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Ethnobotanical Study of Tapkeshwari Hill, Bhuj, Kachchh, India

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Abstract

Ethnobotanical studies were carried out to collect information on the use of medicinal plants by local communities in Tapkeshwari hill of Bhuj Taluka (Kachchh district, India). Plants have been used both in the prevention and cure of various diseases of human societies. Ayurveda, Homeopathey, Sidda, Unani, etc are our traditional systems of medicines. Ethnomedicinal data were collected using semi-structured interviews, field observations, and group discussions. Information on ethnobotanical significant for used in various diseases of plants was obtained through interviews with 14 maldharies, 12 farmers and other 5 local inhabitants living in 4 villages in Tapkeshwari hill. A total of 37 ethnomedicinal plants species distributed in 35 genera and 25 angiosperm families are documented in this study. The medicinal plants are listed with botanical name, local name, family, part used and medicinal used. They belong to Fourteen species (37.84%) of the medicinal plants were shrubs, followed by 10 (27.3%) herb and tree 10 (27.3%). The most frequently used parts were the leaves (21 times occurrence, 33.87%), followed by (10, 16.13%) stem and root (10, 16.13%). We observed that the documented ethnobotanical plants were mostly used to cure boils, swelling, dysentery, bronchitis, toothache, cough and cold. Some cultural believes and traditional practices associated with traditional medicines were found to contribute much to the conservation of medicinal plants in the area. This present study was clearly indicating that the status of the medicinally important plant in this area is urgently needed to proper documentation and a better conservation measures to be under taken.

Key words: Medicinal plant, Ethnomedicinal, diseases, conservation, Tapkeshwari hill

Introduction

The utilization of plants for medicine is an ancient, global tradition that represents the cornerstone of health care for many rural communities and citizens in developing countries (Robbins, 2000). Okello and Ssegawa (2007) stated that the estimated number of human beings using medicinal plants is now increasing worldwide in both developed and developing countries. Today, many medicinal plants are facing threat of extinction and loss of genetic diversity. Plant species and traditional knowledge on their therapeutic uses are important for the adequate utilization of herbal plant resources. The vegetation covers and forest resources of our country offers enormous variety of flora, which

includes a varied range of medicinal plants. The process of documentation of medicinal plants in India is almost as old as our knowledge about them.

Gujarat with its rich floral diversity in various forest and non-forest areas holds rich natural wealth of medicinal plants. The presence of a sizeable strength of Ayurvedic pharmaceuticals and popularity of wide range of traditional ethno-botanical practices reveal the evidence of the rich medicinal flora of Gujarat especially in the tribal belt of the state (Pandey *et al.*, 2005). Existing documentation on medicinal plants of Kachchh is limited, not in terms of taxonomic studies, but in terms of compiled information on ecological status of medicinal plants and their uses by local society. Kachchh supports many plant species of high medicinal values of these several species, such as *Commiphora wightii, Capparis cartilaginea, Boerhavia diffusa* and *Tribulus terrestris* are being exploited heavily for commercial purposes. This resulted in the sharp decline in the population of these species in recent past from Kachchh district (GUIDE, 2009).

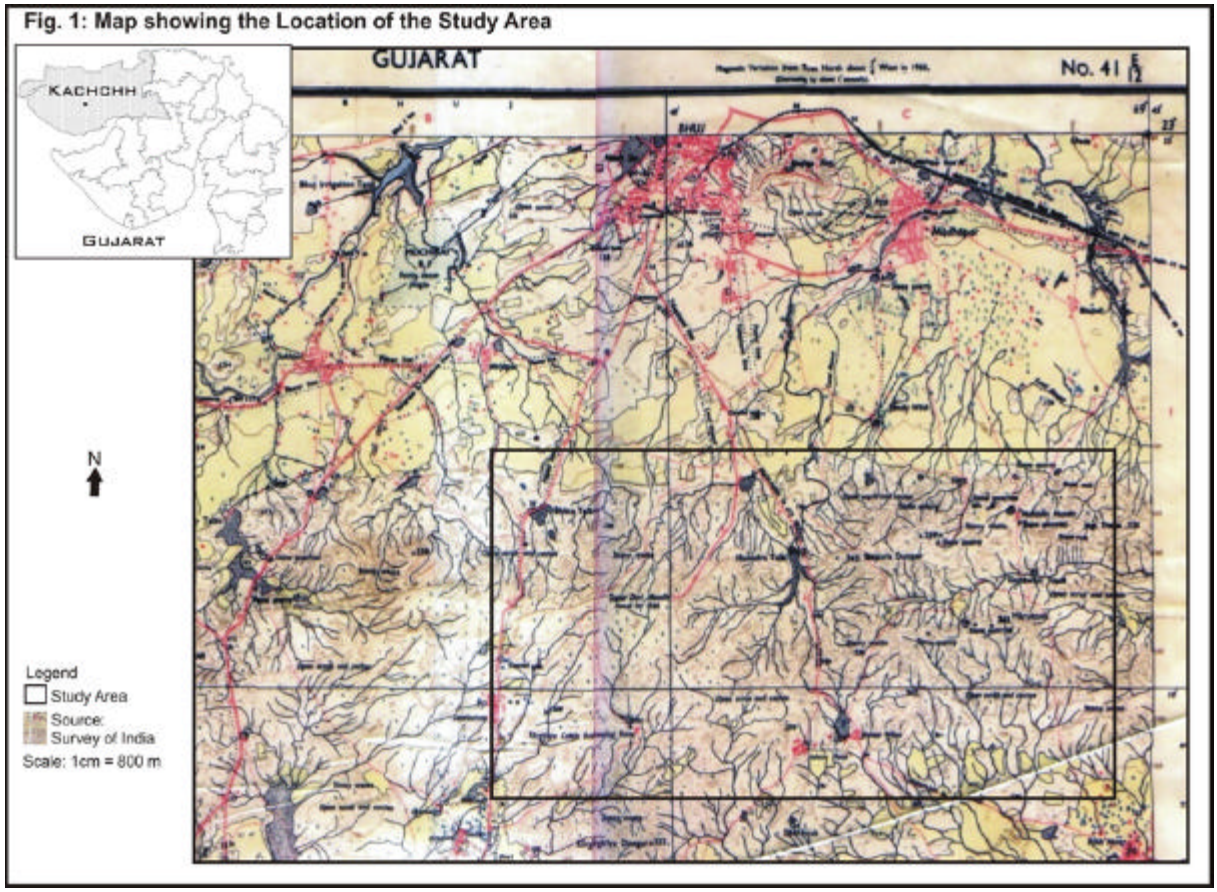
Tapkeshwari hill area supports high diversity of floral species in diverse habitats. Considering the high floral diversity it has been suggested to declare Tapkeshwari forest as Ecologically Sensitive Area (ESA) by Joshi (2002). However in case of Tapkeshwari Hill Range Areas, most of the knowledge on medicinal properties of various species has never been compiled in written form, but being transferred in words from generation to generation. Hence, it is critical to compile and document the traditional knowledge for its long term existence and wider use by society. It is important since the traditional knowledge is dying out with the decline of rural communities and the migration of the population into the cities. Although plants have been harvested since time immemorial for making medicines, however, their collections were for domestic use, which was a sustainable practice unlike existing practice of mass collection of medicinal plants for commercial purposes. Indiscriminate and destructive harvesting to meet the growing market demand is now a real threat to the medicinal flora (Pandey *et al.*, 2005, GUIDE, 2009).

Review of Literature

Very significant study on ethnomedicine, the Vedic literature as Charak and Shusruta and Charak Samhita appeared as the most important works. A large number of portions of the country were covered with forests which yielded a number of medicinal plants and these plants were extensively used in Aurvedic system of medicine since many centuries (Choudhary *et al*, 2008). Very scattered work on ethnomedicine of wild plant resource had been done in various parts of Gujarat. A total of 402 medicinal plant species belonging to 89 families and 270 genera had been recorded from Kachchh (GUIDE, 2002a). Previously GUIDE (1997) reported total 296 and 389 plant species were recorded from Kachchh and Saurashtra regions, respectively. Vyas (2001) documented 46 plant species of medicinal values belonging to 26 families in Kachchh district. Joshi (1995) has also described many of them as medicinal plants in Rajasthan. Soni and Swarnkar (2006) described detailed conservation strategies for *C. wightii*. Seliya and Patel (2009) recorded a total of 30 climbers used as medicinal values from the rural areas of Saraswati river basin of Patan district in North Gujarat Region. Nirmal *et al.*, (2007) reported a total of 50 plants species being used in various medicinal purpose from the Saputara and Purna forests.

Study Area

Tapkeshwari hill (23^0 08' to $23^0$11' north latitude and 69^0 36' to 69^0 45' east longitude) is situated the south-eastern side of Bhuj city and in central part of Kachchh



district (Figure: 1) and covers about 10% of total geographical area of the hilly terrain of Taluka. The hill ranges shared its border with Bhuj and Mundra from two sides, especially the fringe areas of scattered hillocks. This encompasses an area of 140 km^2 (14,400 ha) with covering nine villages under two talukas i.e. Bhuj and Mundra. Tapkeshwari hill being the largest hilly tract in district and vast area fall under area, still lost of important forest patches are under unexplored. The climate of Tapkeshwari hill is arid therefore, the temperature is high during most of the time and it reaches a maximum of 39.45 ^{0}C during May-June (the hottest months) and the winter temperature goes down to 10^0 C with January and February being the coldest months. The total annual rainfall, occurring through south-west monsoon between June and September, is very low with an average of 317 mm per year (GUIDE, 2009).

Materials and Methods

The field work was conducted in four villages (Jadura, Bharapar, Sanatorium, Sedata) adjoining to Tapkeshwari hill areas during November 2008 to June 2009. Ethnomedicinal data were collected following standard methods. The questionnaire survey, field observations, personal interviews and focus group discussion aimed at gathering information on present and past status of medicinal plants and their traditional uses. A total 31local informants belonging to age group of 25-80 yrs were interviewed during the survey. Information on ethnobotanical significant for used in various diseases of plants was obtained through interviews with 14 maldharies, 12 farmers and other 5

local inhabitants living in 4 villages in Tapkeshwari hill. At the end of each interview, specimens of plants mentioned for their medicinal uses were collected and identified. The whole plant specimen collection is deposited in the Herbaria of Gujarat Institute of Desert Ecology (GUIDE), Bhuj, Kachchh, Gujarat. The nomenclature and identification of the plants listed is carrying out of flora of Gujarat state (Shah, G.L. 1978), The Flora of Indian Desert (Bhandari, M.M., 1990), Flora of the Presidency of Bombay, (Theodore Cooke, 1903-1908) and the other non-published recent literature.

Result and Discussion

The present study revealed that traditional medicinal knowledge of treating various kinds of diseases using different wild plants species by the local people inhabitants of villages in the adjoining areas of the Tapkeshwari hill areas. A present ethnomedicinal 37 plants species were reported by the informants for their medicinal uses under 35 genera and 25 angiosperm families. While the predominant families were Asclepiadaceae and Capparidaceae (each 3 Species). It is observed that indigenous treatment available for various deceases in adjoining villages of the Tapkeshwari Hill Range areas.

All 37 plants are being using frequently to cure almost 29 types of deceases, i.e. bronchitis, earache problem, filariasis, headache, leucoderma, tympanities, body pain, boils, cold, cough, diabetes, diarrhea, dysentery, flue fever, gastric troubles, hyper urea, jaundice, leucorrhea, poisonous stings, rheumatoid, ulcers ,skin diseases, stomach pain, swelling, toothache, tuberculosis, urinary Problem, dropsy and fistula. Local people having quite good knowledge on medicinal plant species which using to treatment of boils, swelling, dysentery, bronchitis, toothache, cough and cold.

The data collected show that majority of the preparations (drug materials) in the area are drawn from a single plant; mixture are used rarely. They belong to Fourteen species (37.84%) of the medicinal plants were shrubs, followed by 10 (27.3%) herb and tree. The most frequently used parts were the leaves (21, 33.87%), followed by stem (10, 16.13%) and root (10, 16.13%). The data was represented in table: 1, which included the botanical name, local name, part used medicinal used, family and habit.

1) ***Abutilon indicum*** (L.) **Sw. subsp. *Indicum***

Family- Malvaceae **Local Name:** Nani Khapat, Bhonykhanski **Habit:** Herb

Usage in Ethnomedicine: Leave paste used to cure ulcer, used as tropical applicants on swelling, used on overhead to cure headache, boiling water of young leaves used to cure diabetes, seed powder boiled with oil and two to three drops per day used to cure earache problem, leaves paste with cow milk used to cure toothache, entire plant sap with milk and sugar used to cure hyper urea

2) ***Asparagus racemosus*** Willd. *Var.* ***javanicus*** (Kunth) Baker

Family-Liliaceae **Local Name:** Satvari **Habit:** Sarmentose Shrub

Usage in Ethnomedicine: Green twigs are used to cure stomach ache, dysentery and cooling, crushed roots are tied on the body for any kind of swelling in human beings, paste of the fasciculate root is applied externally in snakebite, root also used to cure urinary disorders, discharges of blood in urine, and to treat headache due to sunstroke.

3) ***Balanites aegyptiaca*** (L.) Del.

Family- Balanitaceae **Local Name:** Ingorio, Hingoriyo **Habit:** Tree

Usage in Ethnomedicine: Fruit pulp is taken once a day for a month to cure tuberculosis.

4) ***Bauhinia racemosa*** Lam.

Family- Caesalpiniaceae **Local Name:** Kasotri, Asotri, Apto **Habit:** Tree

Usage in Ethnomedicine: Leaves and young twigs are boiled and eaten as vegetable, seeds and bark extract used as insecticide

5) ***Boerhavia diffusa*** L.

Family- Nyctaginaceae **Local Name:** Satodi **Habit:** Herb

Usage in Ethnomedicine: Root paste used to cure boils and to cure dropsy and fistula, root juice used for healing wounds.

6) ***Calotropis procera*** (Ait.) R. Br.

Family- Asclepiadaceae **Local Name:** Nano Akado **Habit:** Shrub

Usage in Ethnomedicine: Powder of roots and flowers used to cure rheumatoid arthritis and paste used to cure leucoderma, powder of leaves and flowers used to cure dysentery, boiling water of roots mixed with wheat flour, butter and sugar used to cure gastric troubles

7) ***Capparis cartilaginea*** Decne.

Family- Capparidaceae **Local Name:** Parvati Rai, Parvatai **Habit:** Shrub

Usage in Ethnomedicine: Root barks used to cure dropsy and fistula, leaves and fruits used against to cure cough and cold, sap of plant used against to cure ulcers, earache, gastric troubles, petals of flower or buds used to cure toothache.

8) ***Capparis decidua*** (Forsk.) Edgew.

Family- Capparaceae **Local Name:** Kerdo, Kera **Habit:** Shrub

Usage in Ethnomedicine: Fruits prickles used as tonic strengthen, and used to cure gastric trouble, green stem paste used to cure boils, root barks used to cure cough and cold.

9) ***Cardiospermum halicacabum*** L.

Family- Sapindaceae **Local Name:** Trigharivel, Valfofti **Habit:** Herb

Usage in Ethnomedicine: Leaves paste used to cure filariasis, leaves paste boiling in oil used to cure sty, leaves juice used to cure earache

10) ***Cassia auriculata*** L.

Family- Caesalpiniaceae **Local Name:** Avar **Habit:** Herb

Usage in Ethnomedicine: Leaves used as tannins and are crushed well and applied on head in case of common cold, leaves paste applies externally on hooves and

infusion of leaves given internally to treat foot-and-mouth disease leaves and jiggery is given to cure tympani ties.

11) ***Citrullus colocynthis*** (L.) Soland.

Family- Cucurbitaceae **Local Name:** Truja Val, Tru Val, Tru Deda **Habit:** Climber

Usage in Ethnomedicine: Roots and fruits powder used to cure gastric troubles, roots and fruits powder with sugar used to cure jaundice, boiling water of fruit powder inhaler to cure toothache

12) ***Clerodendrum phlomidis*** L.

Family- Verbenaceae **Local Name:** Tankaro, Arani **Habit:** Tree

Usage in Ethnomedicine: Leaves sap used with sugar powder to cure boils and swelling, flowers powder used to cure cough and cold

13) ***Commicarpus verticillatus*** (Poir.) Standl.

Family- Nyctaginaceae **Local Name:** Dhokariyar **Habit:** Herb

Usage in Ethnomedicine: Root paste used to cure boils and to cure dropsy and fistula and used on topological applicant against swelling, root paste and entire plant sap used to cure in poisonous stings

14) ***Commiphora wightii*** (Arn.) Bhandari

Family- Burseraceae **Local Name:** Gugar **Habit:** Shrub

Usage in Ethnomedicine: Stem gum applied with milk to cure of dysentery, diabetes, arthritis, topological applicants and applied individually to cure in skin diseases, blood purification and hypothermia; especially useful in nervous diseases, gum resin of *C. wightii* has been traditionally used in Kachchh for reducing body weight

15) ***Dichrostachys cinerea*** (L.) W. & A.

Family- Mimosaceae **Local Name:** Kini **Habit:** Shrub

Usage in Ethnomedicine: Stem bark powdered is used in urinary complaints, leaves paste or sap used to cure boils

16) ***Enicostema axillare*** (Lamk.) Roynal

Family- Gentianaceae **Local Name:** Mamecho **Habit:** Herb

Usage in Ethnomedicine: Plant powder used against to cure diabetes, cough and cold; used with piper to cure fever and in indigestion problem, entire plant infusion is given to treat intestinal worms.

17) ***Euphorbia caducifolia*** Hains.

Family- Euphorbiaceae **Local Name:** Thuar, Thor **Habit:** Shrub

Usage in Ethnomedicine: Latex used on cure boil.

18) ***Fagonia schweienfurthii*** (Hadidi) Hadidi

Family- Zygophyllaceae **Local Name:** Javaso, Dhamasha **Habit:** Herb

Usage in Ethnomedicine: Boiling water of plant used to cure bile and used on topological applicants, leaves paste with boiled water used to cure diarrhea.

19) ***Ficus religiosa*** L.

Family- Moraceae **Local Name:** Piplo **Habit:** Tree

Usage in Ethnomedicine: Leaf ash with 1 test spoon honey used in asthma

20) ***Grewia tenax*** (Forsk.) Fiori

Family- Tiliaceae **Local Name:** Ser Gangani, Gangeti **Habit:** Shrub

Usage in Ethnomedicine: Fruit pulp used as topological applicants on swelling, boiling water of root bark powder used to cure dysentery

21) ***Helicteres isora*** L.

Family- Sterculiaceae **Local Name:** Maradsing, Ati, Aiti, Atai **Habit:** Tree

Usage in Ethnomedicine: Stem fiber prepares rope and fruits in mustard oil as cure for body pain

22) ***Indigofera oblongifolia*** Forsk.

Family- Fabaceae **Local Name:** Zeel, Zeel Jo Zad **Habit:** Shrub

Usage in Ethnomedicine: Flower paste is used to cure stomach pain in children

23) ***Indoneesiella echioides*** (L.) Sreem

Family- Acanthaceae **Local Name:** Kariyatu **Habit:** Herb

Usage in Ethnomedicine: Entire plant materials (powder or tablets form) used as in tonic and strengthens medicines, boiling water of entire plant used to cure flue fever, leaves and root used to cure dysentery, diarrhea and to cure gastric troubles

24) ***Lycium barbarum*** L.

Family- Solanaceae **Local Name:** Garothi, Gerati, Gerothi, Khareti **Habit:** Shrub

Usage in Ethnomedicine: Fruits powder used with cow milk for semen enrichment, leaves ash used to cure boils, leaves paste with coconut oil used to apply directly on skin diseases

25) ***Maerua oblongifolia*** (Foeak.) A. Rich.

Family- Capparidaceae **Local Name:** Pinjaro **Habit:** Shrub

Usage in Ethnomedicine: Stem paste used to apply on skin diseases, entire plant sap used in blood purification and used to enrich of semen, stem paste used to cure leucorrhea.

26) ***Maytenus emarginata*** (Willd.) D. Hou

Family- Celastreceae **Local Name:** Vingo, Vico **Habit:** Tree

Usage in Ethnomedicine: Bark powder used with cow milk against weakness, leaves used against on bile control and to cure jaundice, young branches used as toothbrush

27) ***Moringa concanensis*** Nimmo

Family- Moringaceae **Local Name:** Kharo Saragvo, Sargvu **Habit:** Tree

Usage in Ethnomedicine: Boiling water of bark mixed with oil used against to cure of rheumatoid arthritis, boiling water of leaves, barks and flowers used to cure gastric troubles.

28) ***Pentatropis spiralis*** (Forsk.) Decne

Family- Asclepiadaceae **Local Name:** Dhodhiyal, Dhodheji Val **Habit:** Climber

Usage in Ethnomedicine: Root powder used to cure local fever during the summer season and to cure dysentery as well as against indigestion.

29) ***Premna resinosa*** Schau

Family- Verbenaceae **Local Name:** Kundher, Kindhor **Habit:** Shrub

Usage in Ethnomedicine: Young leave's sap with honey used to cure bronchitis, stem paste used as topological applicants to cure swelling and used to cure body pain

30) ***Prosopis juliflora*** (Swarts) DC.

Family- Mimosaceae **Local Name:** Gando Baval **Habit:** Shrub

Usage in Ethnomedicine: Immature leaf used in boil

31) ***Rivea hypocrateriformis*** Choisy

Family- Convolvulaceae **Local Name:** Fang val **Habit:** Climber

Usage in Ethnomedicine: Leaves used as vegetables to purify blood, boiling water of entire plant used to cure misconception in cattle

32) ***Salvadora oleoides*** Decne

Family- Salvadoraceae **Local Name:** Mithi Jar, Piludi **Habit:** Tree

Usage in Ethnomedicine: Leaves sap used to cure bronchitis, leaves paste used as topological applicants to cure swelling, fruits used to cure bile

33) ***Salvadora persica*** L.

Family- Salvadoraceae **Local Name:** Khari Jar, Pilvo, Piludi **Habit:** Tree

Usage in Ethnomedicine: Powder of young branches and leaves with honey used to cure bronchitis, fresh powder of root bark used to cure arthritis, young roots used as toothbrush to cure toothache, boiling water of young branches and leaves used to cure seasonal cough and cold

34) ***Sarcostemma acidum*** (Roxb.) Voigt

Family- Asclepiadaceae **Local Name:** Som, Sandhiaval **Habit:** Shrub

Usage in Ethnomedicine: Decoction of plant used to cure asthma, bronchitis, whooping cough and fever, boiling water used to cure swelling

35) ***Sterculia urens*** Roxb.

Family- Sterculiaceae **Local Name:** Kadai, Kadio, Kadayo **Habit:** Tree

Usage in Ethnomedicine: Bark sap with piper used to cure bronchitis and Paste of stem and leaves used for topological applicants

36) ***Taverniera cuneifolia*** (Roth) Arn.

Family- Fabaceae **Local Name:** Jathi madh **Habit:** Herb

Usage in Ethnomedicine: Underground stem used to cure bronchitis

37) ***Tribulus terrestris*** L.

Family- Zygophyllaceae **Local Name:** Bethu /Patt Gokhru **Habit:** Herb

Usage in Ethnomedicine: Decoction or powder of the whole plant is used as a general health tonic.

Conclusions

Some cultural believes and traditional practices associated with traditional medicines were found to contribute much to the conservation of medicinal plants in the area. This present study was clearly indicating that the status of the medicinally important plant in this area is urgently needed to proper documentation and a better conservation measures to be under taken. However, there is need of conducting in depth ethnomedicinal surveys for promoting conservation (*in-situ* and *ex-situ*), cultivation and trade of medicinal plants at local, regional and global levels.

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