

Ethnomedicinal plants used by Dhimal community of Rajghat, Morang

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Abstract

This work was carried out during 2015-2016. During study PRA technique and interview technique were employed to get ethnomedicinal information from local people. The study showed that Dhimals of Rajghat are ethnomedicinally very rich. They used different plants and parts of plants to recovery from different illness. Altogether 113 plant species were reported with their local name, short description, field notes and ethnobotanical notes used by Dhimals in medicinal purpose. These plant species were distributed under 102 genera and 55 families. Among them 44 families were belongs to dicotyledons, 9 families belong to monocotyledons and 2 families from pteridophytes. The largest family was Fabaceae with 12 species of medicinal purpose. Different 15 plant species were used to cure fever and another 15 species for cold and cough. More than one plant species were used by Dhimals to cure one illness. Similarly, more than one illness was cured by a single plant species. Dhimals used different parts of plants for medicinal purpose. They used leaves of 51 species, roots of 33 species and fruits of 21 species. Similarly, they also used seeds, flowers, trunks, barks, rhizome, latex, resin, etc. of plants for the treatment of different ailments. Dhimals of Rajghat have a great faith in the traditional healing system and they frequently visit the Dhamis for the treatment of most illness. Dhamis on the other hand, have a very sound knowledge on the use of herbal medicines.

Keywords: Dhimal tribe, ethnobotany, indigenous knowledge.

Introduction

Nepal is a country popularly known for its natural beauty and great cultural heritage. Nepal lies between China on north and India on the east, south and west. The country extends along the Himalayas in between the latitudes 26°22' to 30°27' N and longitudes 80°4'E to 88°12'E. The total land area of the country is 1,47,181 km² and its average east-west length measure is 885 km and south-north width measure is 193 km. The altitude varies from as low as 60 m above the sea level in the plains of Terai to 8,848 m the crest of Mount Everest, the roof of the world. Nepal, possessing a typical geography and climatic variation is known to be rich in plant biodiversity. Jha (1992) estimated the country to possess about 7,000 species of flowering plants. Hara *et al.* (1978, 1979, 1982) enumerated about 5,150 species of flowering plants from Nepal, belonging to 1,475 genera and 207 families, and the list is elaborated to 5,833 species by Koba *et al.* (1994).

Economically, Nepal is a poor country but in terms of cultural heritage, it is one of the richest members of the world cultural community. There are more than 60 different ethnic groups speaking about 75 languages in Nepal. Indigenous knowledge about the use of plant

resources is deeply rooted in the tradition and culture of the various ethnic groups (Shrestha 1997). In 1895, the American botanist John W. Harshberger first used the term ethnobotany to the study of plants used by primitive and aboriginal people. In 1916, Robbins et al suggested ethnobotany as investigation and evaluation of the knowledge of all phase of life amongst indigenous societies and of the effects of the vegetal upon the life customs, beliefs and history of these indigenous peoples. Ford redefined ethnobotany as “the study of direct interaction between human and plant population through its culture. Each human population classifies plants, develops attitudes and beliefs and learns the use of plants” (Manandhar, 1997; Singh, 1997). The interaction between plants and people has been established along with the evolution of human beings (Martin, 1995). Martin defined ethnobotany as the relationship of the people with the surrounding environments.

Nearly 80% people of the country reside in rural area. More than 60 ethnic groups residing in different geographical belts depend on local plants and plant products to meet their daily requirements for food, fodder, medicines etc. (Manandhar, 1997). This dependency of man and his animals upon cultivated as well as wild plants of their locality has inspired him to learn much about the use and properties of the various species. Ethnobotanical investigation opens the probability of new medicines and economic plants. Such an ethnobotanical knowledge on various plants acquired by human beings by his self-experience, trial and accidents is now in the state of erosion and is attenuating day by day. This is because of modernization and urbanization. Although this traditional knowledge still survives in some of the villages and among ethnic groups. One day a condition may come such that these villages also get modernized and with mordernization the ethnobotanical knowledge may disappear. In this concern, documentation of our ethnobotanical heritage is essential for the well-being of both present and future generations. The different ethnic groups in eastern Terai region are Dhimal, Bantar, Tharu, Satar, Rajbansi, Mooshar, Danuwar, Meche etc. Dhimal is one of the large and dominant ethnic groups living in the Morang district of eastern Nepal. According to the Central Bureau of Statistics (2011) the total population of Dhimal in Morang district is 11,049.

Materials and Methods

This study was based on one year (2015-2016) of extensive study in the field, library, laboratory and herbarium preparation. Dhimal tribe of Rajghat of Morang district (eastern Nepal) is selected as a unit of study. Rajghat is a small village in the Uurlabari Municipality, comprises two wards; 8 and 9 in the Morang District in the south-eastern Nepal. It is located in North-East part of Morang and 1.5 km south of the East West national highway of Nepal (Mahendra Highway, Uurlabari). Durgapuri Bazar is the central emerging town of Rajghat. The climate of Rajghat is hot and humid during summer, and mild and dry during winter. During the summer, temperatures can reach 35–36°C, and the low in winter is about 2°C. Rainfall is abundant during the monsoon season (June–September). There is little or no rainfall during winter, which makes it ideal for harvesting crops such as rice, wheat and mustard. An ethnobotanical inventory is made up of information about local plant resources used by the Dhimal of the study area. During the field study, socio-cultural, economic and ethnobotanical data were collected carefully with the help of local knowledgeable person of Dhimal. Map of study area is shown in figure 1. Data were collected using following methods.

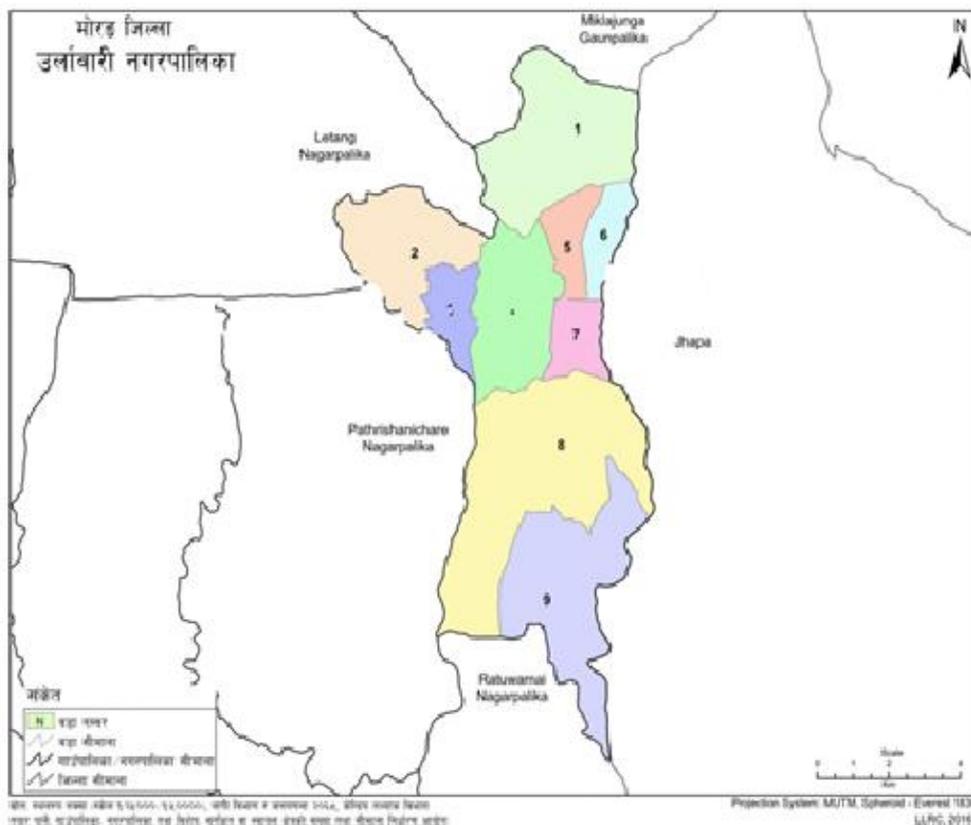


Figure 1. Map of study area.

Participatory Rural Appraisal (PRA) Technique

Participatory Rural Appraisal technique was employed by the direct contact with local people to get information about the knowledge on the different important plant species, place of availability and use category.

Interview Technique

Two method of interview technique were applied during study.

1. *Artifact / Interviewing Technique*: This technique involves asking questionnaire about use of plants by tribal people in folk medicines, for edible purpose, etc. At first interviews with the local professional health healers, especially the Dhamis and other old aged members was taken to acquire data about the plants used by them for medicinal purpose. Other information about the plants used for food, fodder, fuel, timber, etc. and those having spiritual beliefs were taken from different age group of the both sexes.
2. *Inventory / Interviewing Technique*: This technique involves asking questionnaire about the use of plants for different purposes to the information after collecting the specimens. For the plants used in traditional health care, Dhamis were asked about the parts used, stage of parts, mode of preparation, additives if any, dose and mode of administration, any side effect, etc.

Household Survey

During study, fifty households were randomly surveyed for the collection of information about medicinal plants used by Dhimals. At that time socio-cultural and economic conditions of Dhimals were known. The format applied in household survey is given in Appendix-C.

Plant Collection

Ethnobotanically used plants were collected from Rajghat VDC by the help of local Dhimial people. Collections were done for one complete year (2015-2016) making a field visit every month. During collection, field notes on taxonomic characters (location, habit, habitat, colour of flower and period of flowering and fruiting) were noted for easier identification. In case of grasses and other herbs, the whole plant including the underground parts were collected while in case of shrubs and trees, flowering and fruiting portions were taken. At least two or three specimens of each species were collected, tagged properly with field numbers and identified locally before putting them in polythene bags. Some of the photographs were also taken at the time of collection.

Herbarium Preparation and Plant Identification

Herbariums of the collected specimens were prepared by following the standard techniques (Lawrence, 1956; Jain & Rao, 1976). The specimens were placed separately in between every two sheets of old newspaper avoiding overlapping of any organs, stacked one above another and finally pressed between the two frames of the plants press by fastening tightly. Then these were dried with daily change of drying sheets for 6-10 days. The pressed dehydrated specimens, after poisoning with mercuric chloride, were affixed on herbarium sheets (42X28cm) by the help of synthetic adhesive.

The collected specimens were critically studied and identified with the help of available literature (Haines, 1961; Hooker, 1872-1897; Hara *et al.*; 1978, 1979, 1982 & Siwakoti, 1995). Later on the identified specimens were confirmed by the help of specimens deposited at Herbarium Section of Botany Department, P.G. Campus, Biratnagar.

Secondary Data Collection

Literature about flora and ethnobotanical works was collected from the library of P.G. Campus, Biratnagar, Central library Kritipur and other available publications. Literature about Dhimial culture was collected from the library of P.G. Campus, Biratnagar, Central library, Kritipur and T.U. Research Centre. Data about population, total land of VDC, land under cultivation, land irrigation were collected from Rajghat VDC office. The map of Morang district was obtained from Morang DDC office, Biratnagar.

Presentation and illustration

The study is mainly focused on the ethnomedicinal study of Dhimals of Rajghat VDC of Morang district. The medicinal plants were arranged in alphabetical order. The correct name of taxa is given with their respective local name followed by families. A short diagnostic description of each species has been given on the basis of exomorphic characters. Ethnobotanical notes were given regarding to the medicinal uses. A list of reported species along with their respective families and uses were given in tabular form. The medicinal plants used to cure different diseases are presented in tabular as well as diagrammatic form.

Results and Discussion

Plant is an unavoidable element for the existence of life. Human and other herbivorous animals get energy from plants. In addition, plants and its products are very important in medicinal science. In fact, most of the present day medicines are derived from plants. Most of the rural communities and ethnic group frequently used plants and its parts directly as medicine. The present work is primarily based on the exploration of medicinally important plants used by Dhimal in Rajghat of morang district. The study is totally ethnobotanical based and ethnobotanical information presented in this study is solely based on the field observation carried out by the investigator. The information provided by the Dhimals, especially the elder member of the community and the Dhamis have been documented here. Results have also been cross checked with other knowledgeable person of Dhimal in the study area. Dhamis have a sound knowledge on medicinal plants and their use in healthcare of humans as well as animals. Dhimals of the study area believe in traditional health care system and consult the Dhamis for the treatment of different illness.

Traditionally, these Dhimals made use of specific plants for specific purpose but now due to complete destruction of forest in the study area, they are compelled to satisfy with the plants found near their settlements and the plants they cultivate. They use plant resources for a variety of purpose like food, fodder, medicine, firewood, timber, household materials, ceremonies, etc. A single plant is used for various purposes and a number of plant parts are used for the same purpose. Similarly, a single plant is used to treat a number of illness while parts of various plants are also used to treat one illness.

The present study deals with 113 cultivated and non-cultivated plant species with medicinal values used by Dhimals. These 113 plant species distributed under 102 genera of 55 families. Out of these 44 families belongs to Dicotyledons, 9 families belong to Monocotyledons and 2 families from pteridophytes. The dominant families were Fabaceae (12 species), Apocynaceae (5 species), Moraceae (5 species), Solanaceae (5 species), Lamiaceae (5 species). The ethnomedicinally important plants used by Dhimals of Rajghat are listed in table 1.

Table 1. Ethnomedicinally important plants used by the Dhimals of Rajghat.

S.N.	Scientific name	Local name	Family	Parts used	Used in
1.	<i>Abrus precatorious</i>	Lalgedi	Fabaceae	Roots, leaves & seeds	Gonorrhea, Jaundice, cough, cold
2.	<i>Achyranthes aspera</i>	Apamarga	Amaranthaceae	Roots, flowers, decoction	Fever & Pneumonia, dog bite, stomachic, menorrhea
3.	<i>Acorus calamus</i>	Bhojho	Araceae	Rhizome	Epilepsy, diarrhea & dysentery
4.	<i>Adhatoda zeylanica</i>	Asuro	Acantheceae	Leaves, flowers, fruits, roots	Cold, cough, bronchitis, asthma
5.	<i>Aegle marmelos</i>	Bel	Rutaceae	Fruits, roots, bark, leaves	Diarrhea, melancholia, fever,
6.	<i>Ageratum conyzoides</i>	Ilame Jhar	Asteraceae	Leaves, roots	Cutting & bleeding, rheumatism
7.	<i>Allium cepa</i>	Piyaz	Liliaceae	Leaves, stem	Ophthalmic & earache, Diabeties
8.	<i>Allium sativum</i>	Lahsun	Liliaceae	Leaves, stems	Dysentery, rheumatic diseases
9.	<i>Aloe vera</i>	Ghiukumari	Liliaceae	Leaves juice	Colon constipation, plant juice in burns
10.	<i>Alternanthera</i>	Bhringi Jhar	Amaranthaceae	Leaves, roots	Diarrhea & dysentery, cuts and

	<i>sessilis</i>				wounds
11.	<i>Amaranthus viridis</i>	Lude	Amaranthaceae	Seed	Diarrhea, blood diseases & mouth sores
12.	<i>Annona squamosa</i>	Sarifa	Annonaceae	Fruits, seeds	Digestion, vomiting, diarrhea, dysentery & useful in abortion
13.	<i>Anthocephalus chinensis</i>	Kadam	Rubiaceae	Stem, bark	Cough, helpful in snake bite
14.	<i>Arthenisia dubia</i>	Titepati	Asteraceae	Leaves, roots	Gastric troubles, diarrhea, asthma,
15.	<i>Arthocarpus heterophyllus</i>	Katahar	Moraceae	Fruits, leaves	Skin diseases, ulcers, asthma, diarrhea
16.	<i>Arthocarpus lackoocha</i>	Bahadar	Moraceae	Heart wood, leaves, bark, latex	Treatment of Tap-worms, cracks & boils
17.	<i>Asparagus racemosus</i>	Kurilo	Liliaceae	Leaves, roots	Diabetes, headache, malaria, dysentery
18.	<i>Azadirachta indica</i>	Neem	Meliaceae	Leaves, bark	Coco-pox, diabetes, antibacterial, malaria, fever
19.	<i>Bauhinia purpurea</i>	Tanki	Fabaceae	Flowers, buds, bark	Constipation, diarrhea, ulcers
20.	<i>Bauhinia vahlii</i>	Bhorla	Fabaceae	Seed	Snake bite
21.	<i>Bombax ceiba</i>	Simal	Bombaceae	Bark, gum, root	Blood dysentery, influenza, urinary infection
22.	<i>Brassica campestris</i>	Tori	Cruciferae	Seed ,leaves	Mild bronchitic affection in children
23.	<i>Brassica juncea</i>	Rayo sag	Cruciferae	Seeds, leaves	Cough & indigestion, eye diseases
24.	<i>Calotropis gigantean</i>	Aank	Asclepiadaceae	latex, roots, bark, flowers	Dysentery, cold, cough, asthma
25.	<i>Cannabis sativa</i>	Bhang	Cannabaceae	Seeds, twings, leaves	Diarrhea, abdominal disorder
26.	<i>Capsicum annum</i>	Khursani	Solanaceae	Fruits	Rheumatic disorder
27.	<i>Carica papaya</i>	Mewa	Caricaceae	Fruits, roots	Jaundice, piles, stone in kidney
28.	<i>Cassia fistula</i>	Rajbrikchya	Fabaceae	Fruits	Rheumatism, constipation
29.	<i>Cassia tora</i>	Tapre	Fabaceae	Roots, leaves, seeds	Urinary troubles, skin diseases
30.	<i>Centella asiatica</i>	Ghodtapre	Apiaceae	Plant body	Leprosy, skin diseases, rheumatism
31.	<i>Chenopodium album</i>	Bhethusag	Chenopodiaceae	Plant body	Abdominal disorder
32.	<i>Cinamomum tomata</i>	Tejpatta	Lauraceae	Leaves	Diarrhea
33.	<i>Cinamomum zeylanicum</i>	Dhalchini	Lauraceae	Barks	Nausea & vomiting
34.	<i>Citrus limon</i>	Kagati	Rutaceae	Fruits, leaves, roots	Constipation, pneumonia, scurvy, removal of dandruff
35.	<i>Clenodendron indicum</i>	Chinde	Verbenaceae	Leaves, resin	Herpetic eruption, rheumatism
36.	<i>Colebrookea oppositifolia</i>	Dhasure	Lamiaceae	Leaves	Wounds & cuts, bruises
37.	<i>Coniandrum sativum</i>	Dhaniya	Apiaceae	Fruits, seeds	Diuretic, stomachic
38.	<i>Crotalaria pallida</i>	Runche	Fabaceae	Leaves	Menstrual disorder, diarrhea
39.	<i>Curcuma longa</i>	Besar	Zingiberaceae	Rhizome	Anti-parasitic, helminthic, wounds
40.	<i>Cuscuta reflexa</i>	Akashbeli	Cuscutaceae	Plant body, seeds	Fever, liver ailments, itches
41.	<i>Cynodon dactylon</i>	Dubo	Poaceae	Plant body, roots	Cuts & wounds, diarrhea, piles
42.	<i>Cymbopogon</i>	Pirhe Jhar	Poaceae	Leaves, oils	Anti-periodic in catarrha,

	<i>citratus</i>				carminative
43.	<i>Cyperus rotundus</i>	Mothe	Cyperaceae	Roots	Stomach troubles
44.	<i>Dalbergia sissoo</i>	Sisoo	Fabaceae	Leaves, wood	Gonorrhea, leprosy
45.	<i>Datura metal</i>	Dathuro	Solanaceae	Leaves, roots, seeds	Insanity, asthma, secretion of milk
46.	<i>Drymaria cordata</i>	Abijalo	Caryophyllaceae	Plant body	Fever, cold, throat troubles, diarrhea & dysentery
47.	<i>Eclipta prostate</i>	Bhringraj	Asteraceae	Plant body, leaves	Cuts, jaundice, making 'gazal'
48.	<i>Elephantopus scarber</i>	Sanjeevani Buti	Asteraceae	Leaves, roots	Diarrhea, dysentery, stomach pain, swelling, vomiting & toothache
49.	<i>Equisetum debile</i>	Ankhale Ghanss	Equisetaceae	Plant body	Cooling medicine, gonorrhea
50.	<i>Euphorbia hirta</i>	Dudhe	Euphorbiaceae	Plant body	Cattle for increasing milk, dysentery, skin cracks
51.	<i>Euphorbia royalina</i>	Siundi	Euphorbiaceae	Latex	Used in removal of worms
52.	<i>Fiscus cunica</i>	Khanayo	Moraceae	Fruits, roots	Urinary troubles
53.	<i>Fiscus religiosa</i>	Peepal	Moraceae	Fruits, barks, leaves, tenders	Ulcers, skin diseases
54.	<i>Gossypium hirsutum</i>	Kapas	Malvaceae	Roots, seeds	Fever, headache
55.	<i>Guizotia abyssynica</i>	Filunge	Asteraceae	Seed oils	Rheumatism
56.	<i>Hibiscus rosa-sinensis</i>	Ghanti Phool	Malvaceae	Flowers, roots	Fever, cough
57.	<i>Ichnocarpus frutescens</i>	Dude laharo	Apocyanaceae	Root	Tonic, syphilis, rheumatism
58.	<i>Impereta cylindrical</i>	Siru	Poaceae	Roots	Pneumonia, diarrhea
59.	<i>Ipomea aquatic</i>	Karmi Sag	Convolvulaceae	Plant body	Nervous & general debility
60.	<i>Ipomea batatus</i>	Sakharkhanda	Convolvulaceae	Roots, tubers	Carminative & diuretic
61.	<i>Jatropha curcas</i>	Saruwa	Euphorbiaceae	Leaves, roots	Piles, diarrhea
62.	<i>Lantana camara</i>	Banamara	Verbenaceae	Plant body, leaves	Tetanus, malaria, snake bite
63.	<i>Leea aequata</i>	Galen	Leeaceae	Roots	Dysentery, diarrhea, bone breakage
64.	<i>Lepidium sativum</i>	Chamsur	Cruciferae	Seeds, leaves	Asthma, cough, piles, bone breakage
65.	<i>Linum usitatissimum</i>	Aalas	Linaceae	Seeds	Cold, cough, gonorrhea, diarrhea
66.	<i>Lycopodium clavatum</i>	Nagebeli	Lycopodiaceae	Plant body	Rheumatism, lungs & kidney diseases
67.	<i>Maesa chisia</i>	Bilouni	Myrsinaceae	Roots, barks, branches, leaves	Fish poisoning, headache
68.	<i>Mallotus phillippensis</i>	Sindure	Euphorbiaceae	Barks, fresh plant	Scabies, menstrual disorder
69.	<i>Magnifera indica</i>	Aanp	Anacardeaceae	Flowers, fruits, barks	Diarrhea, dysentery, diphtheria, urinary infection
70.	<i>Melastoma melabathrium</i>	Angeri	Melastomataceae	Roots, barks, leaves	Diarrhea, dysentery, skin diseases, wounds to clot blood
71.	<i>Melia azedarach</i>	Bakaino	Meliaceae	Leaves, flowers, barks	Skin diseases, killing lice, liver fluke in cattle
72.	<i>Mentha arvensis</i>	Pudina	Lamiaceae	Leaves	Rheumatism, indigestion, cholera, cough
73.	<i>Mentha longifolia</i>	Pudina	Lamiaceae	Leaves	Fever, abdominal disorder

74.	<i>Mimosa pudica</i>	Lajjawati Jhar	Fabaceae	Roots, leaves	Dysentery, glandular swelling
75.	<i>Moringa oleifera</i>	Sajiwan	Moringaceae	Leaves, pods, roots, young branches	Scurvy, anti pyretic
76.	<i>Morus australis</i>	Kimbu	Moraceae	Leaves, fruits, barks	Inflammation of the throat, cooling
77.	<i>Myrica esculenta</i>	Kafal	Myricaceae	Barks, fruits	Fever, asthma, cough, cholera
78.	<i>Nephrolepis cordifolia</i>	Pani amala	Polypodiaceae	Tubers	Cooling agents, cough
79.	<i>Nerium indicum</i>	Barhamase	Apocynaceae	Roots, leaves	Ulceration, eye diseases
80.	<i>Nicotiana tabacum</i>	Surti	Solanaceae	Plant body, leaves	To cause vomiting, repel leeches, lice, ticks, from the body of livestock
81.	<i>Nyctanthes arbor-tristis</i>	Parijat	Oleaceae	Leaves, roots, flowers, barks	Fever, rheumatism, expulsion of placenta
82.	<i>Ocimum basilicum</i>	Babari Phool	Lamiaceae	Plant body, leaves, seeds	Antipyretic, cough, constipation
83.	<i>Ocimum tenuiflorum</i>	Tulasi	Lamiaceae	Plant body, leaves,	Bronchitis, earache, pneumonia, cough, common cold
84.	<i>Oxalis corniculata</i>	Chariamilo	Oxalidaceae	Plant body	Antiseptic, piles, anemia, fever, scurvy
85.	<i>Peperomia tetraphylla</i>	Sanu-pipla	Piperaceae	Leaves, fruits	Kidney disorder, to saves lungs
86.	<i>Phyllanthus emblica</i>	Amala	Euphorbiaceae	Fruits, barks	Asthma, bronchitis, jaundice, peptic ulcers
87.	<i>Piper betle</i>	Pan	Piperaceae	Leaves,	Pulmonary affection
88.	<i>Piper longum</i>	Pipla	Piperaceae	Fruits, roots	Cough, bronchitis and asthma
89.	<i>Piper nigrum</i>	Marich	Piperaceae	Fruits	Cholera, cough, piles, & skin diseases
90.	<i>Plumbago zeylanica</i>	Chitu	Plumbaginaceae	Roots	Skin diseases, leprosy, piles, diarrhea
91.	<i>Psidium guajava</i>	Amba	Myrtaceae	Leaves, shoots	Digestive disorder, rheumatism, epilepsy, cholera
92.	<i>Pterocarpus marsupium</i>	Bijaysal	Fabaceae	Flowers, gum, barks, wood	Fever, diarrhea, dysentery, diabetes
93.	<i>Punica granatum</i>	Anar	Punicaceae	Barks, fruits	Tapeworms, antihelminthic, cooling, applied in wounds
94.	<i>Rauvolfia serpentine</i>	Chand maruwa	Apocynaceae	Roots	Diarrhea, dysentery, childbirth
95.	<i>Rhododendron arboretum</i>	Lali Guras	Ericaceae	Flowers	Diarrhea, dysentery, removal of fish bone from neck
96.	<i>Rosa alba</i>	Gulab	Rosaceae	Roots, barks	Skin troubles, fever, palpitation of the heart
97.	<i>Rubus ellipticus</i>	Aiselu	Rosaceae	Roots, barks	Wounds, gastric, diarrhea, dysentery
98.	<i>Saraca indica</i>	Ashok	Fabaceae	Barks, leaves, flowers	Dysentery, piles, ulcers, stomachic, diabetes
99.	<i>Scoparia dulcis</i>	Kharete Jhar	Scrophulariaceae	Leaves, shoots, roots	Diarrhea, dysentery, fever, diabetes, anemia
100.	<i>Semicarpus anacardium</i>	Bhalayo	Anacardiaceae	Juice of peri-carp, fruits, stems	Counter irritant, rheumatism, asthma, epilepsy
101.	<i>Shorea robusta</i>	Sakhuwa	Dipthero carpaeae	Fruits, resin, leaves	Diarrhea, skin troubles, eye diseases
102.	<i>Solanum nigrum</i>	Jangali Bihi	Solanaceae	Leaves, shoots	Dropsy, heart diseases
103.	<i>Solanum tuberosum</i>	Aalu	Solanaceae	Tubers	Burn

104.	<i>Tamariandus indica</i>	Titri	Fabaceae	Seeds, fruits	Cough, diarrhea, dysentery
105.	<i>Terminalia bellirica</i>	Barro	Combretaceae	Fruits, seeds	Antipyretic, bronchitis, dropsy, diarrhea, leprosy, fever
106.	<i>Terminalia chebula</i>	Harro	Combretaceae	Fruits, barks	Ulcers, wounds, diarrhea, dysentery, asthma, urinary disorder
107.	<i>Thevetia peruviana</i>	Karbir	Apocynaceae	Plant body	Dropsy, rheumatism
108.	<i>Utrica dioica</i>	Sisnu	Utricaceae	Leaves, young shoots, roots	Excessive menstrual flow, diarrhea, diabetes
109.	<i>Vigna mungo</i>	Kalai daal	Fabaceae	Seeds	Rheumatism, diseases of liver, dropsy, nervous system
110.	<i>Vitex negundo</i>	Simali	Verbenaceae	Leaves, roots	Fever, rheumatism, swelling of joints, boils, dyspepsia
111.	<i>Zanthoxylum armatum</i>	Timur	Rutaceae	Seeds, barks, fruits	Fever, dyspepsia, cholera, stomach pain
112.	<i>Zingiber officinale</i>	Aduwa	Zinzgiberaceae	Rhizome	Stimulant, flavouring agents, dyspepsia, cold, cough
113.	<i>Ziziphus mauritiana</i>	Bayar	Rhamanaceae	Barks, fruits, leaves	Diarrhea, dysentery, cooling agent, scabies, skin diseases

One plant species was used in more than one purpose. *Abrus pectorius* was used in 5 different purposes like gonorrhea, jaundice, cough, cold and to developed fertility in women. Similarly, *Magnifera indica* is used in 4 different purposes, *Myrica esculanta* was used to cure 4 different diseases. But *Piper betle* and *Solanum tuberosum* were used for only one illness of each pulmonary affection and in burn. Numbers of plant species used in treatment of different diseases by Dhimal are shown in figure 2.

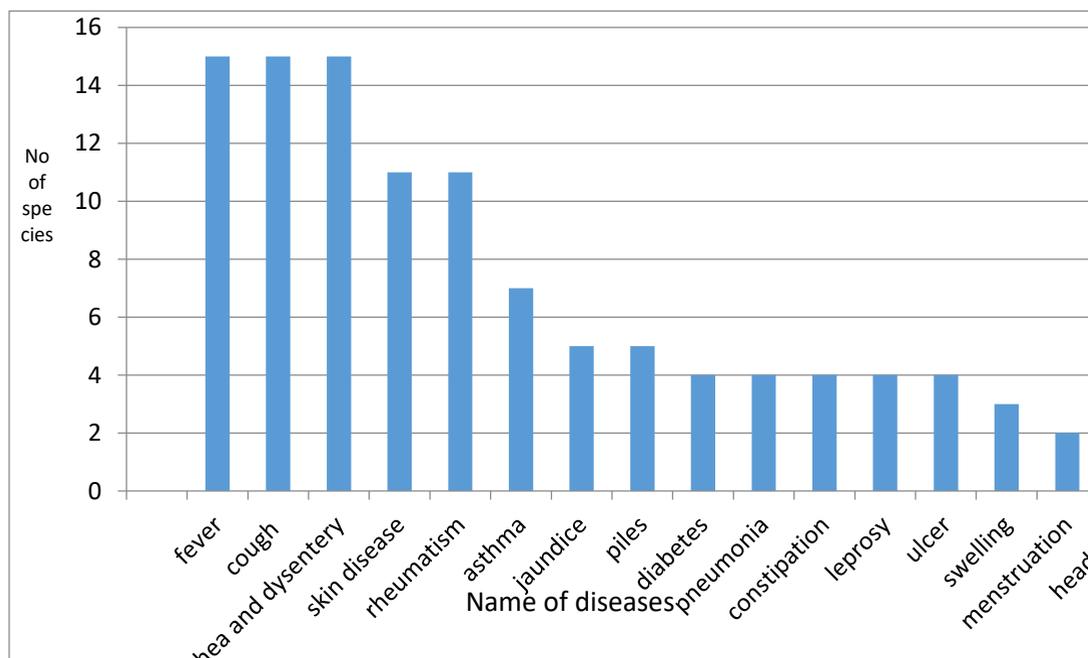


Figure 2. Number of plant species used in treatment of different diseases by Dhimal

More than one plant was used by Dhimals for one disease. Root of *Abrus pectorius*, fruits of *Carica papaya*, whole plant of *Eclipta prostrata*, bark and fruits juice of *phyllanthus emblica* were used in jaundice. Roots of *Cynodon dactylon*, leaf juice of *Jatropha crucas*, seed and leaf of *Ilepidium sativum*, fresh juice of *Oxalis corniculata*, fruit powder of *Piper nigrum*, bark of *Saraca indica* were used to cure piles. Similarly, Regular use of *Allium cepa*, leaf of *Asparagus racemosus*, leaves of *Utrica dioica* were used in diabetes.

Dhimal used different parts of different plant as a medicinal purpose. They used leaves as a dominant plant parts. Among 113 species they used leaves of 51 species to cure different diseases. They used fruits of 21 species, seed of 16 species, flower of 12 species, branches or twinges of 13 different species. Similarly, bark of 20 species, root of 33 species, rhizomes of 3 species, latex, gum or resin of 9 species were used. Whole plant body of 16 different species were used to cure different problems of illness.

They use more than one parts of a single plant for same or different purpose. Roots of *Artemisia dubia* was used in stomachache and diarrhea, leaves were used in asthma and leaves juice was used in cuts and wounds. Similarly, leaves of *Asparagus racemosus* was given in diabetes but roots were used in headache and malaria. Crushed root of *Imperata cylindrica* with water was used to treat pneumonia, paste of root mixed with black pepper was given to get relief from diarrhea.

The plants used by Dhimals of Rajghat VDC of Morang district for different medicinal purposes have also been reported to possess medicinal values among other communities as well. An attempt has been made to illustrate the different medicinal properties of some of these plants used in different ailments by various ethnic group by the help of literatures (Manandhar, 1982, 1986, & 1993; Anonymous, 1993; Siwakoti & Varma, 1996b; Khan, 1997; Malla & Shakya, 1999; Siwakoti & Siwakoti, 1999; Chaudhary, 2000; Joshi, 2000; Rai, 2003; Mahato, 2005).

The medicinally important plants used by Dhimals were taken orally or applied. There are certain plants which in some cases are used in a ritual way too. People believe that the Mantrass to play the main role in the treatment of such ailments, e.g. Jaundice, cholera, stomachache, fever and easy child delivery.

Dhimals of Rajghat VDC use the leaves of *Adhatoda zeylanica* to cure cold and cough. Acharya *et al.* (2006) reported its similar use in cold. On the other hand, Anonymous (1982) reported its use in rheumatism and as insecticidal while Manandhar (1993) reported its use in dysentery.

Root of *Achyranthes aspera* is use in fever and pneumonia. Manandhar (1986) reported the use of stem in toothache. The leaf paste of *Centella asiatica* is use in leprosy and other skin disease. Manandhar (1982) reported its use in urinary problem. The rhizome of *Acorus calamus* is used for the treatment of epilepsy, chronic diarrhea and dysentery. Siwakoti and Varma (1996) reported its use for the repelling insects from crop seeds.

Flower of *Rauvolfia serpentine* is use in childbirth but Anonymous (1982) reported juice of leaves is used in removing opacities of the cornea of the eyes. Siwakoti and Varma (1996) mentioned the roots as hypnotic, sedative, used in the treatment of hypertension, mental

disorder and to cure snake bite. The half-ripe fruit of *Aegle marmelos* is used in diarrhea and dysentery. Manandhar (1986) also reported fruit pulp is used to treat diarrhea.

The juice of fresh leaves of *Ageratum conyzoides* is used in cutting and bleeding. Bhandari and Shrestha (1984) reported its use for the victim of flatulence of stomach and staggering of throat. The juice of *Allium cepa* is used for the treating ophthalmia and earache. Anonymous (1972) reported regular use of onion (50g/day) reduces the insulin requirement of a diabetic patient from 40-20 units a day. Frequency of plant parts used in treatment of different diseases by Dhimal is shown in figure 3.

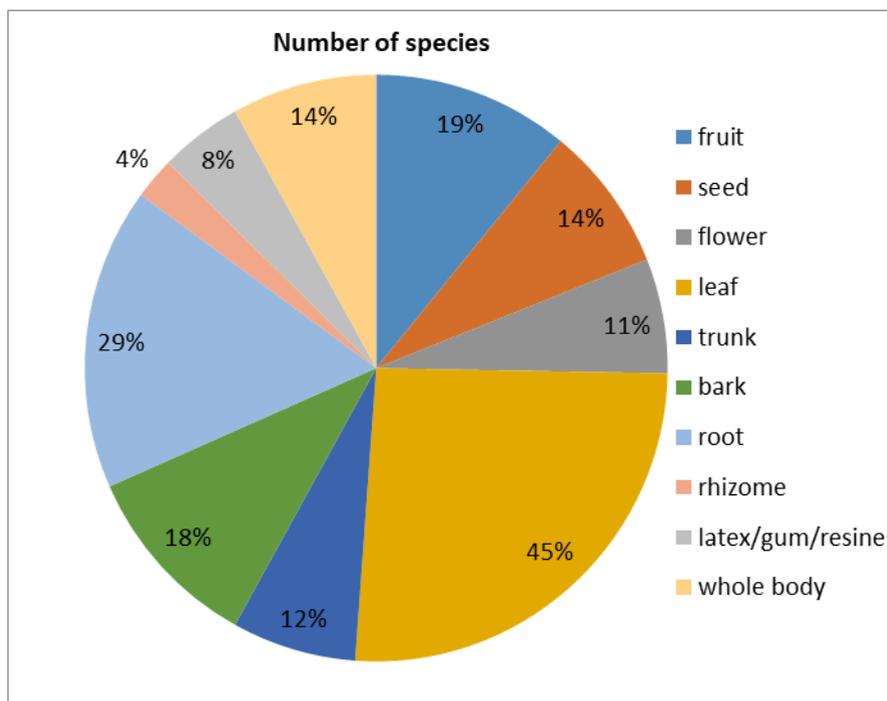


Figure 3. Frequency of plant parts used in treatment of different diseases by Dhimal

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References

- Acharya, K.P., S. Khadka, H.D. Lekhak, R.P. Chaudhary, & O.R. Vetaas 2006. Species composition and regeneration of coniferous Forest in Manang. In: *Local effects of Global changes in the Himalayas: Manang, Nepal* (Eds. Chaudhary, R.P; H. Aase, O.R. Vetaas & B.P. Subedi), Tribhuwan University, Nepal and University of Bergen, Norway. pp. 131-138.

- Anonymus. 2004. *Shivapuri National Park management plan*. King Mahendra Trust for Nature Conservation.
- Banarji, M.L. 1955. Some edible and medicinal plants from east Nepal. *J. Bomb. Nat. Hist. Soc.* 3: 153-155.
- Baral, S.R. & P.P. Kurmi 2006. *A compendium of medicinal plants in Nepal*. Mass Printing Press Chhauni, Kathamandu.
- Bhattarai, N.K. 1992. Medical ethnobotany in the Karnali Zone, Nepal. *Economic Botany* 46(3): 257-261.
- Haines, H.H., 1961. (Rev.ed.). *The Botany of Bihar and Orissa*, Vols. 1-3, Bishen Singh, Mahendra Pal Singh, Dehradun.
- Hara H., W.T. Stearn, & L.H.J. Williams (1978, 1979, 1982). *An Enumeration of the Flowering plants of Nepal*, Vol. 1. Trustees of British Museum (Natural History), London.
- Hooker, J.D. 1872-1897. *The Flora of British India*. Vols. 1-7 Reeve and company, London.
- Jain, S.K. & R.R. Rao 1976. *A handbook of field and herbarium methods*. Today and Tomorrow's Printers and Publishers, Delhi.
- Jha, P.K. 1992. *Man and Environment of Nepal*. In T.C. Majupuria (Eds.) white lotus co.Ltd. Bangkok, Thailand.
- Joshi, K. & S.D. Joshi, 2001. *Genetic heritage of medicinal and aromatic plants of Nepal Himalayas*. Budha Academic Publishers & distributors Pvt. Ltd. Kathmandu, Nepal.
- Koba, H., Akiyama, S., Endo, Y., & Ohba, H. 1994. *Name list of the Flowering plants and Gymnosperms of Nepal*. University Museum, University of Tokyo, Reports No. 32.
- Lawrence, G.H.M. 1951. *Taxonomy of Vascular Plants*. Macmillian Company, New York.
- Mahto, R.B. & R.P. Chaudhary 2005. Ethnomedicinal plants of Palpa district, Nepal. *Ethnobotany* 17: 152-163.
- Malla, S.B., & P.R. Shakya 1999. Medicinal plants of Nepal. In: *Nepal Natures Paradise* (Ed. Majupuria T.C.), White lotus Ltd. Bangkok. pp. 261-297.
- Manandhar, N.P. 1997. Ethnobotany in Nepal. In *Ethnobotany for conservation and community Development* (Eds. Shrestha, K.K., P.K. Jha, P. Shengji, A. Rastogi, S. Rajbhandary, M. Joshi), Proceeding of the National Training Workshop in Nepal, January 6-13, 1997. pp. 20-27.
- Manandher, N.P. 1986. Ethnobotany of Jumla District, Nepal. *International Journal of Crude Drug Research* 24: 8-89.
- Rai, S.K. 2005. Medicinal plants used by Meche people of Jhapa district, Eastern Nepal. *Our Nature* 2 (2): 27-32.
- Shrestha, A.K. 1997. *Documentation of indigenous knowledge on the utilization of plant resources used by the Tharu Community around Royal Bardiya National Park, Western Nepal*.
- Singh, K.K. 1997. *Flora of Dudhwa National park* (Kheri Dist. U.P.). Bishen Singh Mahendra Pal Singh, Dehradun, India.
- Singh, S.S. & M. Siwakoti 2009. Ethnomedicinal study of Tamang people of Shivapuri National park and its adjoining areas of Kathmandu district. *Biozone. International Journal of life science* (2): 131-143
- Siwakoti, M. & S.K. Varma 1996. Medicinal plants of the Tarai of eastern Nepal. *J. Econ. Taxa. Bot. Addi. Ser.* 12: 423-438.
- Tiwari, N.N. 1999. Wild relatives of medicinal and aromatic plants (MAPs) in Nepal. *Proceeding of National conference on Wild Relatives of Cultivated plants in Nepal*. pp. 141-148.