



# Ethnobotanical data documentation of Keshkal, Chhattisgarh, India

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## Abstract

Chhattisgarh is a medicinal plant rich state and the medicinal plants are utilized in a sustainable manner by traditional healers in the treatment of incurable diseases. Keshkal is the forest division of Kondagaon District near Kanker district. Traditional healers of this area are very active and treating human diseases effectively. But now days exploitation of the herbal plants is increased and threatening their diversity in this area. Present survey was carried out to document the traditional knowledge of healers and to save the medicinally important plants. The plants used by the four Vaidyas of Keshkal were studied, in which we found that the method of making the medicine used and the treatment of diseases was slightly different, but all had a passion for working in connection with nature. In the process of traditional healing, it was found that ache problems, diabetes, energy tonic, kidney stone, diseases related to men and women were treated more than other diseases. It was also found in the present work that the leaves and roots of 49 medicinal plants of 30 families were used more than other plant parts for medicine. Keeping in mind the knowledge privacy of traditional healers, the methods of making medicines by them have not been included in the presented publication.

**Keywords:** Ethnobotany, Medicinal plants, Traditional healers

## 1. Introduction

Ethnobotanical study is very important in health science which deals with the study of medicinal plants used by aboriginal people. Powers (1874) coined the term “aboriginal botany” which was remained accepted for more than 20 years. The first report of term ethnobotany was published by Harshberger (1895), which was the pioneer step towards ethnobotanical studies. In India, Jain (1964) have described the methodology which is being used for data documentation by ethnobotanists. The development of drugs using medicinal plants used by aboriginal people is known as the ethnomedicines are well practiced in this area by traditional healers using medicinal plants sustainably.

Chhattisgarh is the herbal plants rich state of India and have much potential in herbal plant research. The level of research in Chhattisgarh was such that after separation from Madhya Pradesh, many researchers took information on medicinal plants from them, but did not brought them any recognition in any way. As can be said from the previous research. Turkey (2006) collected and studied the plants used by aboriginal people of Chhattisgarh. Kala in 2009, studied on Aboriginal uses and management of ethnobotanical species in deciduous forests. Sahu and his colleagues studied ethnomedicinal plants in 2014 documented the plants being used in healthcare systems by the tribes of Dantewada.

If we talk about Keshkal, then this type of study has been done here for the first time and an attempt has been made to leave their traditional knowledge to the guru-disciple tradition. In this direction, attention of the scientific community should be focused on plants and the disease treatment.

The main objective of this study was to obtain ethnobotanical uses of plants and their conservation status. However many plants were seen as considering rare, endangered and threatened. Also the use patterns of medicinal plants were evaluated to know about difference in practice behavior of traditional healers. Mesfin *et al.*, (2009) mentioned about traditional healers, who believed that wild plants are more effective. Most recent documentation on non-timber forest produce (NTFPs) Chandel *et al.* (2018) has reported several medicinal plants and their therapeutic properties from Dhamtari forest area.

## 2. Materials and methods

Keshkal is the forest region that is rich in plant diversity having major sal forest. The geographical area of Keshkal is 1685.810 km<sup>2</sup> and situated in plain and Bastar plateau (Fig.1). Optimum height from ocean surface is 534 to 834 meters. This forest division has Sal and mixed vegetation. It has four sub-divisions viz., Keshkal, Bade Rajpur, Farasgaon and Bade Dongar with total 1429.458 m<sup>2</sup> forest area. Total 30.50% of total forest area is occupied by Sal forest consisting of tropical moist deciduous forests, dry deciduous forests and subtropical dry evergreen (Champion and Seth, 1968).

During survey, Camera were used Canon EOS 1200D and Canon IXUS 170 and field note book was maintained. For the conservation purpose, Herbarium specimen was not taken from the field and the data was taken primarily from local traditional healers including the local name of the concerned plant species. However, the plants were further identified on the basis of digital herbarium records and species names were recognized using their local names and related characters of plants viz., leaf, root, shoot and flower and compared with secondary data available in books and internet.

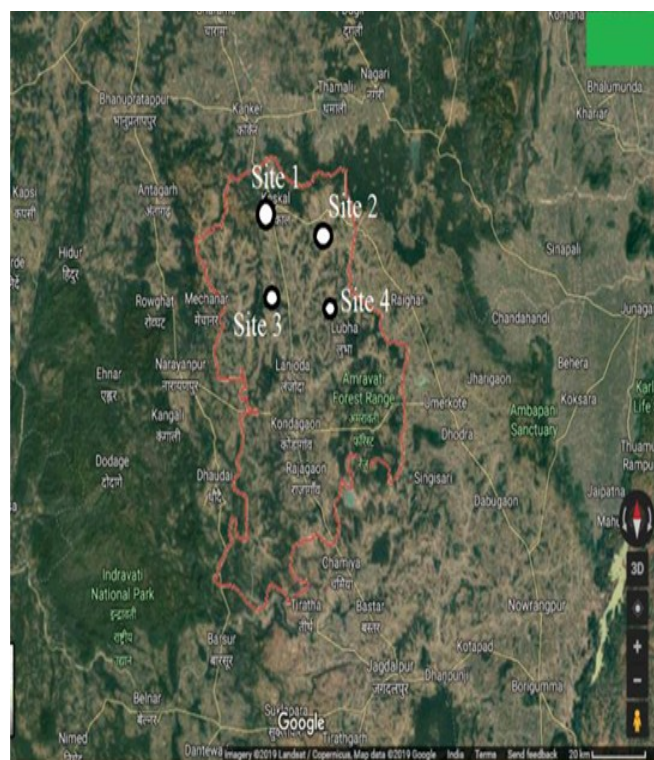
Ethnobotanical data documentation was carried out according to methodology suggested by Jain (1964). In this work, detailed description was obtained from official traditional healers of forest department of Keshkal forest division during September - October 2017 (Table 1). Also photographs were taken during data collection to insure the authentic knowledge about plants and formation of digital herbarium records.

In this survey, medicinally important plants were marked and identified by local traditional healers and

literature available on books and internet sources. Following traditional healers were participated during documentation:

**Table 1.** Four different traditional healers were contributed their ethnobotanical knowledge during field investigation.

Site No.	Name of Traditional Healer	Medicinal Plants used (As recorded in the field study)	Locality
1	Vaidyaraj Naval Ram	28	Keshkal
2	Vaidyaraj Sukhram Nag	49	Neljhar (Bade Rajpur)
3	Vaidyaraj Ram Prasad Nishad	41	Pharasgaon
4	Vaidyaraj Jainath Markam	26	Bade Donger (Makdi)



**Fig. 1.** Map of study site (Retrieved from Google map on 5/07/2019).

## 3. Results and discussion

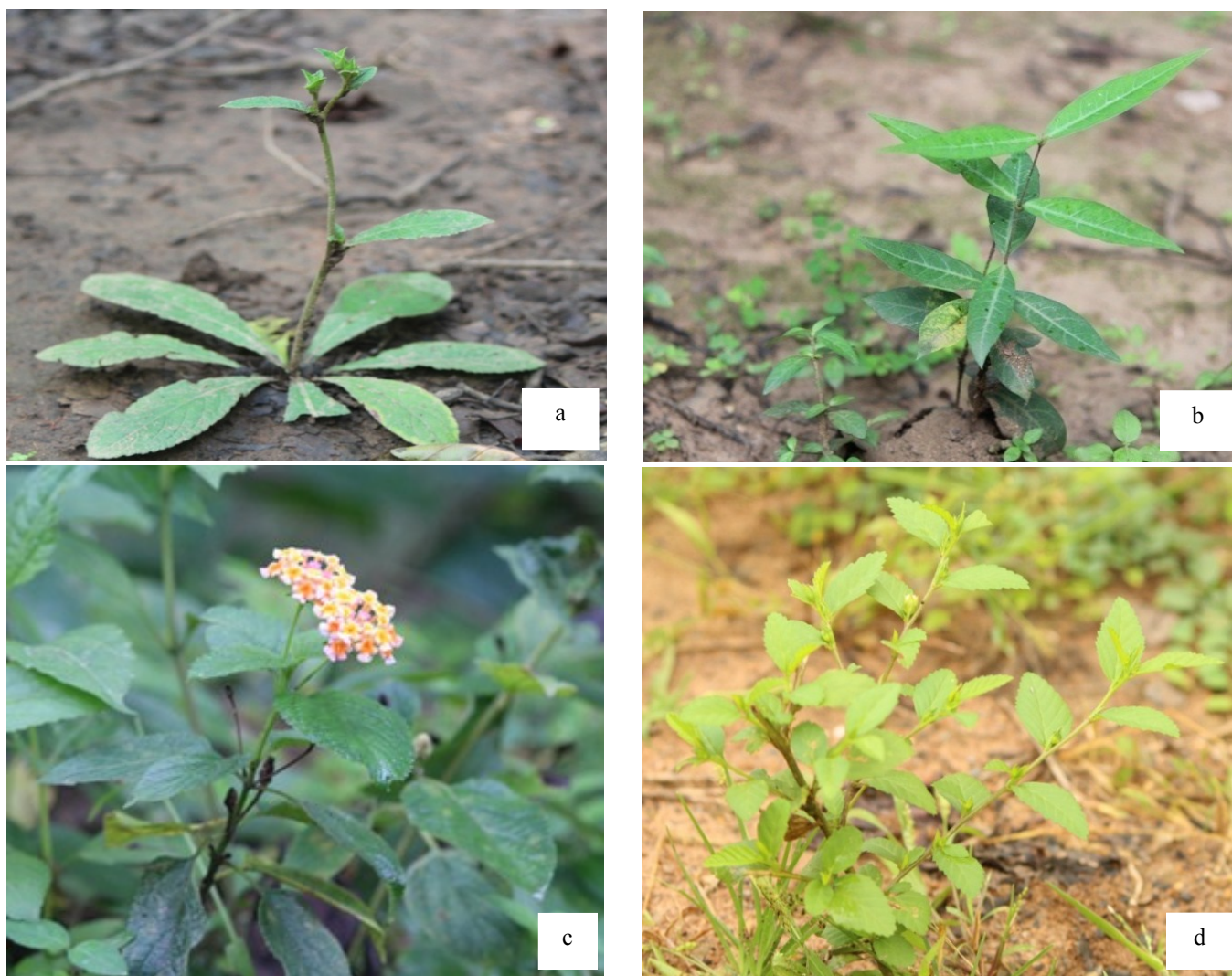
Total plants from Keshkal forest was 49, of 30 families have the tremendous use for the treatment of human diseases (Table 2).

Table 2. Ethnobotanical data of Keshkal forest division of Kondagaon district

Sl.No.	Family	Local Name	Scientific Name	Plant part used	Disease treatment
1	Acanthaceae	<i>Kalmegh,</i> <i>Bhui Neem</i>	<i>Andrographis paniculata</i> (Burm.f.) Nees	<i>Panchang</i> (Leaf, Root, Flower, Seed and Stem)	Fever, diabetes
2	Amaryllidaceae.	<i>Sudarshan</i>	<i>Crinum asiaticum</i> L.	Leaf	Malaria
3	Anacardiaceae	<i>Chironji</i>	<i>Buchanania lanzan</i> Spreng.	Root	(Dhatwardhak Sperm enhancer)
4	Apocynaceae	<i>Anantmool</i>	<i>Hemidesmus indicus</i> (L.) R. Br. ex Schult. (Fig.2.b)	Seed endosperm	Weight gain
5	Apocynaceae	<i>Koria</i>	<i>Holarrhena antidysenterica</i> (L.) Wall. ex A. DC.	Root	Snake bite, Blood purifier, Breast milk enhancer, Syphilis.
6	Apocynaceae	<i>Anantmool Type II</i>	<i>Hemidesmus indicus</i> (L.) R. Br.	Root	Diabetes
7	Asclipiadaceae	<i>Aank</i>	<i>Calotropis procera</i> (Aiton) Dryand.	Root	Breathing disorder
8	Asparagaceae	<i>Shatawar</i>	<i>Asparagus recimosus</i> Willd.	Fruit	Ankh aana (Eye discharge)
9	Asteraceae	<i>Ajgandha</i>	<i>Ageratum conyzoides</i> (L.) L.	Root	Milk formation in breast
10	Asteraceae	<i>Rasna Jadi</i>	<i>Blepharispermum subsessile</i> DC.	Inflorescence	Wounds
11	Asteraceae	<i>Bhrigraj species</i>	<i>Eclipta alba</i> var. <i>alba</i>	Root	Body fitness
12	Asteraceae	<i>Mayurshikha</i>	<i>Elephantopus scaber</i> L. (Fig.2a)	Leaf	Hair shining, Eye problem
13	Asteraceae	<i>Akar-kara</i>	<i>Anacyclus pyrethrum</i> (L.) Lag.	Root	Insecticide in cattle
14	Caesalpinaceae	<i>Amaltash</i>	<i>Cassia fistula</i> L.	Root and Inflorescence	Toothache
15	Caesalpinaceae	<i>Mahul</i>	<i>Bauhinia vahlii</i> Wight & Arn.	Root	Paralysis
				Leaf Root	Purgative Diabetes

16	Caesalpiniaceae	Charota Bhaji	<i>Cassia tora</i> L.		Leaf, Fruit, Whole plant parts	Skin disease			
	Celastraceae	Malkangni	<i>Celastrus paniculatus</i> Willd.		Seed	Infertility, Absent minded persons			
17	Celastraceae,	Peng	<i>Celastrus paniculatus</i> Willd.		Seed	Ache relief			
18	Combretaceae	Harra, Harrad	<i>Terminalia chebula</i> Retz.		Fruit	As antibiotic, in every disease, Health enhancer			
19	Dioscoreaceae	Karu kanda	<i>Dioscorea hispida</i> Dennst.		Rhizome	Body fitness			
20	Dioscoreaceae	Karuakanda	<i>Dioscorea bulbifera</i> L.		Rhizome	Kidney stone			
21	Dipterocarpaceae	Salai, Saal	<i>Shorea robusta</i> Gaertn.		Bark	Asthma in Cattle			
22	Ebenaceae	Tendu	<i>Diospyros melanoxylon</i> , Roxb.		Bark	White and red discharge in woman			
23	Euphorbiaceae	Dudhi	<i>Euphorbia hirta</i> L.		Leaf	Loose motion			
24	Euphorbiaceae	Jatropha	<i>Jatropha curcas</i> L.		Root	Itching			
25	Fabaceae	Kachnar	<i>Bauhinia variegata</i> L.		Bark	Cancer (1 <sup>st</sup> & 2 <sup>nd</sup> stage)			
26	Fabaceae	Saalparni	<i>Desmodium gangeticum</i> (L.) DC.		Root	Tonsils			
27	Fabaceae	Lajwanti	<i>Mimosa pudica</i> L.		Root	Pneumonia, Cough			
28	Fabaceae	Patal Kumhda (Bedarikand)	<i>Pueraria tuberosa</i> (Willd.) DC.		Root	To neutralize sex desire			
29	Fabaceae	Wajradanti (Sarphonka) Sarp phoonka	<i>Tephrosia purpurea</i> (L.) Pers..		Tuber	Energy tonic			
30	Fabaceae	Vajradanti	<i>Tephrosia purpurea</i> (L.) Pers.		Whole plant	Pleaha			
					Root	Kidney stone			
					Root	Snake bite (Karait)			

31	Hypoxidaceae	<i>Kali musli</i>	<i>Curculigo orchiooides</i> Gaertn.	Root	Energy tonic, Sperm enhancer
32	Lecythidaceae	<i>Kumbhi</i>	<i>Careya arborea</i> Roxb.	Leaf	Bird flue
33	Liliaceae	<i>Shatavari</i>	<i>Asparagus</i> <i>racemosus</i> Willd.	Bark	Fatness, cut and burns
34	Lythraceae	<i>Senha</i>	<i>Lagerstroemia</i> <i>parviflora</i> Roxb.	Root	Body fitness
35	Malvaceae	<i>Jangli Bhindi</i>	<i>Abelmoschus manihot</i> (L.) Medik.	Fruit	Pain
36	Malvaceae	<i>Kamraj</i>	<i>Byttneria herbacea</i> Roxb.	Root	Pelia
37	Malvaceae	<i>Atibalaa</i>	<i>Sida acuta</i> Burm.f.	Root	Energy tonic
38	Malvaceae	<i>Mahabalaa</i>	<i>Sida cordifolia</i> L.	Leaf	Boils
39	Malvaceae	<i>Balaa</i>	<i>Sida rhombifolia</i> L. (Fig.2.d)	Leaf	Boils
40	Moraceae	<i>Bargad</i>	<i>Ficus benghalensis</i> L.	Latex	Energy tonic
41	Oleaceae	<i>Hadsingar</i>	<i>Nyctanthes arbor-tristis</i> L.	Root	Bawasir Hemorroides
42	Orchidaceae	<i>Rasna banda,</i> <i>Bandargodi,</i> <i>Kamagodi</i> <i>Gavagodi</i>	<i>Rhynchosytilis retusa</i> (L.) Blume	Leaf	Earache, Paralysis Health tonic
43	Phyllanthaceae	<i>Aamla</i>	<i>Phyllanthus emblica</i> L.	Leaf and Root	Dysentery Earache Paralysis, pain, broken bones
44	Primulaceae	<i>Dulli Baybidang</i>	<i>Embelia ribes</i> Burm. f.	Fruit	Eye problem
45	Pteridaceae	<i>Bhusri ronda</i>	<i>Adiantum</i> sp.	Leaves	Stomach ache, pain relief, vermicide
46	Rubiaceae	<i>Manhar</i>	<i>Randia dumetorum</i> (Retz.) Lam.	Fruit	Wounds
47	Selaginellaceae	<i>Bhui kharounda</i>	<i>Selaginella lepidophylla</i> (Hook. & Grev.) Spring	Leaves	Bodypain, Infertility in women
48	Smilacaceae	<i>Ram datum</i>	<i>Smilax zeylanica</i> L.	Root	Ulcers
49	Sterculiaceae	<i>Jarka</i>	<i>Pterospermum acerifolium</i> (L.) Willd.	Root	Dhat broken bones
50	Verbenaceae	<i>Lantana</i>	<i>Lantana camera</i> L. (Fig.2. c)	Whole plant	Cold, Viral fever



**Fig. 2.** Digital herbarium of some documented Medicinal plants of Keshkal: a. *Elephantopus scaber* L.; b. *Hemidesmus indicus* (L.) R. Br.; c. *Lantana camera* L.; d. *Sida rhombifolia* L.

Totally, 31 plant families were documented in which family Fabaceae (Fig.3) mostly used in traditional healing followed by Asteraceae and Malvaceae.

Traditional healers don't uproot the plants, they utilize the plants sustainable and harvest the desired plant part and leave the plant in their wild locality for further regrowth and use. In the study it was observed that the use of root and leaf is the major part of traditional healing (Fig.5).

Documentation of traditional plants in Bastar area is done since long (Chandra U,1991), and the study of ethnobotanical uses of medicinal plants in this part of Chhattisgarh is a subject of curiosity of scientific community (Rai and Nath, 2005; Sahu, *et al.* 2014; Sinha *et al.* 2016). But present study is not only documentation, but also an attempt to give priority to traditional healers and the data was recorded accordingly on the spot. The area of study was almost untouched by scientific community since long time and

the effort was done to promote the traditional healers and their tireless effort in this area.

*Elephantopus scaber* L. is previously reported as antiasthmatic (Sagar and Sahoo, 2012), antibacterial (Anitha *et al.*, 2012), wound healing properties (Singh *et al.*, 2005), and presently it has been documented as wound healing in cattle which also supports previous studies. We also want to give emphasis on its vernacular name i.e. Mayurshikha, which was mainly known for the plant *Adiantum flabellulatum* L. (Shahriar and Kabir 2011).

Many vernacular names were studied has been obtained as *Bhui Neem*, *Sudarshan*, *Chironji*, *Koria*, *Rasna Jadi*, *Mayurshikha*, *Mahul*, *Charota Bhaji*, *Malkangni*, *Peng*, *Karu kanda*, *Karuakanda*, *Salai*, *Saalparni*, *Patal Kumhda*, (*Bedarikand*) *Sarp phoonka*, *Kali musli*, *Kumbhi*, *Senha*, *Jangli Bhindi*, *Kamraj*, *Atibalaa*, *Mahabalaa*, *Balaa*, *Hadsingar*, *Rasna*, *banda*, *Bandargodi*, *Kamagodi*, *Gavagodi*, *Dulli*

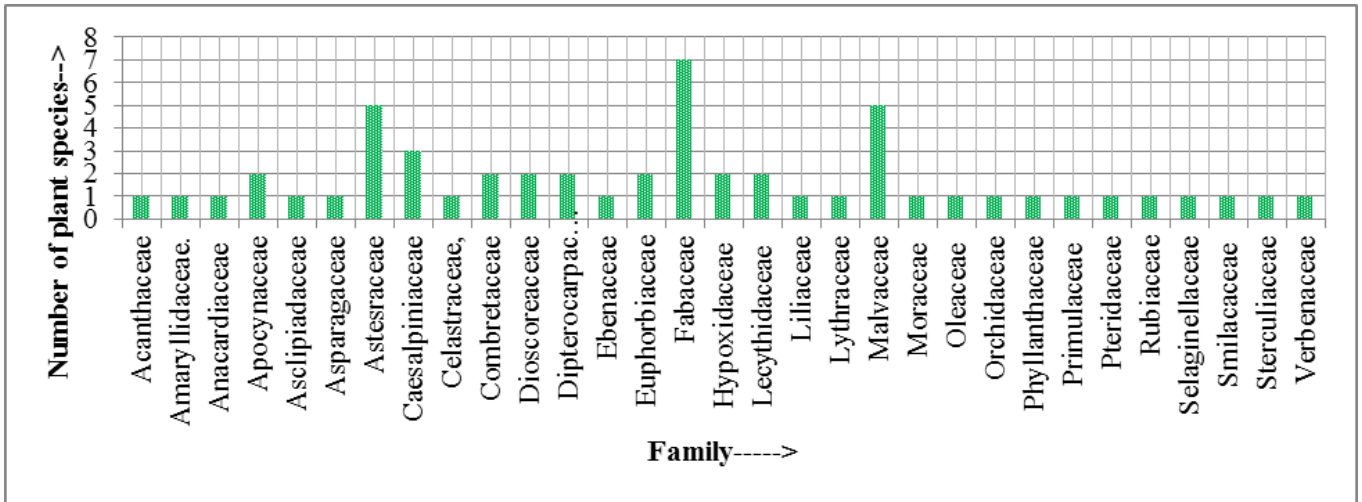


Fig. 3. Bar graph showing the data of plants and their family used for the treatment of different human diseases by the traditional healer of Keshkal

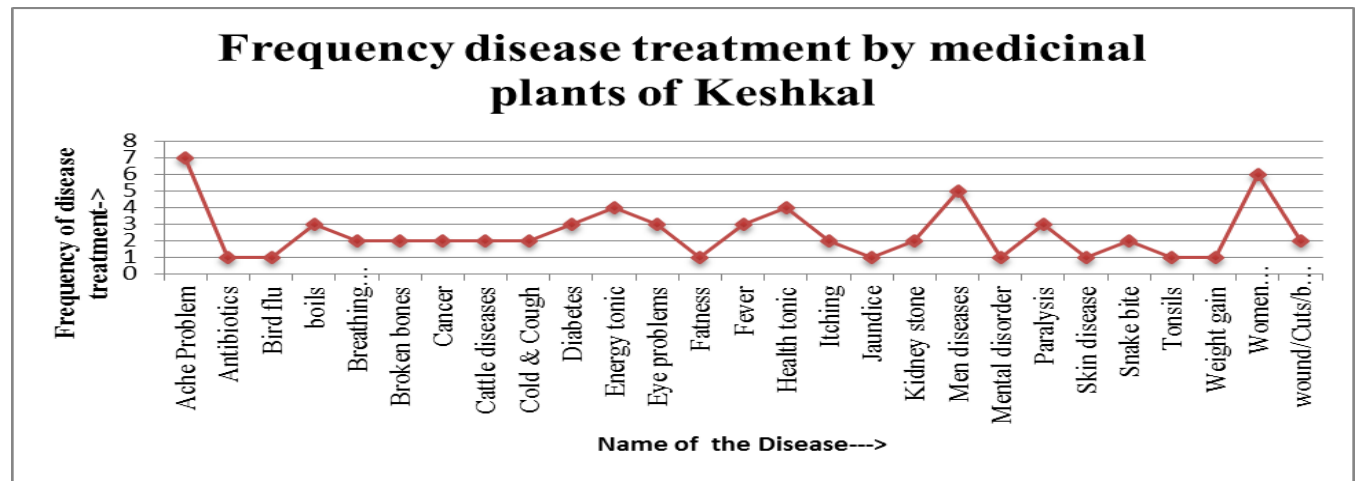


Fig. 4. A line graph showing the frequency of disease treatment by using medicinal plants of Keshkal.

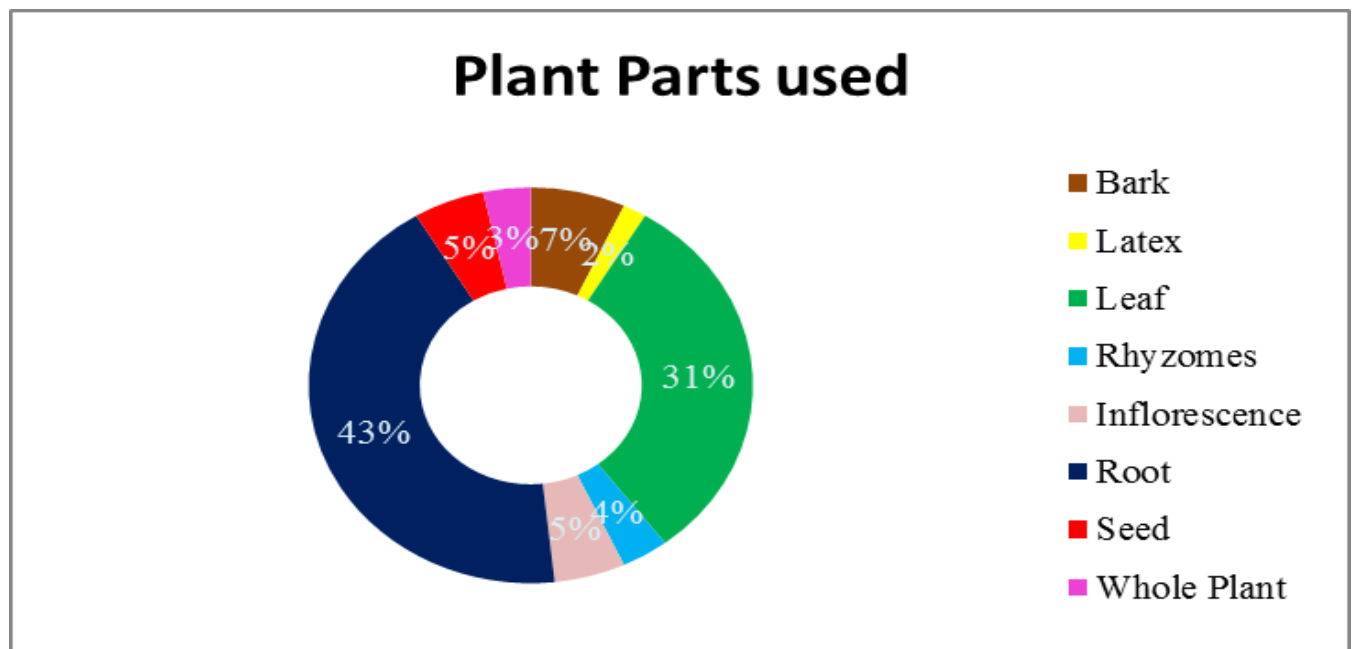


Fig.5. Doughnut graph showing the percentage value of plant part used for the treatment of human diseases by traditional healers.

*Baybidang, Bhusri ronda, Manhar, Bhui kharounda, Ram datum, Jarka*, which will be helpful for future researchers in Chhattisgarh.

Root and leaf are widely used by traditional healers 43% and 31% accordingly, which was reported during the study, which is a supportive statement for other medicinal plant studies (Minu *et al.*, 2012; Sahu *et al.*, 2014; Painkra *et al.*, 2015).

#### 4. Conclusion

Keshkal forest division of Kondagaon district is a less explored region of Chhattisgarh in which medicinal plant diversity is abundant and they are being utilized by traditional healers sustainably. But apart of medicinal uses, they are illegally being utilized by villagers. Because this valley region is currently developing, so the diversity is also affected by construction of buildings and roads. However present documentation is based on primary data obtained by the extensive field survey with certified traditional healers present in the locality. Due to their own methodology and secrecy, the method of herbal formulation is not presented to the paper. The diseases treated by traditional healers were documented to assess the plant importance to that area and found many medicinal plants are being used to treat human and cattle diseases including, Bird flu, Cancer, Paralysis, etc.

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