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Ethnomedicinal plants and its Use in Mainpur block of Gariaband district in Chhattisgarh, India

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Abstract
Mainpur block in the Gariaband district of Chhattisgarh state in India is a tribal block with 51.74% population of schedule tribes. The major tribal community lives in the area are Gond, Kamar, Bhunjiya and Halba. The famous Udanti Wildlife sanctuary is also located in the Mainpur block. A total area of 1547.93 sq. km is covered with dense forest. The type of forest found in the area is tropical deciduous forest. Tribals are dependent on forest for their livelihood as well as health security. The Baidyas, Sirhas and the medicine man are found treating various ailments of tribals. The knowledge of these Ethnomedicine in use of treating various diseases required proper documentation. In present investigation an attempt has been made to document the ancient knowledge of tribals. A total of 70 ethnomedicinal plants belonged to 42 families were documented for their Ethnomedicinal uses to treat 40 human diseases prevalent in the Mainpur area. The maximum number of medicinal plants were found to belong the Family Fabaceae and majority of the plants were of Tree habit. The largely used method of drug preparation was found to be Decoction and powder and the most used plant part as a medicine was noted to be the stem and stem bark. The documentation of ethnomedicinal plant used in Mainpur block is an essential work in order to conserve our ancient knowledge.

Keywords: tribe, mainpur, ethnomedicine, health security

Introduction
The state of Chhattisgarh is classified as a part of the Deccan biogeographical area covers 44.21% forest, having an important biological diversity, rich in flora. The state has a large number of natural resources and endemic plants having medicinal properties. Gariaband district is a forest area consists of 50.41% forest. The total land area of the Gariaband district is 5822.94 sq. km. has forest in 2935.8 sq. km. area. The forests of the Gariaband district are a tropical deciduous forest classified into Teak forest (0.37%), Saal forest (22.66%), and mixed forest (54.51%). The district is situated in the southeast of the Chhattisgarh state.

Mainpur forests have rich diversity of medicinal plants. The tribes of the region were found to use plants as medicine to treat various diseases since long ago and are still dependent on plants for primary health security. As this knowledge of plant use is precious for mankind hence, before losing this valuable heritage of knowledge, it is required instant attention for its documentation. Chhattisgarh state, with a rich traditional knowledge of medicinal plants, many species of plants is used as a source of herbal medicines which also has a vast diversity of floral and faunal species (Patel, 2012) [1]. Forests and their goods have played an important role in the everyday lives of the locals since ancient times. The forest provides essential drugs and medicines for treatment of various diseases, in addition to fulfilling human beings basic needs of food, shelter, and clothes (Bargali and Shrivastav, 2002) [2]. India is a world's botanical garden and a great source of well-documented and traditionally used herbal medicine knowledge (Savithramma *et al*, 2016) [3]. People have established their conventional methods of disease diagnosis and treatment by trial and error, and this record from the nearby forest fulfills their basic requirement. It has become an important way of accumulating rich information on medicinal plants and the use of other natural resources as a result of this long experience and practice (Sharma, 2010) [4]. People living in rural areas have more practices for using and sustaining plants for various economic values. Tribal uses both cultivated and wild plant species in their daily lives, according to their knowledge and needs, and contribute to plant conservation (Patel, 2014) [5]. India is a habitat for medicinal and aromatic plants, with a wide range of species. Herbal medicines are in high demand around the world due to their low side effects and high promise (Naidu *et al*, 2014) [6]. Natural resources are threatened by this increase in demand. The amount of knowledge about medicinal plants is vast, but if it is not quickly gathered and preserved, it is likely to be lost to future generations (Maroyi, 2011) [7]. In light of the above knowledge, the present work of documentation of such indigenous knowledge was done to conserve it for many future generations.

Study Area
The present study was conducted in the Mainpur block of Gariaband district in the state of Chhattisgarh located between 20°57' N to 20°17'N latitude and 82°53' to 81°53'E longitude. 50.41% area of Gariaband district is covered by forest. Out of the five blocks of the district, Mainpur is the largest block selected for the study. Mainpur forests cover a total of 1547.93 Sq. Km. including 983.94 Sq. Km. of Udanti forest. 10 of the villages in study area were selected for the study.

Materials and Methods
An ethnobotanical survey was carried out in 10 densely populated tribal villages of Mainpur block. In each village, 50 locals including Traditional healers, Sirha, and Baigas of different age bracket were chosen as informants. Traditional medicinal uses, procedures of drug preparation and

administration were recorded through organizing personal interview with Baiga, Sirha, and traditional healer and group discussion with informants at a working site. Ethnobotanical data was also collected by using the Proforma developed by Jain (1987, 1988) [8, 9] and Masih (1990) [10].The vernacular name, a habit of the plant, and plant parts used in drug preparation for disease treatment were documented. Informants were asked to name the plant and describe how the various plants are used to treat any kind of disease. During the survey, plants were photographed and rare plants were collected for herbarium preparation.

Results and Discussion

A total of 70 plant species belonged to 64 genera and 42 families were recorded during the present study. 13 monocot plant species belonging to 9 families and 57 dicot plant species belonging to 32 families were noted. All the 70 plant species were found to be used by locals and traditional healers to treat 40 diseases, including three veterinary diseases [Table 1]. Highest (10) number of plants species were found to be used for birth control followed by (9) for after delivery, (7) for gonorrhea, muscles pain and fever, (6) for diarrhea and piles, (4) for cough, indigestion and jaundice, (3) for asthma, itching, small pox and stomachache, (2) for amoebic dysentery, blood purification, cold, heat stroke, malaria, pneumonia and typhoid, only one plant species is used for each of the following diseases like animal's wound, blood in stool, cuts and wound, dandruff, earache, epilepsy, fire burn, gastric, hemorrhagic septicemia, irregular menses, leucorrhea, removing thorn, snake bite, sore throat, stomachache (cattle), toothache, toothache (cattle), vitiligo and, vomiting and diarrhea, and wound (cattle). The highest number of plants (12) belonged to the family Fabaceae, similar results were obtained in some others studies conducted by Singh *et al*, (2013); Sivasankari *et al*, (2014) [11][12] followed by Cucurbitaceae (4), 3 species each was belonged to the families like Anacardiaceae , Poaceae , Rutaceae and 2 species each was belonged to families like Amaranthaceae, Arecaceae, Combretaceae, Lamiaceae, Meliaceae, Moraceae, Phyllanthaceae, and Zingiberaceae, 01 species each was recorded belonged to the families like Acanthaceae, Apiaceae, Apocynaceae, Araceae, Asparagaceae, Asphodelaceae, Burseraceae, Calophyllaceae, Celastraceae, Costaceae, Cyperaceae, Dipterocarpaceae, Euphorbiaceae, Lecythidaceae, Loranthaceae, Lythraceae, Malvaceae, Menispermaceae, Moringaceae, Musaceae, Myrtaceae, Piperaceae, Rubiaceae, Sapindaceae, Sapotaceae, Simaroubaceae, Smilacaceae, Solanaceae and Vitaceae. The habit of majority of the plants was noted as Trees (42%) , similar results were noted by other workers from the state *viz*. Naidu *et al*, (2014); Ahirwar, (2015); Kaushik and Dixit, (2020); [6, 3, 14] , in country by Ji *et al*, (2007); Reddy *et al*, (2019) [15][16] and in world by Kadir *et al*, (2012) [17]. In rest of the plants the herbs were (33%), shrub (13%), climber (4%), liana (4%), scandent shrub (3%) and twiner (1%) recorded in the present study [Figure 2]. Stem and stem bark (23%) was noted to be the most common plant part used as Ethnomedicine followed by root and root bark (17%), fruit (17%), seed (15%), leaves (12%), rhizome (7%), flower (4%), whole plant (4%), and gum (1%) [Figure 1]. Decoction (34%) was found to be the most important mode of preparing medicines, similar results were obtained by Kadir *et al*, 2012 [17] followed by other mode of medicine preparation recorded were powder (27%), juice (8%), oil (7%), paste (6%), direct chewable (5%), crushed (5%), syrup (4%), boiled (2%), infusion (1%), and direct apply (1%) [Figure 3].

Conclusion

The ethnomedicinal plants and traditional knowledge are vanishing, hence required to be conserved by documentation. The traditional knowledge is transferred orally from generation to generation, so documentation is instantly essential to conserve. Tribal areas have not enough source and facilities for health care but now Mitanins at every village serve primary essential medicines for common diseases like cough, cold, fever, muscles pain, and diarrhea, but for major diseases and disorders tribals are still dependent on their traditional medicines obtained from the forest and it also provides socioeconomic and livelihood security to tribals, therefore an attempt has been made to conserve the knowledge by documentation.

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Table 1: Ethnomedicinal plants of Mainpur block of Gariaband district, Chhattisgarh, investigated during the year 2021.

S.N.	Treated ailment	Botanical name of the plant	Vernacular name	Family	Habit	Plant part used	Mode of preparation
1.	Amoebic dysentery	*Ougeinia oojeinensis* (Roxb.) Hochr.	Timsa	Fabaceae	Tree	Stem bark	Powder
		Setaria verticillata (L.) P. Beauv.	Jogi lati	Poaceae	Herb	Seed	Direct chewable
2.	After delivery	*Andrographis paniculata* (Burm.f.) Nees	Bhuineem	Acanthaceae	Herb	Whole plant	Decoction
		Asparagus racemosus Willd.	Dashmool	Asparagaceae	Shrub	Rhizome	Decoction
		Bombax ceiba L.	Semal	Malvaceae	Tree	Stem bark	Decoction
		Chrysopogon zizanioides (L.) Roberty	Urai	Poaceae	Herb	Root	Decoction
		Hellenia speciosa (J.Konig) S.R.Dutta	Keu	Costaceae	Herb	Rhizome	Decoction
		Macrotyloma uniflorum (Lam.) Verdc.	Kulthi	Fabaceae	Herb	Seed	Decoction
		Madhuca longifolia (J. Koenig ex L.) J.F.Macbr.	Mahua	Sapotaceae	Tree	Stem bark	Decoction
		Moringa oleifera Lam.	Munga	Moringaceae	Tree	Stem bark	Decoction
		Phoenix acaulis Roxb.	Chhind	Arecaceae	Shrub	Root	Decoction

3.	Asthma	*Piper nigrum* L.	Kalimirch	Piperaceae	Climber	Fruit	Powder
		Trachyspermum ammi (L.) Sprague	Ajvayan	Apiaceae	Herb	Seed	Powder
		Zingiber officinale Roscoe	Adarak	Zingiberaceae	Herb	Rhizome	Crushed
4.	Birth control	*Datura metel* L.	Kala dhatura	Solanaceae	Herb	Flower	Crushed
		Diplocyclos palmatus (L.) C. Jeffrey	Shivlingi	Cucurbitaceae	Herb	Seed	Powder
		Ficus benghalensis L.	Bargad	Moraceae	Tree	Root	Powder
		Ficus religiosa L.	Peepal	Moraceae	Tree	Root	Powder
		Leea macrophylla Roxb. ex Hornem.	Hathikand	Vitaceae	Shrub	Fruit	Powder
		Melia azedarach L.	Bakayan	Meliaceae	Tree	Fruit	Powder
		Mesua ferrea L.	Naagkeshar	Calophyllaceae	Tree	Fruit	Powder
		Musa paradisiacal Linn.	Kela	Musaceae	Shrub	Flower	Powder
		Piper nigrum L.	Kalimirch	Piperaceae	Climber	Fruit	Powder
		Woodfordia fruticosa (L.) Kurz	Dhawai	Lythraceae	Shrub	Flower	Powder
5.	Blood in stool	*Bauhinia racemosa* Lam.	Raini	Fabaceae	Tree	Stem bark	Juice
6.	Blood purification	*Chrysopogon zizanioides* (L.) Roberty	Urai	Poaceae	Herb	Root	Decoction
		Cocos nucifera L.	Nariyal	Arecaceae	Tree	Fruit	Decoction
7.	Cold	*Ocimum tenuiflorum* L.	Tulsi	Lamiaceae	Herb	Leaves	Decoction
		Moringa oleifera Lam.	Munga	Moringaceae	Tree	Leaves	Boiled
8.	Cough	*Cocos nucifera* L.	Nariyal	Arecaceae	Tree	Fruit	Crushed
		Ocimum tenuiflorum L.	Tulsi	Lamiaceae	Herb	Leaves	Decoction
		Terminalia bellirica (Gaertn.) Roxb.	Baheda	Combretaceae	Tree	Seed	Decoction
		Terminalia Chebula Retz.	Harra	Combretaceae	Tree	Fruit	Direct chewable
9.	Cuts and Wound	*Lannea coromandelica* (Houtt.) Merr.	Modga	Anacardiaceae	Tree	Stem bark	Direct apply
10.	Dandruff	*Aloe era* (L.) Burm.f.	Alovera	Asphodelaceae	Herb	Stem	Juice
11.	Diarrhea	*Bauhinia racemosa* Lam.	Raini	Fabaceae	Tree	Stem bark	Powder
		Dendrocalamus strictus (Roxb.) Nees	Bans	Poaceae	Shrub	Leaves	Juice
		Ougeinia oojeinensis (Roxb.) Hochr.	Timsa	Fabaceae	Tree	Stem bark	Crushed
		Psidum guajava L.	Jam	Myrtaceae	Tree	Leaves	Juice
		Shorea robusta C.F.Gaertn.	Sal	Dipterocarpaceae	Tree	Seed	Boiled, Powder
		Terminalia Chebula Retz.	Harra	Combretaceae	Tree	Fruit	Paste
12.	Earache	*Coccinia grandis* (L.) Voigt	Kundaru	Cucurbitaceae	Climber	Leaves	Juice
13.	Epilepsy	*Achyranthes aspera* L.	Chirchiti	Amaranthaceae	Herb	Root	Powder
14.	Fever	*Andrographis paniculata* (Burm.f.) Nees	Bhuineem	Acanthaceae	Herb	Whole plant	Decoction, Syrup
		Cyperus rotundus L.	Nagarmotha	Cyperaceae	Herb	Root	Decoction
		Ficus religiosa L.	Peepal	Moraceae	Tree	Stem bark	Decoction
		Madhuca longifolia (J.Koenig ex L.) J.F.Macbr.	Mahua	Sapotaceae	Tree	Seed	Oil
		Azadirachta indica A.Juss.	Neem	Meliaceae	Tree	Stem bark	Decoction
		Ocimum tenuiflorum L.	Tulsi	Lamiaceae	Herb	Root	Decoction
		Tinospora cordifolia (Willd.) Hook.f. & Thomson	Giloy	Menispermaceae	Twiner	Stem	Decoction
15.	Fire burn	*Lablab purpureus* (L.) Sweet	Semi	Fabaceae	Herb	Leaves	Paste
16.	Gastric	*Rauvolfia serpentina* (L.)Benth. ex Kurz	Bhuikurva	Apocynaceae	Herb	Root	Powder
17.	Gonorrhea	*Careya arborea* Roxb.	Kumhi	Lecythidaceae	Tree	Stem bark	Decoction
		Cicer arietinum L.	Chana	Fabaceae	Herb	Seed	Paste
		Ouret lanata (L.) Kuntze	Polpala	Amaranthaceae	Herb	Stem, leaves and flower	Decoction
		Senegalia pennata (L.)Maslin	Safed chil	Fabaceae	Scandent shrub	Root bark	Juice
		Senegalia torta (Roxb.) Maslin, Seigler & Ebinger	Lal chil	Fabaceae	Scandent shrub	Root bark	Juice, Decoction
		Smilax perfoliata Lour.	Ramdatun	Smilacaceae	Liana	Root	Decoction
		Woodfordia fruticosa (L.) Kurz	Dhawai	Lythraceae	Shrub	Root, Flower	Decoction
18.	Heat stroke	*Erythrina suberosa* Roxb.	Gindhol	Fabaceae	Tree	Gum	Syrup
		Mesosphaerum suaveolens (L.) Kuntze	Ban tulsi	Lamiaceae	Herb	Seed	Infusion
19.	Hemorrhagic Septicemia	*Benincasa hispida* (Thunb.) Cogn.	Rakhiya	Cucurbitaceae	Herb	Fruit	Juice
20.	Indigestion	*Ficus religiosa* L.	Peepal	Moraceae	Tree	Fruit	Powder
		Phyllanthus emblica L.	Aaonwla	Phyllanthaceae	Tree	Fruit	Powder

		Rauvolfia serpentina (L.) Benth. ex Kurz	Bhuikurva, Sarpgandha	Apocynaceae	Herb	Root	Powder
		Zingiber officinale Roscoe	Adarak	Zingiberaceae	Herb	Rhizome	Powder
21.	Irregular menses	*Senna occidentalis* (L.) Link	Sona patti (Sona mukkhi)	Fabaceae	Herb	Leaves	Decoction
22.	Itching	*Azadirachta indica* A. Juss.	Neem	Meliaceae	Tree	Seed	Oil
		Pongamia pinnata (L.) Pierre	karanj	Fabaceae	Tree	Seed	Oil
		Schleichera oleosa (Lour.) Oken	Kusum	Sapindaceae	Tree	Seed	Oil
23.	Jaundice	*Ficus religiosa* L.	Peepal	Moraceae	Tree	Fruit, Stem bark	Powder
		Phyllanthus emblica L.	Aaonwla	Phyllanthaceae	Tree	Fruit	Powder
		Piper nigrum L.	Kalimirch	Piperaceae	Climber	Fruit	Powder
		Zingiber officinale Roscoe	Adarak	Zingiberaceae	Herb	Rhizome	Powder
24.	Leucorrhea	*Tinospora cordifolia* (Willd.) Hook.f. & Thomson	Giloy	Menispermaceae	Twiner	Stem	Decoction
25.	Malaria	*Andrographis paniculata* (Burm.f.) Nees	Bhuineem	Acanthaceae	Herb	Whole plant	Decoction
		Rauvolfia serpentina (L.) Benth. ex Kurz	Bhuikurva	Apocynaceae	Herb	Root	Powder
26.	Muscles pain	*Boswellia serrata* Roxb.	Saliha	Burseraceae	Tree	Stem bark	Decoction
		Chrysopogon zizanioides (L.) Roberty	Urai	Poaceae	Herb	Root	Decoction
		Cleistanthus collinus (Roxb.) Benth. ex Hook.f.	Karra	Phyllanthaceae	Tree	Stem bark	Decoction
		Cocos nucifera L.	Nariyal	Arecaceae	Tree	Fruit	Decoction
		Moringa oleifera Lam.	Munga	Moringaceae	Tree	Stem bark	Decoction
		Phyllanthus emblica L.	Aaonwla	Phyllanthaceae	Tree	Stem bark	Decoction
		Schleichera oleosa (Lour.) Oken	Kusum / Lakh	Sapindaceae	Tree	Stem bark, Seed	Decoction, Oil
27.	Piles	*Ailanthus excela* Roxb.	Mahaneem	Simaroubaceae	Tree	Stem bark	Decoction
		Amorphophallus paeoniifolius (Dennst.) Nicolson	Suran (Jimikand)	Araceae	Herb	Rhizome	Powder
		Ougeinia oojeinensis (Roxb.) Hochr.	Timsa	Fabaceae	Tree	Stem bark	Decoction
		Piper nigrum L.	Kalimirch	Piperaceae	Climber	Fruit	Powder
		Ricinus communis L.	Arandi	Euphorbiaceae	Shrub	Seed	Oil
		Zingiber officinale Roscoe	Adarak	Zingiberaceae	Herb	Rhizome	Powder
28.	Pneumonia	*Citrullus colocynthis* (L.) Schrad.	Indrayan	Cucurbitaceae	Climber	Seed	Powder
		Semecarpus anacardium L.f.	Bhelwa	Anacardiaceae	Tree	Seed	Oil
29.	Removing thorn	*Semecarpus anacardium* L.f.	Bhelwa	Anacardiaceae	Tree	Seed	Oil
30.	Small pox	*Azadirachta indica* A.Juss.	Neem	Meliaceae	Tree	Leaves	Syrup, Paste
		Citrus limon (L.) Osbeck	Neebu	Rutaceae	Shrub	Fruit	Syrup
		Curcuma longa L.	Haldi	Zingiberaceae	Herb	Rhizome	Syrup, Paste
31.	Snake bite	*Adina cordifolia* (Roxb.) Brandis	Haldu / Kalmi	Rubiaceae	Tree	Leaves	Paste
32.	Sore throat	*Aegle marmelos* (L.) Correa	Bel	Rutaceae	Tree	Leaves	Direct chewable
33.	Stomachache	*Mangifera indica* L.	Aam	Anacardiaceae	Tree	Leaves	Decoction
		Rauvolfia serpentina (L.) Benth. ex Kurz	Bhuikurva	Apocynaceae	Herb	Root	Powder
		Tephrosia purpurea (L.) Pers.	Bajradanti	Fabaceae	Herb	Stem, Root	Direct chewable
34.	Stomachache (Cattle)	*Pueraria tuberose* (Roxb. ex Willd.) DC.	Patalkumhada	Fabaceae	Liana	Fruit	Crushed
35.	Toothache	*Tephrosia purpurea* (L.) Pers.	Bajradanti	Fabaceae	Herb	Root	Direct chewable
36.	Toothache (Cattle)	*Dendrophthoe falcata* (L.f.) Ettingsh.	Madang	Loranthaceae	Shrub	Whole plant	Crushed
37.	Typhoid	*Andrographis paniculata* (Burm.f.) Nees	Bhuineem	Acanthaceae	Herb	Whole plant	Decoction
		Tinospora cordifolia (Willd.) Hook.f. & Thomson	Giloy	Menispermaceae	Twiner	Stem	Direct chewable
38.	Vitiligo	*Celastrus paniculatus* Willd.	Pheng	Celastraceae	Liana	Root	Juice
39.	Vomiting and Diarrhea	*Bauhinia racemosa* Lam.	Raini	Fabaceae	Tree	Stem bark	Powder
40.	Wound (Cattle)	*Chloroxylon swietenia* (Roxb.) DC	Bhirha	Rutaceae	Tree	Leaves	Paste

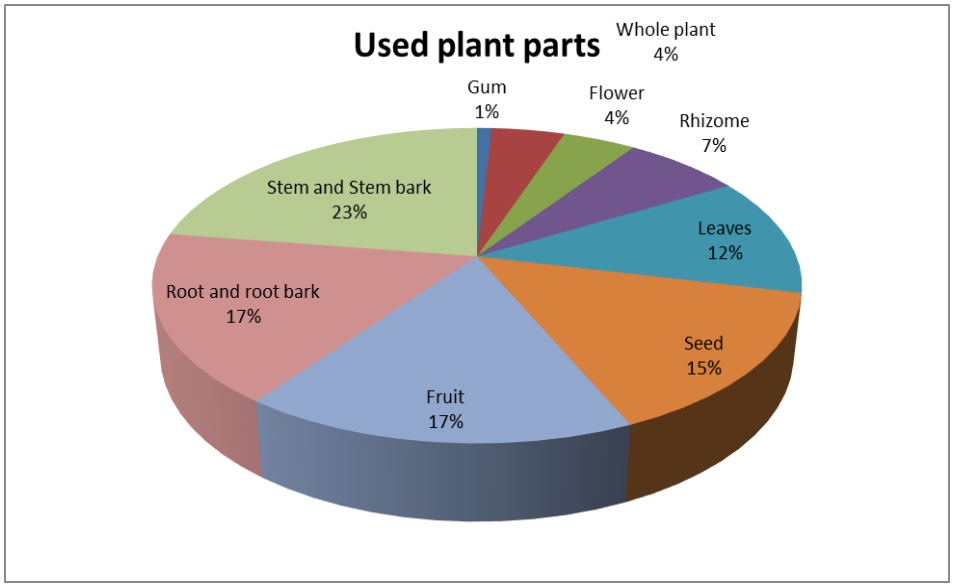

Fig 1: Plant parts used for the preparation of medicine, recorded in Mainpur block of Gariaband district of Chhattisgarh.

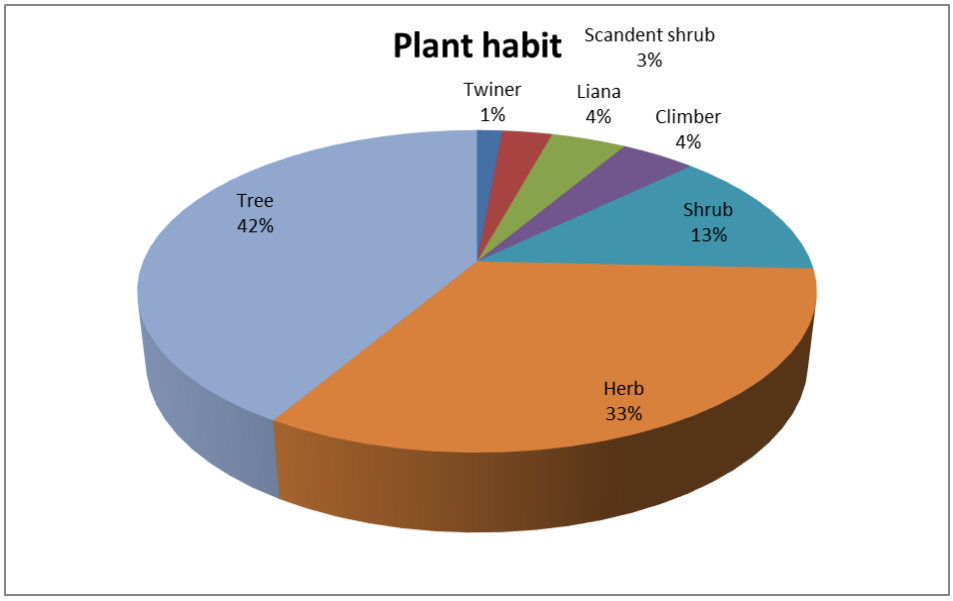

Fig 2: Habit of the medicinal plants recorded in Mainpur block of Gariaband district of Chhattisgarh.

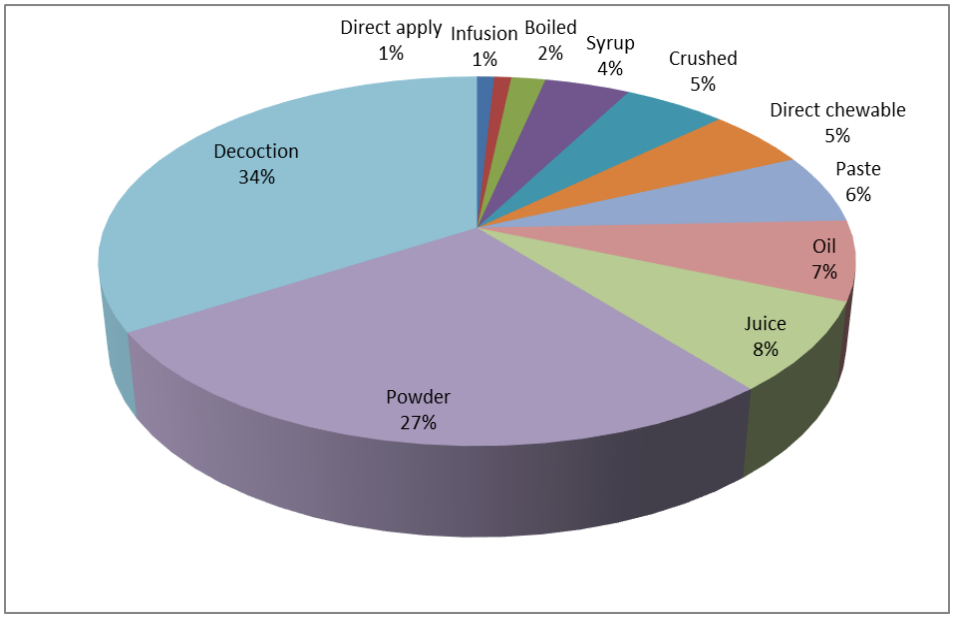

Fig 3: Mode of medicine preparation recorded in Mainpur block of Gariaband district of Chhattisgarh.

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