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RESEARCH ARTICLE

Ethnomedicinal Plants Used for the Treatment of Skin-Related Ailments by the Kanikkars, an Indigenous Tribe Inhabiting Southern Western Ghats

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Abstract

The study of ethnobotany relating to any tribe is in itself a very intricate or convoluted process. An ethnomedicinal survey was carried out in ten Kanikkar tribe inhabited villages namely Kalapparai, Kayalkarai, Kodhayar, Koduthurai, Mangamalai, Maramalai, Mothiramalai, Mudavanpothai, Thachamalai and Thottamalai in Pechiparai Panchayat (forest range), Kalkulam Taluk, which form a part of the southern tip of Western Ghats region of Kanyakumari District, Tamil Nadu, India. This paper documents the traditional knowledge of medicinal plants which are being potentially used by the Kanikkars for treating various skin-related ailments. A total of 45 species of ethnomedicinal plants belonging to 40 genera and 27 families (24 dicot families and 3 monocot families) were recorded with the help of the most reliable tribal informants. The study thus underlines the potentials of the ethnomedicinal survey and the need for the documentation of traditional ecological knowledge pertaining to the medicinal plants utilization for the greater benefit of mankind.

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Introduction

Since time immemorial man has used parts of plants in treatment and prevention of many ailments (Chah *et al.*, 2006). Ethnobotany gives value to peoples in traditional knowledge and understanding of their cultures, and also the practical uses of plants. Ethnobotany also collaborates to value knowledge and community in traditional medicine (Cotton, 1996). Ethnomedicine is one of the systems of medicine that is widely practiced among the tribal and aboriginal populations of our country for the treatment of ailments (Singh *et al.*, 2003). Tribal medicine or traditional medicine plays a vital role in the primary healthcare of tribal as well as rural people (Sinha Rajiv, 1998; Patil, 2008). World Health Organization has stated that 80% of the world's population depends on traditional medicine for its primary healthcare and has become indispensable for its survival (Hiremath and Taranath, 2013).

Some tribes are adhering to the traditional way of life, native culture and customs have vast store of information and knowledge on potentially useful medicinal plants. The traditional knowledge system in India is fast eroding due to steady decline in human expertise capable of recognizing various medicinal plants. Much of this wealth of knowledge is totally becoming lost as traditional culture is gradually disappearing because it is mostly oral (Hamilton, 1995). Therefore, effort should be initiated for the documentation and computerization of useful medicinal plants and their traditional knowledge (Mehrotra and Mehrotra, 2005). The ethnobotanical survey can bring out many different clues for the development of drugs to treat human diseases (Ghosh, 2003).

A hill tribe called Kanikkars is the predominant local inhabitants, inhabiting the southern tip of Western Ghats region of Kanyakumari district of Tamil Nadu, India. The Kanikkars are also known as Kanis. Like the other aboriginal hunting and gathering tribes, Kanis also have the primitive history of hunting, gathering and shifting cultivation. Long back, the Kanikkars were employed by the Travancore Government to collect honey, wax, ginger, cardamom, dammar and elephant tusks (Thurston, 1909). Kani tribal medicinal experts are called as "Philathies" (Nagendra Prasad *et al.*, 1996).

Skin-related ailments are of common occurrence among the rural masses due to poor hygienic conditions, poor sanitation facility and contaminated water. Traditional herbal medicines used by different tribal communities play an important role in alleviating various skin-related ailments. They are safe, effective and inexpensive and in many cases, the only method of medication. The aim of our study was to explore and document the plants used to treat various skin-related ailments by the Kanikkars reside in Pechiparai Panchayat (forest range) of Kalkulam Taluk situated in the southern tip of Western Ghats region of Kanyakumari District, Tamil Nadu, India. Caught up between the traditional forest dependent life styles and modernism the Kanikkars are in a transition.

Materials and Methods

An ethnomedicinal survey was conducted in ten villages namely Kalapparai, Kayalkarai, Kodhayar, Koduthurai, Mangamalai, Maramalai, Mothiramalai, Mudavanpotha, Thachamalai and Thottamalai in Pechiparai Panchayat (forest range), Kalkulam Taluk, which form a part of the southern tip of Western Ghats region of Kanyakumari District, Tamil Nadu, India. Kanyakumari District of Tamil Nadu is the southernmost part of Western Ghats region which is located between 77° 15' and 77° 36' of east of longitude and 8° 03' and 8° 35' north of latitude. It occupies an area of 1684 Km². It is bounded by Tirunelveli District on the north and east and by the Gulf of Mannar on the southeastern part; the south and southwest are surrounded by the Indian Ocean and the Arabian Sea and the west and northwest by Kerala.

The general procedure for collection of information regarding the use of plants to treat various skin-related ailments by the Kanikkars was followed as described by Martin (1950), Borthakur (1976) and Bellamy (1993). The procedure comprised of by personal contact with the Kani tribal medicinal experts, village medicine men and women (tribal informants) and by personal observation on application of medicines. When recording the names of plants, forest visit was made with the tribal informants for identification of the specific plants.

The collected information include formulations (mode of preparation of medicines), ailments for which the formulations were used and dosages. Vernacular names of the plants were obtained from the tribal informants and the plant specimens were collected, prepared herbarium and identified with the help of regional floras, and finally confirmed by comparing with the authenticated specimens in the Herbarium of Botanical Survey of India (Southern Circle), Coimbatore District of Tamil Nadu, India. The voucher specimens were numbered and deposited in the Research Department of Botany, V. O. Chidambaram College, Tuticorin, Tamil Nadu, India.

Results

A total of 45 ethnomedicinal plants distributed in 27 families which are being traditionally and potentially used by the Kanikkars for the treatment of various skin-related ailments are documented and enumerated with their botanical name in alphabetical order, family, vernacular name, part(s) used, number of informants, mode of preparation of medicine and mode of administration (Table).

The recorded 45 plant species belong to 40 genera and 27 families with the highest representative of 6 species belong to the family Euphorbiaceae followed by 4 species belong to the family Caesalpiniaceae. The families Apocyanaceae, Fabaceae and Menispermaceae have 3 species each. The families Asclepiadaceae, Liliaceae, Oleaceae and Rubiaceae have 2 species each, whereas the remaining 18 families have 1 species each. Out of 45 plant species recorded, 41 species belong to dicotyledons of angiosperms and 4 species belong to monocotyledons of angiosperms. Among the different plant parts used for the preparation of medicine, leaf (51%) is found to be the most frequently used plant part followed by root (11%), seed (7%), stem (7%), all parts of the plant i.e. entire plant (7%), bulb (2%), fragrant wood (2%), flower (2%), fruit (2%), rhizome (2%), root tuber (2%) and stem bark (2%). From the survey, it is found that the Kannikars in the study area proficiently use 10 plant species to treat dermatophytosis (tinea/ringworm) out of 45 plant species recorded. The most common mode of administration of medicine is paste.

Table: Ethnomedicinal Plants Used for the Treatment of Skin-Related Ailments by the Kanikkars Inhabiting Southern Western Ghats, Tamil Nadu, India

Botanical Name	Family	Vernacular Name	Number of Informants M - Male F - Female	Part(s) Used	Mode of Preparation of Medicine and Mode of Administration
<i>Abrus precatorius</i> L.	Fabaceae	Kunnimuthu	3 (M - 3)	Seed	The seed powder mixed with coconut oil is applied topically as a remedy for itching and common skin infections.
<i>Aloe barbadensis</i> Mill.	Liliaceae	Chothukattalai	3 (M - 2, F - 1)	Leaf	The gel obtained from the leaf is used to treat acne, boils (furuncles) and prickly heat rashes (miliaria).
<i>Alstonia scholaris</i> (L.) R. BR.	Apocynaceae	Mukkampalai	4 (M - 3, F - 1)	Stem	The latex of stem is applied to treat common warts.
<i>Anamirta cocculus</i> (L.) Wight & Arn.	Menispermaceae	Kakkilikai	4 (M - 3, F - 1)	Fruit	The fruit paste is applied topically to treat dermatophytosis (tinea/ringworm) and scabies.
<i>Aristolochia bracteolata</i> Lam.	Aristolochiaceae	Aduthinnapalai	3 (M - 3)	Leaf	The leaf paste is applied topically to treat scabies and eczema (atopic dermatitis).
<i>Begonia malabarica</i> Lam.	Begoniaceae	Narayanasanjeevi	3 (M - 3)	Leaf	The leaf paste is applied topically to treat dermatophytosis (tinea/ringworm).
<i>Calotropis gigantea</i> (L.) R.	Asclepiadaceae	Erukku	2 (M - 2)	Stem	As a natural wart remedy, the latex of stem is applied directly on the warts several times a day. The leaves are gently heated in sesame oil and applied as a lukewarm bandage on the

					boils (furuncles) to heal.
<i>Canarium strictum</i> Roxb.	Burseraceae	Kungilium	3 (M - 3)	Stem Bark	Coconut oil in which resin (dammer) produced in the stem bark is boiled and applied liberally over the skin as a remedy for itching and common skin infections.
<i>Canthium parviflorum</i> Lam.	Rubiaceae	Karai	1 (M - 1)	Leaf	The leaf paste is applied topically to treat dermatophytosis (tinea/ringworm) and scabies.
<i>Cassia alata</i> L.	Caesalpiaceae	Anathavarai	2 (M - 2)	Leaf	The leaf paste is applied topically to treat freckles and dermatophytosis (tinea/ringworm).
<i>Cassia kleinii</i> Wight & Arn.	Caesalpiaceae	Mulluillathottali	2 (M - 2)	All Parts of the Plant (Entire Plant)	Coconut oil in which a handful of entire plants, crushed roots of <i>Diplisia glaucescens</i> , <i>Vernonia cineria</i> and <i>Hemidesmus indicus</i> and few petals of <i>Ixora coccinea</i> are boiled is applied topically to treat boils (furuncles) and scabies.
<i>Cassia occidentalis</i> L.	Caesalpiaceae	Pethavarai	4 (M - 3, F - 1)	Leaf	The leaf paste is applied topically to treat dermatophytosis (tinea/ringworm) and scabies.
<i>Chlorophytum heynei</i> Rottl. ex. Baker	Liliaceae	Agathurunji	3 (M - 3)	Bulb	A paste of bulbs is used as a topical cream to treat carbuncles.
<i>Costus speciosus</i> (Koen.) J. E. Smith	Costaceae	Costum	4 (M - 3, F - 1)	Rhizome	The rhizome paste is applied topically to treat itchy skin rashes and common skin infections.
<i>Crotalaria retusa</i> L.	Fabaceae	Kilukilupai	4 (M - 3, F - 1)	Seed	The seed paste is applied topically to treat leprosy (Hansen's disease).

<i>Croton bonplandianum</i> Baill.	Euphorbiaceae	Milakaipoondu	2 (M - 2)	Leaf	The leaf paste is applied topically to treat common skin infections.
<i>Croton tiglium</i> L.	Euphorbiaceae	Neervalam	2 (M - 2)	Leaf	Oil obtained from the seeds pre-soaked in limewater for two days is applied topically to treat eczema (atopic dermatitis). The leaf paste is applied topically to treat dermatophytosis (tinea/ringworm) and scabies.
<i>Cyclea peltata</i> (Lam.) Hook.	Menispermaceae	Padathali	2 (M - 2)	Root	The root paste (about the size of a gooseberry) is taken with buttermilk twice a day to lessen the severity of chickenpox (varicella) symptoms.
<i>Diploclisia glaucescens</i> (Blume) Diels	Menispermaceae	Erumathirankodi	2 (M - 2)	Leaf	Coconut oil in which leaves and betel leaves (<i>Piper betle</i>) are boiled is applied over the skin to get rid of scabies and contagious itch naturally.
<i>Euphorbia hirta</i> L.	Euphorbiaceae	Ammanpacharisi	4 (M - 3, F - 1)	All Parts of the Plant (Entire Plant)	As a natural wart remedy, the latex obtained from all parts of the plant is applied directly on the warts several times a day.
<i>Euphorbia nivulia</i> Buch-Ham.	Euphorbiaceae	Ilaikalli	4 (M - 3, F - 1)	Stem	As a natural wart remedy, the latex of stem is applied directly on the warts several times a day.
<i>Evolvulus alsinoides</i> (L.) L.	Convolvulaceae	Vishnukiranthi	3 (M - 3)	All Parts of the Plant (Entire Plant)	Coconut oil in which few entire plants and the leaves of <i>Indigofera tinctoria</i> are boiled is applied topically to treat leprosy (Hansen's disease) and scabies.
<i>Indigofera tinctoria</i> L.	Fabaceae	Neelamari	3	Leaf	A fine paste of leaf prepared together with the leaves of <i>Ocimum basilicum</i> is used as a

			(M - 3)		topical cream to heal sores and wounds.
<i>Jasminum angustifolium</i> (L.) Willd.	Oleaceae	Kattupichi	3 (M - 3)	Root	The root paste is applied topically to treat dermatophytosis (tinea/ringworm) and leprosy (Hansen's disease).
<i>Jatropha curcus</i> L.	Euphorbiaceae	Citramanaku	1 (M - 1)	Leaf	The leaf paste is applied topically to treat eczema (atopic dermatitis), dermatophytosis (tinea/ringworm) and scabies.
<i>Jatropha glandulifera</i> Roxb.	Euphorbiaceae	Kaatuamanakku	3 (M - 2, F - 1)	Seed	The seed oil is applied topically to treat dermatophytosis (tinea/ringworm).
<i>Kalanchoe pinnata</i> (Lam.) Pers	Crassulaceae	Sodakuchedi	3 (M - 3)	Leaf	The leaf paste is applied topically to treat dermatophytosis (tinea/ringworm).
<i>Lawsonia inermis</i> L.	Lythraceae	Maruthani	4 (M - 2, F - 2)	Leaf	The infusion obtained by soaking the leaves along with the flowers of <i>Saraca asoca</i> in coconut oil is used to treat dermatophytosis (tinea/ringworm).
<i>Leucas biflora</i> (Vahl) R. Br.	Lamiaceae	Perunthumbai	1 (M - 1)	Leaf	The leaf paste mixed with coconut oil is applied topically to treat common skin infections.
<i>Limonia acidissima</i> L.	Rutaceae	Vila	1 (M - 1)	Tender Leaf	A paste of tender leaves is applied topically to treat prickly heat rashes (miliaria).
<i>Morinda pubescens</i> J. E. Smith	Rubiaceae	Manjanathi	1 (M - 1)	Root	The root paste is used as an ointment for carbuncles.
<i>Myxopyrum serratum</i> A.W. Hill	Oleaceae	Sathuramullai	1 (M - 1)	Leaf	The leaves are boiled in sesame oil until the oil turns blue in colour and the concentrate is applied all over the body to get relief from itching.
<i>Pergularia daemia</i> (Forssk.) Chiov.	Asclepiadaceae	Vaeliparuthi	1	Leaf	The leaf paste is applied topically to treat

			(M - 1)		freckles.
<i>Phyla nodiflora</i> (L. Greene)	Verbenaceae	Poduthalai	3 (M - 3)	Leaf	Coconut oil in which leaves are boiled is applied all over the scalp to get rid of dandruff (seborrhea).
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Venkoduveli	3 (M - 2, F - 1)	Leaf	The leaf paste is applied topically to treat scabies.
<i>Pongamia pinnata</i> (L.)	Papilionaceae	Pungai	1 (M - 1)	Stem Bark	Sesame oil in which crushed stem bark is boiled is applied topically to treat itchy skin rashes.
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Apocyanaceae	Amalpori	1 (M - 1)	Root	The root paste is applied topically to treat eczema (atopic dermatitis).
<i>Rhinacanthus nasutus</i> (L.) Kurz	Acanthaceae	Nagamalli	1 (M - 1)	Leaf	A paste of leaves prepared with coconut milk is applied topically to treat itchy skin rashes.
<i>Santalum album</i> L.	Santalaceae	Sandanam	2 (M - 2)	Fragrant wood	A fine paste of wood is applied topically as a remedy for itching and to treat pimples on chin.
<i>Saraca asoca</i> (Roxb.) Willd	Caesalpiaceae	Asoka	3 (M - 3)	Flower	Coconut oil in which flowers are boiled is applied topically to treat eczema (atopic dermatitis) and scabies.
<i>Thespesia lampas</i> (Cav.) Dalz.	Malvaceae	Kattuparuthi	1 (M - 1)	Leaf	The leaf paste is applied topically to treat dermatophytosis (tinea/ringworm).
<i>Vetiveria zizanioides</i> (L.) Nash	Poaceae	Vettiver	3 (M - 3)	Root	A pot of water with a handful of roots is boiled and then cooled to take shower as treatment for prickly heat rashes (miliaria).
<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Amukara	3 (M - 3)	Root Tuber	A paste of root tubers prepared with saliva is used as an ointment for carbuncles.

<i>Wrightia tinctoria</i> (Roxb.) R. Br.	Apocynaceae	Vetpalai	3 (M - 2, F - 1)	Leaf	The leaves are soaked in coconut oil in a jar and left out under the direct rays of the sun until the oil turns blue in color, and the infusion obtained is applied topically to treat scabies and contagious itch.
<i>Zizyphus rugosa</i> Lam.	Rhamnaceae	Thodali	3 (M - 2, F - 1)	Leaf	The leaf paste is applied topically to treat scabies and contagious itch.

Discussion

Plants are known to provide a rich source of raw materials for traditional medicine, so traditional medicinal practices are known to still be an important component of everyday life in many regions of the world (Bussmann and Sharon, 2006). People in the remote rural areas of India are forced to resort to traditional practitioners and to use traditional medicine for the continued maintenance of their health and also to alleviate their diverse sufferings. This practice which has considerable economic importance in the tribal culture has never been properly standardized. Every tribal group represents unique indigenous ethnobotanical systems that include the mode of taking or applying plant parts externally or internally as a cure. There were diversities in the preparation and use of the herbal medicines in the different groups of tribals. Without proper documentation of such knowledge, the cultural and traditional heritage of the Kanikkars is losing its importance and traditional indigenous knowledge is being lost. According to the World Conservation Union about 15,000 medicinal plant species may be threatened with extinction worldwide from overharvesting (IUCN Species Survival Commission, 2007). Due to commercial unsustainable harvesting and over exploitation the medicinal plant diversity is being largely threatened in the study area. *Canarium strictum*, *Santalum album* and *Saraca asoca* have come under critically endangered category in the study area. Conservation measures targeted at threatened plants as well as other medicinal plants will help in the long-term protection of the natural vegetation.

Conclusion

Anthropogenic activities have led to the decline of medicinal plants drastically in their natural habitats. Therefore, the ecologists, ethnobotanists, pharmacologists, anthropologists and plant taxonomists should pay attention to develop strategy for conservation of medicinal plants. It is essential that ethnomedicinal investigation should persistently be carried on and efforts should be made for proper protection, cultivation and conservation of precious traditional medicinal plants in a large scale so that professional requirements can be fulfilled. Preservation and recording of ethnomedicinal uses of traditional medicinal plants is an indispensable obligation for sustaining the medicinal and cultural resources of mankind. Extensive research on such traditional medicinal plants is of prime importance to scientifically validate their ethnomedicinal claims.

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