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AN ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS OF DARJEELING DISTRICT, WEST BENGAL, INDIA

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Abstract

Plants have been used both in prevention and cure of various diseases of human. with the advent of human civilization. Many system of therapy have been developed primarily based on plants. Darjeeling District is well known for his diverse range of vegetation, and wide diversity of Ethnomedicinal Plants. The present paper deal with Ethnomedicinal uses of different plant specimen, their uses, preparation, parts use for medicinal purposes and mode of preparation. Total 50 plants specimen with 49 Genara belonging 37 families with their medicinnal uses were identified. The most dominant families in the study were Zingiberaceae, Graminaceae and Saxifragaceae, with the proper information from senior resourceful citizens and herbal healers. Since such information are to be known and conserved for mankind since it is decreasing in alarming rate with the death of resourceful senior citizen.

Keywords: Ethnomedicine; mode of preparation; Darjeeling District.

1. INTRODUCTION

Ethnobotany is a multidiscipinary science defined as the interaction between plant and people. Since ancient times human have used various natural materials as source of medicines. The use of plants to cure diseases and relieve physical sufferings has started from the earliest time of mankind's history (Hill, 1989). According to the World Health Organization (WHO) as many as 80% of the world's people depend on traditional medicine for their primary health care needs.

Darjeeling District is very rich in medicinal plants (Bhujel 1996). It is extended from tropical to alpine areas with chill and warm climatic condition. Many poor people are directly depends on the medicinal plants for their primary health care.

The hill areas of Darjeeling District (Fig. No.1) are located with the lesser and sub-Himalayan belts of the eastern Himalayas. The areas bounded by the Sikkim Himalaya in the north, the Bhutan Himalaya in the east and Nepal Himalaya in the west. The southern foothill belt is demarcated by a highly dissipated platform of terrace deposits extending along the east–west axis.

Darjeeling hill covers an area of 3254.7 sq.km. It lies between 27.03600 north latitude and between 88.2627^0 east longitudes. It has five sub-division i.e. Darjeeling, Kalimpong, Kurseong, Mirik and Siliguri. The region harbour a large number of plants species with wide range of diversity and distribution. Many people have worked on the medicinal plants of Darjeeling and Sikkim region.

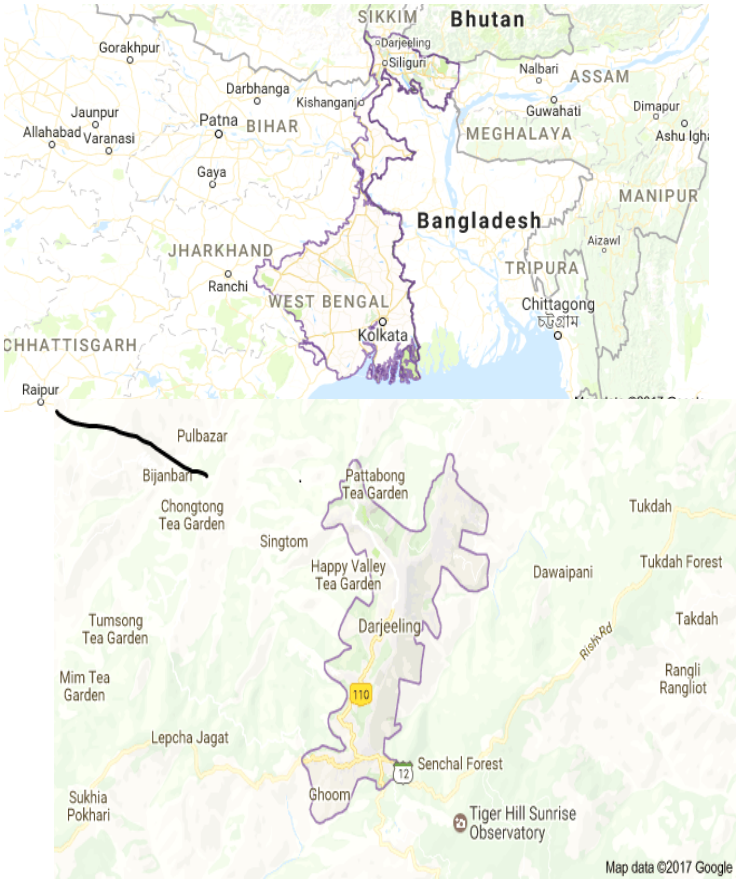

Figure 1: Location of Darjeeling district (study area) of West Bengal, India

The objective of this study was to interact with resourceful senior citizens and herbal healers and document their knowledge on medicinal plant with local names, plants part used for medicine and other purposes, types of diseases treated, doses preparation, single or mixture of drug and duration. The knowledge on medicinal plants decreasing in alarming rate due to lack of interest among the young generation, as they migrate to the cities for lucrative jobs. The first and foremost duty is to conserve our knowledge on medicinal plants of our area; it should not go invain with our resourceful senior citizens.

2. MATERIALS AND METHODS

Ethnomedicinal data are collected through general conversation with the resourceful senior citizens, herbal healers. The questionnaires were used to obtain information. On medical plants with their local names, plants used, mode of preparation and administration, total of 8 informant comprising 6 male and 2 females identified between age of 45 and 65. They are selected based on their knowledge of medicinal plants either for self medication or for treating others. Informants were asked to come to field and show the plants with local names, and information was collected with the available literature. The necessary photograph of the plant specimen and informants have been taken. The study was carried out during the period of October 2016 to May 2017 covering the different villages of Darjeeling District.

Preservation of the plants specimen: Collection of medicinal plants specimen during survey work for the herbarium preparation was done by standard method such as drying, mounting on standard herbarium sheet with the proper label and tag had been done. The plants with their correct nomenclature were arranged alphabetically, by family name, local name and ethnomedicinal uses. Unidentified plants specimen were identified and authenticated from Llyod Botanical Garden of Darjeeling, West Bengal, India. The herbarium prepared was preserved in the taxonomy laboratory of Darjeeling Government College.

3. RESULTS

After the total field survey and literature survey a total of 50 plant species, 49 genera belonging to 37 families with their medicinal uses were identified. Out of these species 17 herbs, 14 shurbs,15 Local people of area trees and 4 climbers (fig. No 2) were found.The results of the survey are presented in table 1.

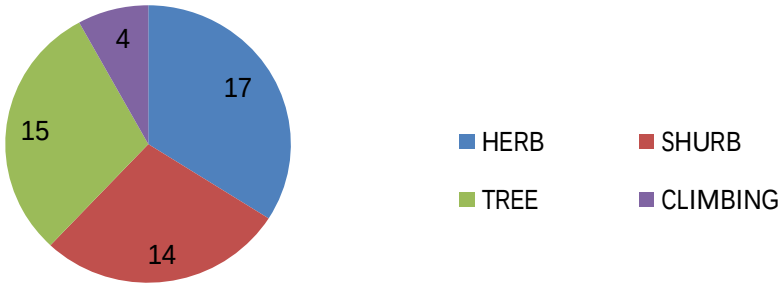

Figure 2: Habit

Herbal healers are using the medicinal plant to cure diseases like Cough and Cold, Diarrhea, Tonssilites, Jaundice, Urine infection, Hypertension, Skin diseases, Ulcer, Constipation, Abortion, Boils, Scitica, Snake poisoning, Diabetes, Stomach ailments, Asthama, Sinusitis, Pneumonia, Lung disorder, Antipeptic, Gout, Nose bleeding, Indigestion, Gastritis, Bone fracture, Joint dislocation, Eczema, Piles, Fever, Kidney problem and Malaria. (Fig. No 3).

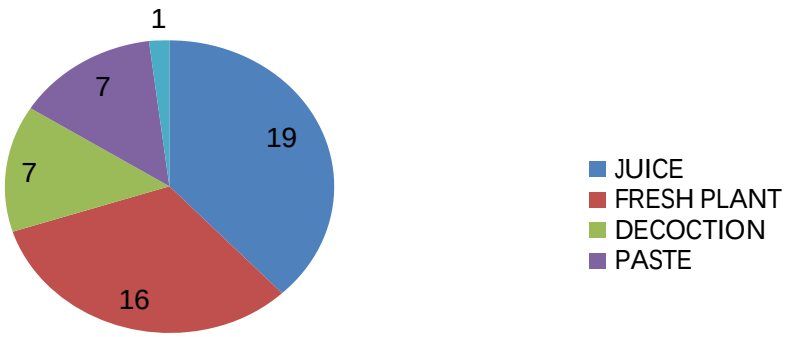

Figure 3: Method of Preparation

The most dominant families in the study were Zingiberaceae (5 Species), Gramineae (3 Species), Saxifragaceae (3Species), Asteraceae (2 Species), Urticaceae (2 Species), Ericaceae (2 Species), Rubiceae (2Species), Rutaceae (2 Species), Rosaceae (2 Specie) and other families with low number are listed below.

Umbelliferae, Equisetaceae, Orchidaceae, Oleaceae, Lamiaceae, Apiaceae, Amalliaceae, Fabaceae, Menispermaceae, Brassiacaceae, Caryphyllaceae, Oxalidaceae, Plantaginaceae, Elaeocarpaceae, Rannunculaceae ,Cannabaceae, Mimosaceae, Bignoniaceae, Araliaceae, Melastomataceae, Lauraceae, Clusiaceae, Solanaceae, Scropularaceae, Leguminosaeae, Violaceae (1 Species).

Local herbal healers are commonly using the followings plant to treat more than one diseases. They are *Nyctanthes arbor-tristis*, *Costus speciosus*, *Rubia cordifolia, Drymaria cordata, Oxalis corniculata, Plantago major, Rubus ellipticus, Artemisia vulgaris, Cucurma longa, Mimosa pudica, Oroxylum indicum, Panax pseudoginsing, Melastoma malabathricum, Litsea cubeba, Zingiber officinale, Prunus cerasoides,* Preference for their use may be related to their availability.

Table 1: List of ethnomedicinal plants of Drjeeling district with their local name, plant part used and uses.

NO	NAME OF THE PLANTS FAMILY	LOCAL NAME & PARTS USED	USES
01	*Bergenia ciliata,* (Haworth)Sternber. Saxifragaceae	**Pakhenbet** Whole Plant parts, mainly rhiome**.**	Diarrhoea,Tonssilites & Tooth Ache
02	*Hydrocotyl asitica* Thunb. Umbelliferae	**Athanayjhar/Golpatta** Leaves & Shoots	Tonsilitis, Pneumonia & Tuberculosis
03	*Euisetum debile* L. Equisetaceae	**Kurkuray Jhar** whole plant	Jaundice &Urine Infection
04	*Urtica dioca* L. Urticaceae	**Pathley Sisno** Young twig flower	Hypertension, Gout & Heart Disease

05	*Rhodendron arboreum* Smith. Ericaceae	**Laliguras** Dry and fresh flowers	Dysentry &Throat Problem
06	*Rumex nepalensis* Sprang. Polygonaceae	**Halhalay** Roots	Skin Diseases,Ulcer & Diarrhoea
07	*Tagetes erecta* Linn. Asteraceae	**Sayapatri** Petals or the flower heads	Severe Constipation, Sore Throat & Dysentry
08	*Thysanolaena latifolia*(Roxb.ex Hornem)Honda.Gramineae	**Amliso** Fresh roots	Abortion ,Boils & Tonsillites
09	*Nyctanthes arbor-tristis* Linn. Oleaceae	**Parijat** Leaves and seeds ,bark	Scitica,Constipation &Snake Poisoning
10	*Costus speciosus*((Koen.ex Retz.)Smith. Zingiberaceae	**Betlauri** Rhizome	Diabetes,Intestinal Worms &Burning Sensation
11	*Astible rivularis* D.Don Saxifragaceae	**Buro Okhoti** Fresh & Dry Rhizome	Stomach Ailments
12	*Curcuma aromatica* Salisb. Zingiberaceae	**Fatcheng** Rhizome	Used As An Appetizer
13	*Occimum basilicum* L. Lamiaceae	**Tulsi** Leaf & whole plant parts	Cold & Cough
14	*Heracleum wallichi* DC. Apiaceae	**Chimping** Fresh leaves & dry seeds	Diarrhoea,Nausea & Gastritis Dysentery
15	*Pentapanx leschenaultii* Seem. Araliaceae	**Chinde** Tender leaves	Hypertension & Kidney Trouble.
16	*Phoneix acaulis* Roxb.ex Buch-Hens. Arecaceae	**Betgera** Raw fruits	Diabetic
17	*Rubia cordifolia* Linn. Rubiaceae	**Majito** Shoot and root	Skin Disease, Jaundice & Chest Problem
18	*Mucuna macrocarpa* Wall. Fabaceae	**Baldhengra** Seeds	Cough & Asthma
19	*Stephania glabra*(Roxb)Miers Menispermaceae	**Tamarke** Roots	Anti-Diabetice & Anti-Asthmatic
20	*Gnaphalium luteo-album* Linn. Asteraceae	**Bookey Phul** Leaves	Astringent &Vulnery
21	*Cardamine hirsute* Linn. Brassicaceae	**Tori Jhar** Leaves	Heart Troubles & Low Blood Pressure
22	*Drymaria cordata* Wild. Caryphyllaceae	**Abhijal** Whole plant	Pneumonia,Fever&Throat Pain
23	*Oxalis corniculata* Linn. Oxalidaceae	**Chariamilo** Whole plant	Stomach Ache &Eye Pain
24	*Plantago major* Linn. Plantaginace	**Kaney Jhar** Whole plant	Lower Blood Sugar,Lung Disorder &Stomach Problems
25	*Rubus ellipticus* Smith. Rosaceae	**Aselu** Roots and shoots	Dry Cough, Dysentery &Stomach Ache
26	*Artemisia vulgaris* Linn. Asteraceae	**Titepati** Leaves	High Blood Pressure &Nose Bleeding

27	*Eupatorium adenophorum* Linn. Asteraceae	**Kalijhar** Leaves and stem	Antiseptic
28	*Dichroa febrifuga* Lour. Saxifragaceae	**Basak** Leaves and roots	Dysentery & Gout
29	*Elaeocarpus lanceafolius* Roxb. Elaeocarpaceae	**Bhadrase** Fruit	Lowering Blood Pressure
30	*Clematis buchananiana* DC. Rannunculaceae	**Pinase Lahara** Fresh roots	Sinusitis & Nasal Congestion
31	*Cinchona succirubra* Pavon ex. Klozsch. Rubiaceae	**Kulain** Trunk & Stem bark	Malaria Fever
32	*Cannbis sativa* L. Cannabaceae	**Ganja/Bhang** Mature leves & mature infloresence	Indigestion
33	*Curcuma longa* L Zingiberaceae	**Hardi** Rhizomes, roots & leaves	Cough & Cold & Skin Disease
34	*Cynodon doctylon* (L). Pers. Graminaceae	**Dubo** Whole plant parts	Piles
35	*Mimosa pudica* L. Mimosaceae	**Buhari Jhar** Whole plant parts	Asthama & Kidney Problem
36	*Oroxylum indicum* (L). Kurz. Bignoniaceae	**Totala** Stem bark, leaves & seeds	Janudice & Tonsillitis
37	*Panax pseudoginseng* Wall.var. *angustifolius* (Burkill) Li. Araliaceae	**Panchpatey** Rhizomatous root	Asthama & Gastritis
38	*Melastoma malabathricum* L Melastomataceae	**Angeri** Young Shoots leaves bark & roots	Dysentry & Pneumonia
39	*Litsea cubeba* (Lour). Persoon. Lauraceae	**Siltimbur** Fresh leaves & mature fruit	Gastritis & Indigestion
40	*Garcinia cowa* Roxb. Clusiaceae	**Kaphal** Fresh fruits	Dysentry
41	*Datura metel* L. Solanaceae	**Dhatura** Mature seeds	Gout
42	*Digitalis purpurea* L. Scropulariaceae	**Digitalis** Fresh leaves & inflorence	Uninary Trouble
43	*Kaempfera rotunda* L. Zingiberaceae	**Bhuin Champa** Tubers stem & root	Bone Fracture & Joint Dislocation
44	*Imperata Cylindrica* (L).Reauschel Greminaceae	**Siru** Fresh roots	Kidney Problem
45	*Zanthoxylum acanthopodium* DC. Rutaceae	**Bokey Timbur** Mature food	Indigestion & Gastritis
46	*Zingiber officinale* Rocs Zingiberaceae	**Aduwa** Rhizomes & roots	Throat Infection,Fever & as Spice
47	*Erythrina arborescens* Roxb. Leguminosae	**Phaledo** Leaves & bak	Skin Diseses

48	*Prunus cerasoides* Don. Rosaceae	**Paiyun** Bark & wood	Fever, Eczema &Piles
49	*Ebodia fraxinifolia* Hk. F. Riutaceae	**Khanakpa** Fruits & flower	Gastric Problem, Dysentery, Fever & Cold
50	*Pouzolzia hirta* (Bl). Hank. Urticaceae	**Chiple** Leaves	Bone Dislocation

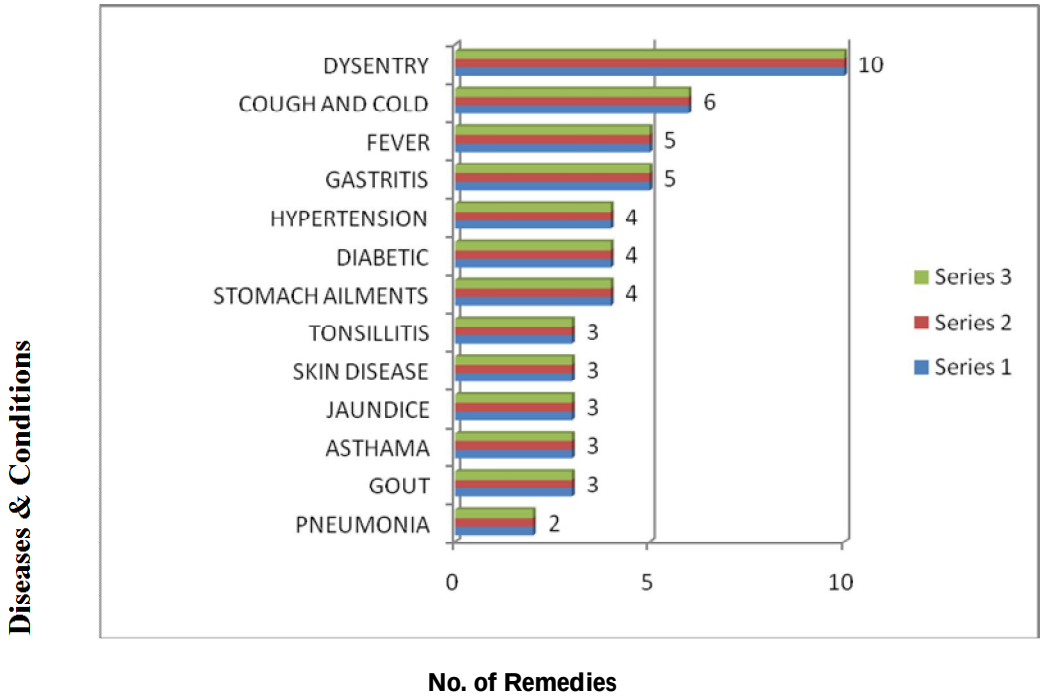

Figure 4: Numbers of remedies used for various diseases

4. DISCUSSION

Different parts of Medicinal Plants were used as medicine by local resourceful citizen and herbal healers such as leaves, rhizome, whole plant parts, flowers, seeds, stem, bark etc. The method of preparation fall into different categories viz. juice extract from fresh plant parts (19), fresh plant parts (16), decoction (7), plant parts applied as paste (7), powder made from some fresh or dried pant parts (1). It was observed moreover a single plant is used for more than one disease example - *Drymaria Cordata* Wild (for Pneumonia, Sinusities, Fever and Throat Pain), Plantago Major Linn. (Lung Disorder, Hypertension, Stomach Problem,) Ebodia Speciosus (Koen. Ex Retz.) Smith (Diabetes, Intestinal, Worms and Bourning Sensation), Thysanolaena Latifolia (Roxb.Ex Hornem) Honda (Abortion, Boils and Tonssilites), Rumex Nepalensis Sprang (Skin Diseases, Ulcer and Diarrhea), Tagetes Erecta Linn (Severe Constipation, Sore Throat and Dysentry).Common health problems in the sites of study area were common cold and cough hypertension, skin diseases and dysentry and largest number of remedies was used to treat these problems. Local people of area used of 13 plants species to treat stomach problems. Ghorbani [35] reported that Fraxinifolia Hk. F (Gastric Problem, Dysentry, Fever and Cold), Bergenia Cilliata (Haworth) Sternber (Tonssilites, Toothache, Diarrhea), Urtica Dioca L (Hypertension, Gout and Heart Diseases), Nyctanthes Arbor-Tristis Linn (Scitica, Constipation, Snake Poisoning), *Costus* there were 48 plants for the treatment of Gastrointestinal disorder in the north of Iran. In the present study, *Costus Speciosus, Phoneix Acaulis, Stephania Glabra,* are mainly used for diabetes. *Equisetum*

Debile and Rubia cordifolia are used for Jaundice. Various studies have reported on the indigenous use of medicinal plants on treatment of oral diseases. [39] and [21]. Chettri et.al [15] reported that tribal people of Sikkim and Darjeeling Himalayan Region in India utilized 37 species of plants belonging to 28 different famalies as anti-diabetes agents.

5. CONCLUSION

Majority of these medicinal plant species are available in the wild habitat. Some plants are disappering at a high rate due to several reasons such as landslides, construction work, urbanisation etc. Therefore conservative measures are necessary for the further utility of these plants, this study concluded that even though people depend on the western medicine for different diseases, but many people of the Darjeeling district depend on the medicinal plant for some simple diseases such as dysentery, cough and cold, skin diseases and tonsillitis etc. So local cultvation of medicinal plants and other economic species can play an important role in economic development of the area, for sustainable and long term conservation of natural resources of the area, there is a need to actively involve the quiescence of local people in evaluation, planning, implementation and monitoring the processes as they are the best judges of the area.

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