceae	Bulb	Fresh juice is used for burn wound.
3	Nim	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Leaf	Leaf extract is used against skin disease
4	Babla	<i>Acacia arabica</i>	Mimosaceae	Bark	Bark is useful for the treatment of eczema
5	Gritakumary	<i>Aloe vera</i>	Liliaceae	Leaf	Leaves paste use for curing burning, skin irritations, cuts, itching and skin swellings
6	Sisal	<i>Agave Americana</i> L.	Agavaceae	Leaf	Leaves have wound-healing and anti-inflammatory properties. It uses externally as a medicinal herb to treat burns, minor cuts, injuries and skin irritation
7	Bans	<i>Bambusa arundinaceae wild (Retz)</i>	Poaceae	Bark	Thin green bark is used to stop bleeding
8	Kanchan katmauli	<i>Bauhinia racemosa</i>	Caesalpineaceae	Bark	Decoction prepared from bark is used against skin diseases
9	Bandarlathi	<i>Cassia fistula</i>	Caesalpineaceae	Leaf	Leaves are useful for skin problem
10	Thankuni	<i>Centella asiatica(L)</i>	Apiaceae	Aerial part, Leaf	The plant extract is useful for treatment of burns and wounds
11	Ghentu	<i>Clerodendrum visosum Vent</i>	Verbenaceae	Leaf	Leaves are used for skin diseases
12	Kansira	<i>Commelina benghalensis</i> L.	Commelinaceae	Whole Plant	The plant is useful in treatment of skin diseases
13	Haladi	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome	Rhizome is used to treat skin diseases and wound healing
14	Durba	<i>Cynodon rotundus</i> L.	Poaceae	Whole plants	The plant extract is useful for stop bleeding
15	Dhutra	<i>Datura metel</i> L.	Solanaceae	Leaf	Leaves are used to cure sores, skin diseases
16	Sissoo	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Bark	A decoction of bark cure skin diseases
17	Hatisur	<i>Heliotropium indicum</i> Linn	Boraginaceae	Leaf	Leaves cure wounds and inflammations, skin infections
18	Challa	<i>Holoptelea integrifolia (Roxb.) Planch</i>	Ulmaceae	Leaf	Leaf paste is used to reduce eczema
19	Jasmine	<i>Jasminum grandiflorum</i>	Oleaceae	Root Leaf Flower	Root is skin diseases and leprosy Leaves are used for wound and leprosy Flowers are beneficial for skin diseases and leprosy
20	Lal varenda	<i>Jatropha gossypifolia</i> L	Euphorbiaceae	Leaf	The latex play a great role to stop bleeding and for healing wounds and for curing skin problems. The sap is used for cuts, eczema abrasions
21	Bagbherenda	<i>Jatropha curcas</i> L.	Euphorbiaceae	Leaf	Latex play a great role to stop bleeding and for healing wounds, inflammation
22	Tomato	<i>Lycopersicon esculentum</i>	Solanaceae	Fruit	Fruits are used to treat for burns.
23	Berajal	<i>Lygodium flexuosum</i>	Schizeaceae	Root	The root cure cut, wounds, eczema and scabies

24	Baghnakh, Bag lucha (Santali).	<i>Martynia annua</i> Linn. Syn. <i>M. diandra</i> Glox	Martyniaceae	Fruit	Fruits are used in treatment of inflammation and burns
25	Ghikalla	<i>Momordica dioica</i> Roxb	Cucurbitaceae	Leaf	Leaves are used in skin diseases
26	Kala	<i>Musa paradisiaca</i>	Musaceae	Leaf	Leaves are used in burns and skin diseases
27	Lal-shaluk	<i>Nymphaea mouchali</i>	Nymphaeaceae	Flower	Flowers are used in to stop heavy bleeding, burning of skin
28	Amrul	<i>Oxalis corniculata</i> L	Oxalidaceae	Leaf	Leaves use for curing burn
29	Dhan	<i>Oryza sativa</i> L.	Poaceae	Seed	Seeds are useful against, skin infection
30	Radhachura	<i>Peltophorum pterocarpum</i> (DC.) K. Heyne	Caesalpiniaceae	Leaf	Leaves are used in skin diseases
31	Ritha	<i>Sapindus mukorossi</i> Gaertn	Sapindaceae	Leaf	Young leaves are used in leucoderma, leprosy and skin diseases
32	Sal	<i>Shorea robusta</i>	Dipterocarpaceae	Bark Resin	The stem bark is used to cure burn Resin is used externally for painful swelling
33	Kakmachi	<i>Solanum nigrum</i> L.	Solanaceae	Fruit	Fruits are used in skin diseases
34	Segun	<i>Tectona grandis</i> Linn.f.	Verbenaceae	Leaf	Leaf is used in wounds and burns.
35	Arjun	<i>Terminalia arjuna</i> (Roxb. ex DC) Wight. & Arn	Combretaceae	Bark	The bark of stem is beneficial for skin problem
36	Phalsa tree	<i>Trewia nudiflora</i> L.	Euphorbiaceae	Leaf	Leaves are used to treat and heal wound
37	Ashwagandha	<i>Withania somnifera</i>	Solanaceae	Leaf	Leaves are used for wound and burn

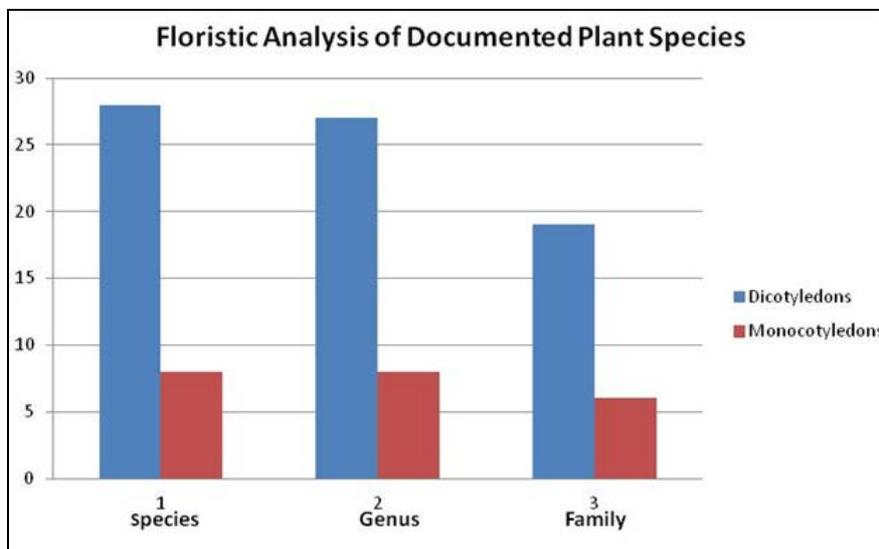


Fig 3: Floristic Analysis of Documented Plant

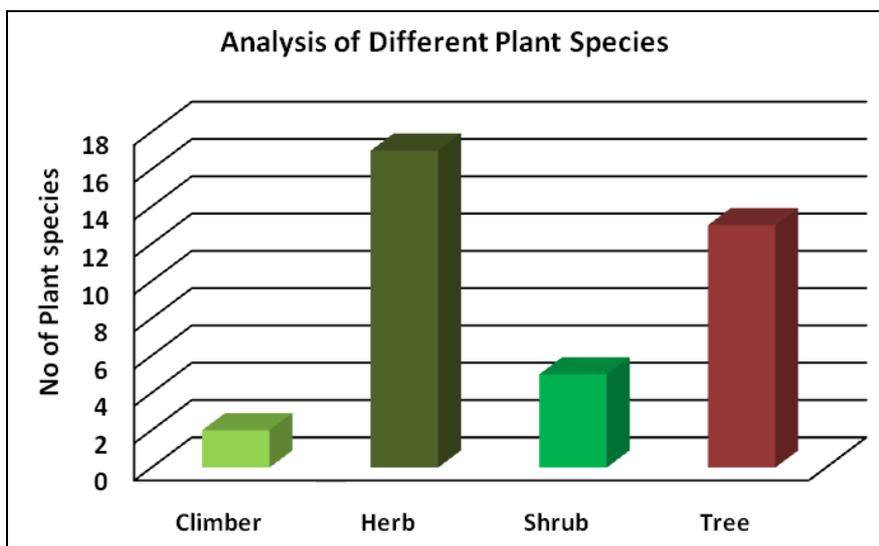


Fig 4: Analysis of Different Habits of Plant Species

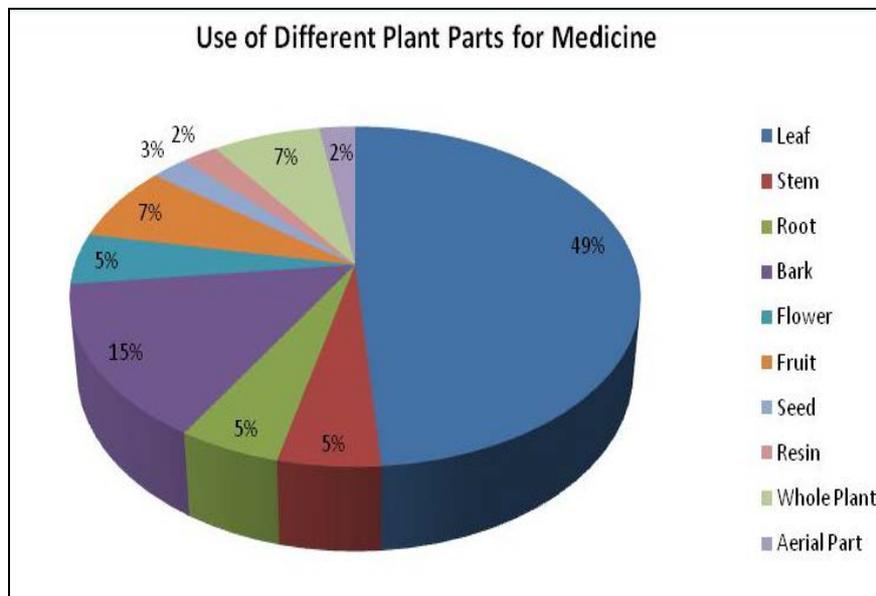


Fig 5: Different Parts of Plants Used for Medicine

Conclusion

The present study deals with identification of 37 plant species belonging to 26 families, used by the tribal people in Paschim Medinipur district for their skin care. It includes trees, shrubs, herbs, climbers etc. The knowledge about the use of plants by the tribes appears to be unknown or little known outside their community. The rural area of this district which was our study area is an important source of traditional medicines. More information may be explored from the peoples residing in the remote villages in this district. The traditional healers are the main source of knowledge on medicinal plants. This knowledge has been transmitted orally from generation to generation; however it seems that it is vanishing from the modern society since younger people are not interested to carry on this tradition. It is also observed that some traditional plants in that area are fast eroding. The conservation efforts are needed by plantation and protection of these plants with maximum participation of local people. This piece of ethno botanical work emphasizes about the traditional knowledge employed for treatment of skin diseases. Therefore the documentation of plants used as traditional medicines in tribal community is needed so that this veritable treasure of knowledge can be preserved, shared and exploited sustainably. This article might attract the attention of ethno botanists, phytochemists and pharmacologists for further critical investigation of plants present in Paschim Medinipur district of West Bengal, India.

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