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Ethnomedicinal plants to cure skin diseases—An account of the traditional knowledge in the coastal parts of Central Western Ghats, Karnataka, India

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ABSTRACT

Ethnopharmacological relevance: Documentation of ethnomedicinal knowledge pertaining to the treatment of different types of skin diseases from the Central Western Ghats of India, a rich habitat of different ethnic communities.

Materials and methods: Frequent field surveys were carried out to invent the 'key informants' in the treatment of skin diseases in the study area. The information was collected through semi-structured open ended interviews with questionnaire in their local Kannada language. All medicinal plants recorded for the treatment of skin diseases were photographed in the field; voucher specimens were made subsequently and are deposited in the Herbarium, P.G. Department of Botany, Karnatak University, Dharwad. The information such as botanical name, status, family, vernacular name, habit and habitat, analysis like percentage of parts used, percentage of drug preparations, use value (*UV*), informants consensus factor (ICF), fidelity level (FL) and correlation between *UV* and use mention (*Np*) of the plants are provided.

Results: In all, 48 informants were interviewed. Amongst which 38 were the 'key informants' who gave the information exclusively about the treatment of skin diseases. Among 102 plant species collected, seven species are endemic to India and eleven species have their nativity outside India. Twelve species could be considered as new claims for skin diseases as their use has not been mentioned in Ayurveda or any other research articles surveyed. Of all the drug formulations, paste is the most preferred method (50%) followed by oil extraction (18.89%), juice (14.44%), ash (4.44%) etc. The highest *UV* is for *Pongamia pinnata*, *Naregamia alata*, *Randia dumetorum* and *Girardinia diversifolia* (1.50 each). The treatment for different types of skin diseases by the herbal healers are classified into 13 categories, out of which ringworm scored the highest ICF value. Similarly, the 100% FL value scored was in the order of 10 plants for boils, 4 plants for different types of sore, 2 plants for ringworm, intertrigo, eczema and pruritus respectively. As *Caesalpinia mimosoides* and *Basella alba* in the treatment of boils, *Hygrophila schulli* for inter trigo, *Cissus discolor* for ringworm, *Mammea suriga* for eczema scored high FL and high Np value, they can be considered as important species.

Conclusions: The documentation and data analysis of the ethnomedicinal knowledge in the coastal regions of Uttara Kannada district of Central Western Ghats have provided the information about important plants in the treatment of different types of skin diseases. Further scientific analysis of such plants may provide novel compounds for the treatment of skin diseases.

1. Introduction

India has the ancient indigenous knowledge of medicinal and herbal medicines accumulated through many centuries. This knowledge of curing human illness is based on different Indian systems of medicine, practiced by various communities such as Ayurveda, Unani and Siddha (Gadgil, 1996). It is estimated that in India, traditional healers use around 2500 plant species in the preparation of traditional medicine (Pei, 2001). In recent years, there has been a tremendous range of interest in the medicinal plants especially those used in Ayurveda and other traditional systems of medicines. Allopathic drugs have brought a revolution throughout the world but the plant based medicines have their own unique status (Korpenwar, 2012). Medicinal plants form the only easily accessible alternative health care for the most of our population in rural and tribal areas (Choudhary et al., 2011).

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People of the developing countries rely quite effectively on traditional medicine for primary health care (Sullivan and Shealy, 1997; Singh, 2002).

The Western Ghats, one of the world's ten "Hottest biodiversity hotspots", constitute a mountain range along the western side of India and has over 5000 species of flowering plants (Myers et al., 2000). The forests and hills of this region is a treasure house of about 700 medicinal plants (Padmavathy and Mekala, 2013). The Western Ghats is classified into three regions, *viz*., South (8°N to 12°N), Central (12°N to 16°N) and North (16°N to 21°N) Western Ghats (Dahanukar et al., 2004). The Central Western Ghat range includes the Uttara Kannada (former North Canara) and some parts of Dakshina Kannada (former South Canara) districts. These two districts are joined by narrow coastal belt of Arabian Sea towards the west and unbroken stretch of the Western Ghats towards the East (Kamath, 1985). Many attempts have been made to document the traditional medicine knowledge in Uttara Kannada district. These studies focused on the indigenous knowledge of different communities like Gawlis, Siddis, Kunbis and Kare-vokkaligas as community based studies (Bhandary et al., 1995, 1996; Harsha et al., 2002; Achar et al., 2010), on specific human ailments like poisonous snake bites, skin diseases, reproductive health, herpes, bone fracture and wounds (Bhandary and Chandrashekhar, 2001; Harsha et al., 2003; Hegde et al., 2007; Bhandary and Chandrashekhar, 2011; Upadhya et al., 2012; Bhat et al., 2012), on veterinary ailments (Bhandary and Chandrashekhar, 2003; Harsha et al., 2005). Use of medicinal plants in coastal Karnataka by various ethnic communities is listed by Bhandary and Chandrashekhar, (2002). Harsha et al., (2003) have documented the ethnomedicinal knowledge
in the treatment of skin diseases from upper ghat region of Uttara Kannada district. There is no specific documentation on the traditional treatment methods to cure skin diseases by different communities in the below ghat regions. The present paper aims to highlight the first hand information on traditional methods to cure skin diseases by different communities in the coastal parts of Uttara Kannada district, located in Central Western Ghats of Karnataka.

2. Materials and methods

2.1. Study area

Uttara Kannada district is situated between 13°55′ to 15°31′N and 74°9′ to 75°10′E with an area 10, 327 km^2. Present study was carried out in five coastal taluks, *viz* Karwar, Ankola, Kumta, Honnavar and Bhatkal of Uttara Kannada district (Fig. 1). The soil type is alluvial throughout the coastal region and mostly lateritic, sandy red and black towards the interior margin. The average rainfall is 2835 mm per annum. The temperature remains moderate throughout the year. It fluctuates between 37 °C in mid-summer to 15 °C in winter. The floristic composition shows much diversification similar to its geographical and physiographical patterns. It is classified as (a) Littoral vegetation, (b) Tropical evergreen vegetation, (c) Tropical Moist deciduous forests and (d) Tropical Scrub and thorny forests (Kamath, 1985).

2.2. People communities of the study area

The people of the study area represent a mixture of rich ethnic and cultural diversity. Total population of the area is 1.437 million of which 70.86% of population lives in rural areas (Census of Uttara Kannada District, 2013, http://www.census2011.co.in). Kannada, Konkani and Marathi are the major languages. Siddis, Gowlis, Kunbis, Halakki Okkaligas and Kare Okkaligas are the important tribal communities. Halakki Okkaligas are one of the earlier settlers in the Uttara Kannada district and are said to have come from Tirupati of Andhra Pradesh state. Now they are confined to the coastal taluks of Uttara Kannada district. Siddis are the scheduled tribe of African origin and were brought by the Portuguese as slaves in the coastal regions of western India and majority of them are now settled in the Uttara Kannada district. The mixed marathi speaking Kunabis have migrated from Goa and settled here long back. Similarly the Gowlis are the migrants from Maharashtra. Havyaka Brahmins, Saraswatas, Nayaks, Harijanas, Idigas and Nadavas are the other ethnic communities of this region. Amongst these, the Havyaka Brahmin community was more civilized and scholarly community. It is believed that they have been brought here by the Kadamba king, Mayura Varma, for performing sacrificial rituals. Agriculture is the main occupation of all these communities (Gauniyal et al., 2010). The herbal healers of all these communities have developed the practical knowledge about the medicinal plants through their forefathers and some of them practicing it as a profession. They are practicing it individually. But, use of some plants during the drug formulations in different communities is same as a result of inter-community interactions.

2.3. Sampling techniques and data collection

Field Studies were conducted in regular intervals in different seasons between 2010 and 2013 to collect the primary data. The identification of the 'key informants' (Martin, 1995) in the treatment of skin diseases is based on the information obtained from the patients attending the healers and discussion with the elderly local village people. The information was collected from the informants through semi-structured open ended interviews with questionnaire (Appendix A) as suggested by Martin (1995). The objective of the study was explained to the healers. Information was collected in the local Kannada language and then translated to English. The consent of the informants was taken to share their knowledge about the plants they use to cure the diseases and then their experience in the field of treatment, causes and symptoms of the ailments they treat, average number of patients they treat per week, vernacular names, parts of the plants used and other ingredients added during the drug formulations were noted down. During the survey, depending on the convenience of the practitioner, guided field walk method (Martin, 1995; Maundu, 1995) was followed. A walk through the forest with the healers allowed for both confirmations of the medicinal plants they use for the treatment and the detailed information gathering. Each informant was interviewed more than twice and only those formulations having consistency were considered.

2.4. Identification and preparation of voucher specimens

Plants collected with the herbal healers during the guided field walk were authentically identified with the help of standard floras such as Flora of Presidency of Bombay (Cooke, 1967), Flora of British India (Hooker, 1998), Flora of Presidency of Madras (Gamble, 1984), Flora of Karnataka (Saldahna, 1984) etc. The recent names of the plants have been given according to the Flora of Kerala (Nayar et al., 2006) and The Plant List (2010). All medicinal plants recorded for the treatment of skin diseases were photographed in the field; voucher specimens were made subsequently and are deposited in the Herbarium, P.G. Department of Botany, Karnatak University, Dharwad with accession numbers (PB/GRH 1 to 160).