



# Edible Medicinal Plants from Chhattisgarh (India) and their Economic Significance

# 10

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## Abstract

The utilization of herbal drugs and phytonutrients or nutraceuticals keeps on extending quickly around the globe with many people now depending on these products for the management of different health afflictions in various national healthcare settings. From the past decade, enormous spike in acceptance and people's interest in natural remedies have been observed in both developing and developed countries. Diversity, adaptability, easy accessibility in edible form, low cost, relatively fewer side effects, increasing economic importance, and low levels of technological input are some of the positive features of herbal medicine. It is believed that up to four billion people (accounts for about 80% of the world's population) residing in the developing countries rely on herbal medicines as a primary source of healthcare. In this context, there is a basic need to standard conventional drugs into public healthcare to accomplish the objective of enhanced access to healthcare facilities. India has a distinct status in the world owing to the richness in medicinal plant diversity. About 17,000 species of higher

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plants are identified in India, of which 8000 are considered to have medicinal value. Chhattisgarh state located in East-Central India is considered as “Herbal state” because of its vast diversity of medicinal plant species that are used by its unique tribal population for treating various health ailments since time immemorial. This chapter aims to explore the indigenous knowledge of locally available edible medicinal plants being used by the traditional community of Chhattisgarh state along with their documentation to expand the scope and scientific value of local use of these medicinal plant species.

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**Keywords**

Edible medicinal plants · Chhattisgarh · Herbal state · Economical importance

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## 10.1 Introduction

Nature has been very kind to humanity and offers services for its long-term survival and continuous regeneration. The future of the human race is difficult to foresee if the earth does not have plants. From ancient times, plants have been considered as valuable and esteemed bio-resource that work in manifold ways and are used for food, fuel, and medicinal goals (Dixena and Patel 2019b; Aslam and Ahmad 2016). Plants are actually “natural industries” and act as a source of raw material to perfumery, pharmaceutical, and cosmetics industry without having any harmful impact on the environment (Jain et al. 2006). Before the chemical drug species were introduced to the world, people were dependent on the healing properties of the medicinal plant species (Ahvazi et al. 2012).

Medicinal plants are being used in health care systems since prehistoric times (Samal 2016). According to the World Health Organization (WHO), “a medicinal plant is a plant which in one or more of its organs, contains a substance that can be used for therapeutic purposes, or which are precursors for chemo-pharmaceutical semi-synthesis” (Husain et al. 2008). Owing to their high therapeutic effectiveness, low toxicity, local availability, and economic feasibility, herbal drugs are being explored in recent scientific advancements worldwide. People are globally returning to nature, i.e. shifting from the use of synthetic drugs to the herbal medicines (Shakya 2016; Bandaranayake 2006; Ekor 2014). As per the reports of the world health WHO, almost 8 billion people comprising about 80% of the global population particularly in developing countries largely rely on herbal medicines (Faruque et al. 2018; Ekor 2014; Calixto 2000). Therapeutic medicinal plants are an important part of research advancements in the pharmaceutical industry. This research focuses on identifying, isolating, and using either the active medicinal products directly or to develop semi-synthetic drugs or screening of natural products to obtain synthetically pharmacological active ingredient (Singh 2015; Süntar 2020). The therapeutic effectiveness of the medicinal plants is mainly due to secondary metabolites produced by them, including alkaloids, glycosides, terpenoids, flavonoids, steroids, saponins, tannins, and volatile oils (Dar et al. 2017; Shakya 2016; Larayetan et al.

2019; Seca and Pinto 2019). In present times, the pharmacological efficacy of various medicinal plants is found to be a potential future drug candidate to combat various ailments (Shakya 2016; Pan et al. 2013). Various institutions have followed a “reverse pharmacology” strategy to examine the clinical efficacy or therapeutic effectiveness of medicinal plants and their functional utility in health services (Samal 2016; Atanasov et al. 2015).

Medicinal plants also generate revenue for millions of people around the world (Dar et al. 2018). The global market approaches many billion dollars per year for plant-based pharmaceuticals, flavors, chemicals, coloring components, and fragrances. Global trade in medicinal plants is believed to be around US\$ 800 million per year (Singh 2015).

Nature has blessed an incredible richness of medicinal plants to India and hence it is often referred to as “World’s medicinal garden”(Shakya 2016). Medicinal plants had attained an important place in the spiritual, social, cultural, and health aspects of Indian people living in rural and tribal areas (Gupta and Gupta 2017). India is considered as Asia’s one of the leading nations as far as the indigenous herbal knowledge system is concerned (Malik et al. 2018). India houses several medicinal plant species and is listed in the seventh position among the 17 mega-diversity centers of the world. India has a range of ecosystems including forests, desert, marine, coastal, and wetlands that habitats various plant species which contribute towards the well-being (Singh and Shahi 2017). India has a distinctive status in the world because of its well renowned traditional system of medicine such as Ayurveda, Siddha, homeopathy, and Unani (Shakya 2016; Samal 2016; Mukeshwar et al. 2011). About 95% of the medicinal formulations used in these traditional systems of medicine are plant-based products (Balamurugan et al. 2017; Pandey et al. 2013). There are around 17,000 higher plant species in India of which 8000 are recognized to have medicinal value and are used by the people living in villages and tribal communities (Singh 2015). Over 70% of the Indian population depends on herbal medicines to address health related issues (Samal 2016). In India, there are approximately 550 tribes inhabited with 227 ethnic groups living in 5000 villages within forest areas (Sahu et al. 2014; Pandey et al. 2018). Since times immemorial these tribal people have been practicing the usage of medicinal plants for treating various health ailments. This traditional knowledge of medicinal plants has been disseminated over generations and has contributed greatly to the conservation of biodiversity and its sustainable use. Chhattisgarh state located in East-Central India came into existence on 1 November 2000 after separation from Madhya Pradesh. It is bordered by Uttar Pradesh to the north, Jharkhand to the north-east, Orissa to the west, Andhra Pradesh to the south-east, Maharashtra to the south-west, and Madhya Pradesh to the west and north-west. The state is spread over the area of 192,000 km<sup>2</sup> with 59,772 km<sup>2</sup> under forest coverage. Chhattisgarh has approximately 44% forest cover of its total geographical area which accounts for about 8% of India’s total forest cover. Chhattisgarh is considered as an “Herbal state” because of its rich biodiversity of medicinal plants. The state is also renowned for its distinctive tribal people such as Baiga, Gongs, Sahu, Ahir, Oraon, Kunbi, Gwalas, Kols, Korwa, etc. These indigenous people have the accessibility of plants with medicinal and

nutraceutical advantage and gather the valuable parts of these plants for their service (Gupta and Gupta 2017; Pandey et al. 2018; Patel et al. 2019).

The present book chapter provides a compilation of existing information of various edible medicinal plants used in some selected districts (Durg, Jashpur, Balod, Janjgir-Champa, Korea, Bastar, Bilaspur, Gariaband, Dhamtari, Kabirdham, and Surguja) of Chhattisgarh. We emphasized on the knowledge that researchers can easily access and do not assert to have included all the existing information or claim to have done a comprehensive review of all the published literature on the medicinal plants of Chhattisgarh state. The purpose of documentation is to expand the scope and scientific value of the local use of these medicinal plants that may help to raise awareness among people and the scientific community so that conservative initiatives can be implemented for their sustainable use.

The present chapter documents 149 medicinal plant species used traditionally by the tribal people of Chhattisgarh state for treating various ailments. The results are provided in Table 10.1 with botanical name, local name, family, habitat, parts used, and ethnomedicinal use.

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## 10.2 Taxonomic Categories

The vast majority of edible medicinal plant species were angiosperms belonging to 59 families. The highest number of medicinal plant species reviewed were found to belong to Fabaceae (13 species) followed by Euphorbiaceae and Lamiaceae (08 species each), Solanaceae and Caesalpiniaceae (07 species each), Apocynaceae (06 species), Apiaceae and Liliaceae (05 species each), Combretaceae, Moraceae, Rutaceae, and Zingiberaceae (04 species each), Acanthaceae, Amaranthaceae, Annonaceae, Asclepiadaceae, Asteraceae, Brassicaceae, Poaceae, Rhamnaceae, Verbenaceae (03 species each), Araceae, Cleomaceae, Convolvulaceae, Cucurbitaceae, Dioscoreaceae, Malvaceae, Meliaceae, Menispermaceae, Mimosaceae, Sapotaceae (02 species) (Fig. 10.1). The rest of the plant species reviewed were represented by 01 species each.

Based on the morphology (Fig. 10.2) of medicinal plant species, 67 species were found to be herbs, 44 species of trees, 22 species of shrubs, and 16 species of climber.

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## 10.3 Plant Parts Used for Medicinal Purpose

The most commonly used plant parts in the preparation of herbal formulations were found to be roots, rhizomes, fruits, flowers, seeds leaves, stems, or the whole plant (Table 10.1). The use of multiple plant parts was also observed for some plant species. These plant parts were found to be consumed either fresh or cooked or used in the form of decoction or infusion. The use of specific plant parts indicates that these parts may be associated with potent biological properties and further phytochemical screening is needed to validate the ethnomedicinal claims scientifically.

**Table 10.1** Edible plants of used traditionally by the tribal people of Chhattisgarh state for treating various ailments

Botanical name	Local name	Family/habitat	Part used	Ethnomedicinal uses	References
<i>Abelmoschus esculentus</i>	Bhindi	Malvaceae/herb	Fruit	Improve eight sights, control blood sugar level	Sharma et al. (2016)
<i>Acacia catechu</i>	Khair	Mimosaceae/tree	Bark	Cough, cold, diarrhea	Tiwari and Mehta (2013)
<i>Acacia leucophloea</i>	Bambary	Leguminosae/tree	Bark	Diabetes	Ekka and Dixit (2007)
<i>Acacia nilotica</i>	Babul	Fabaceae/tree	Bark, fruit	Urine-genital disease, mouth ulcers	Sharma et al. (2016)
<i>Acayypha indica</i>	Kuppi	Euphorbiaceae/herb	Leaves, root	Diarrhea, anthelmintic, dysentery	Sharma (2016)
<i>Acorus calamus</i>	Bach	Araceae/herb	Rhizome	Cough, cold, menstrual disorders epilepsy	Tiwari and Mehta (2013); Kurre (2015)
<i>Adhatoda vasica</i>	Adusa	Acanthaceae/shrub	Leaf	Asthma, tuberculosis, fever, bronchitis, cough, antidote	tiwari and Mehta (2013); Ahirwar (2015); Sinha et al. (2012)
<i>Aegle marmelos</i>	Khotta, Bael, bel	Rutaceae/tree	Leaf, fruit, bark, pulp	Diarrhea, diabetes, jaundice, stomach troubles, dysentery	Sahu et al. (2014); Sharma et al. (2016); Tiwari and Mehta (2013); Ekka and Dixit (2007)
<i>Albizia lebeck</i>	Segta/Siri	Fabaceae/tree	Leaf	Blood purifier, night blindness	Sahu et al. (2014)
<i>Albizia procera</i>	Karhi	Fabaceae/tree	Bark	Cough and cold	Dixena and Patel (2019a)
<i>Allium cepa</i>	Pyaj/Bhaji	Liliaceae/herb	Leaf and bulb	Vomiting, cardiovascular disease, diabetes, antioxidant, cancer, osteoarthritis, ulcer	Sharma et al. (2016); Sharma (2016); Sharma (2019)
<i>Allium sativum</i>	Lahsun	Liliaceae/herb	Bulb	Heart disease, ulcer, osteoarthritis, cancer	Sharma et al. (2016)
<i>Aloe barbadensis</i>	Ghikuwire	Liliaceae/herb	Leaf	Jaundice	Ekka and Dixit (2007)
<i>Amaranthus spinosus</i>	Kanta/Bhaji	Amaranthaceae/herb	Root, leaves	Anti-fertility, scorpion bite, and snake bite	Rai and Nath (2005); Sharma (2019)
<i>Amaranthus tricolor</i>	Lal Bhaji	Amaranthaceae/herb	Leaf	Maintains good kidney function, diabetes digestion, dysentery	Prabhas et al. (2016)

(continued)

Table 10.11 (continued)

Botanical name	Local name	Family/habitat	Part used	Ethnomedicinal uses	References
<i>Amaranthus viridis</i>	Chaulai/Bhaji	Amaranthaceae/ herb	Whole plant, leaves, roots, seeds, and stem	Gonorrhea, heart trouble, diuretic, dysentery, inflammation, constipation, laxative	Sharma (2019); Shrivastava et al. (2017); Prabhas et al. (2016)
<i>Andrographis paniculata</i>	Bhuai neem, kalmegh	Acanthaceae/ herb	Whole plant, root, leaf	Malaria, diabetes, respiratory disease, blood purifier, anthelmintic, stomachic	Gupta and Gupta (2017); Sharma et al. (2016); Shrivastava and Kanungo (2013b)
<i>Anethum graveolens</i>	Soay	Annonaceae/herb	Seed	Hypertension, digestive disorders	Shrivastava (2019)
<i>Annona reticulata</i>	Ramphal	Annonaceae/tree	Fruit, seeds, leaves, bark	Diarrhea, dysentery treatment of intestinal worms, diabetes, cancer, tumor	Sahu et al. (2014); Lal et al. (2015); Sharma et al. (2017)
<i>Annona squamosa</i>	Sitaphal	Annonaceae/tree	Leave, fruit	Tumor, cancer, antidepressant, epilepsy	Sahu et al. (2014); Sharma et al. (2017)
<i>Asparagus ascendens</i>		Liliaceae/climber	Tuberous parts	Restore fertility	Rai and Nath (2005)
<i>Asparagus racemosus</i>	Satawari	Liliaceae/climber	Root, whole plant	Lactagogue, blood pressure, nervous disorders, tuberculosis, weakness, dyspepsia uraemia, fever, tumors, nervous disorders	Gupta and Gupta (2017); Ekka and Dixit (2007); Ahirwar (2015); Sharma et al. (2017)
<i>Asteracantha longifolia</i>	Mokhla/Bhaji	Acanthaceae/ herb	Leaves	Blood disease, liver problems, diabetes	Sharma (2019)
<i>Azadirachta indica</i>	Neem	Meliaceae/tree	Seed, bark	Diabetes, diarrhea, piles, antidote	Sinha et al. (2012); Kujur and Ahirwar (2015); Shrivastava and Kanungo (2013a); Shrivastava and Kanungo (2011)
<i>Azima tetracantha</i>	Menasu Uppimullu	Salvadoraceae/ shrub	Leaves	Antidote	Sinha et al. (2012)

<i>Bacopa monnieri</i>	Brahmi	Scrophulariaceae/ herb	Leaves	Constipation, weakness, bronchitis, blood purifier, anemia, anticancer, ulcer, epilepsy, tumor, asthma	Tiwari and Mehta (2013); Sinha (2017); Ekka and Ekka (2016a); Sharma (2016)
<i>Bambusa arundinacea</i>	Bans	Poaceae/tree	Leaves	Fever	Gupta and Gupta (2017)
<i>Basella alba</i>	Poi Bhaji	Basellaceae/ climber	Leaves, root	Gonorrhea, intestinal disorders, constipation,	Sharma (2019); Sahu et al. (2014)
<i>Bauhinia racemosa</i>	Kachnar	Caesalpinaceae/ shrub	Bark, fruit	Diarrhea, diabetes, worms, tumor	Gupta and Gupta (2017)
<i>Bauhinia vahlii</i>	Mohlain	Caesalpinaceae/ climber	Root	Syphilis, gonorrhoea, respiratory disease	Kujur and Ahirwar (2015); Shrivastava and Kanungo (2013b)
<i>Boerhavia diffusa</i>	Khapra sag, PatharriBhaji	Nyctaginaceae/ herb	Root, whole plant	Dysentery, typhoid, tetanus, kidney stone, jaundice, antidiabetic, indigestion, antioxidant, diuretic, inflammation	Ekka and Dixit (2007); Tiwari and Mehta (2013); Sharma (2016)
<i>Bauhinia purpurea</i>	KoliaariBhaji	Caesalpinaceae/ tree	Leaves, stem, flower, and bark	Diabetes, piles, asthma, dysentery, ulcer, leprosy, diarrhea, cough, rheumatic pain	Sharma (2016); Sharma et al. (2017); Sharma (2019)
<i>Bauhinia variegata</i>	Kachanar	Caesalpinaceae/ tree	Root, leave, flower, seeds	Stomach disorders, dyspepsia, diarrhea, dysentery,	Chandel et al. (2018); Toppo et al. (2016)
<i>Brassica campestris</i>	SarsoBhaji	Brassicaceae/ herb	Leaves and seeds	Menstrual disorders, fever, internal pains	Sharma (2019)
<i>Brassica oleracea var. capitata</i>	Bandhgobhi Bhaji	Brassicaceae/ herb	Leaves	Pneumonia, gastritis, rheumatism, bone weakness, anemia	Sharma (2019)
<i>Bryophyllum pinnatum</i>	Patharchata	Crassulaceae/ herb	Leaf	Kidney stone	Vinodia et al. (2019)
<i>Caesalpinia bonducella</i>	Gataran	Caesalpinaceae/ shrub	Leaf	Asthma and cough related disorders	Ahirwar (2015); Kujur and Ahirwar (2015)

(continued)

Table 10.1 (continued)

Botanical name	Local name	Family/habitat	Part used	Ethnomedicinal uses	References
<i>Calotropis gigantea</i>	Safed aak	Apocynaceae/ shrub	Flower	Lactagogue	Ahirwar (2015); Vinodia et al. (2019)
<i>Calotropis procera</i>	Aak/ Akwan	Asclepiadaceae/ shrub	Fruit, flower, whole plant	Whooping cough, asthma, leprosy, rheumatoid pain, bronchitis	Kujur and Ahirwar (2015); Sharma (2017)
<i>Canscora diffusa</i>	Shank puli	Gentianaceae/ herb	Whole plant	Diarrhea	Shrivastava and Kanungo (2014)
<i>Capsicum annuum</i>	Mirchi	Solanaceae/herb	Fruit, leave	Carminative, rheumatism	Sharma et al. (2016)
<i>Carissa carandus</i>	Karonda	Apocynaceae/ tree	Root, fruit	Anemia, constipation	Sharma (2017)
<i>Carica papaya L.</i>	Pavitar, Papita	Caricaceae/tree	Root, leaf, fruit, seed, latex	Tetanus, piles, heart problem, skin problems, Anthelmintic, stomachic, diuretic.	Ekka and Dixit (2007); Sharma (2017); Sharma et al. (2016)
<i>Carthamus tinctorius</i>	Kera/ BurreBhaji	Asteraceae/shrub	Flower, leaves, seeds	Heart disease, menstrual pains, tumors, rheumatism, decreases cholesterol level	Sharma (2019)
<i>Cassia fistula</i>	Sonarkhi	Leguminosae/ tree	Bark, flower, fruit	Diabetes, laxative	Shrivastava and Kanungo (2013a); Sinha (2017)
<i>Cassia tora</i>	Charota, Chakora	Caesalpinaceae/ herb	Leaves, roots, and seeds	Respiratory disease, arthritis, leprosy, skin diseases	Sharma (2019); Shrivastava and Kanungo (2013b); Sharma et al. (2017)
<i>Catharanthus roseus</i>	Sadababar	Apocynaceae/ shrub	Leaf	Diabetes, dysentery, high blood pressure, leukemia, stomachic	Tiwari and Mehta (2013); Ekka and Dixit (2007); Gupta and Gupta (2017)
<i>Celastrus paniculatus</i>	Peng/ Malkangini Bhaji	Cleomaceae/ climber	Leaves and seeds	Memory enhancer, leprosy, asthma, fever,	Sharma (2019)
<i>Centella asiatica</i>	Mukhaadkha, Brahmi	Apiaceae/herb	Leaf, whole plant, flowers	Epilepsy, insomnia, memory enhancer, liver tonic, stomachic, constipation	Sharma et al. (2016); Kujur and Ahirwar (2015); Sharma (2017); Sharma (2019)



<i>Cicer arietinum</i>	Chana Bhaji	Fabaceae/herb	Leaves and seeds	Dyspepsia, stomachic, constipation	Chauhan et al. (2014); Sharma (2016)
<i>Cissampelos pareira</i>	Pathar/ Paat, Korea	Menispermaceae/ climber	Root	Fever, diuretic, tonic, diarrhea	Ahirwar (2015); Kujur and Ahirwar (2015); Shrivastava and Kanungo (2014)
<i>Citrus medica</i>	Nimbu/ limbu	Rutaceae/tree	Fruit, leaf, root, whole plant	Constipation, cough, digestive, antiseptic, throat disorder, fever, dyspepsia, rheumatic	Sharma (2017); Sharma (2016)
<i>Citrus reticulata</i>	Santara	Rutaceae/herb	Fruit	Blood purifier, diarrhea	Sharma et al. (2016)
<i>Cleome viscosa</i>	Balakut/ HurhurBhaji	Cleomaceae/herb	Leaves	Dysentery, diarrhea, ulcers, stomach pain, piles, indigestion	Sharma (2019); Shrivastava et al. (2017)
<i>Clitoria ternatea</i>	Aparajita	Fabaceae/climber	Flower	Diabetes	Shrivastava and Kanungo (2013a)
<i>Cocculus hirsutus</i>	Nappakand	Menispermaceae/ climber	Tuber, root, leaves, stem	Stomach and abdominal pain, female sterility, fever, diuretic, tonic	Ekka and Dixit (2007); Sharma (2019)
<i>Cocos nucifera</i>	Nariyal	Arecaceae/tree	Fruits	Liver weakness	Gupta and Gupta (2017); Lal et al. (2015)
<i>Coleus aromaticus benth</i>	Pathorecur	Labiatae/shrub	Leaf, tuber	Cough, cold, cancer, weakness,	Ekka and Dixit (2007)
<i>Colocasia esculenta</i>	Kochai	Araceae/herb	Leaves corm	Alopecia, weakness and constipation, cancer, neurological disorder, arthritis, asthma	Sharma (2017); Sharma et al. (2017)
<i>Coriander sativum</i>	Dhania	Apiaceae/herb	Leaf, seed	Liver tonic, vomiting, digestive	Sharma et al. (2016)
<i>Cordia dichotoma</i>	Lasoda	Boraginaceae/ tree	Bark	Diarrhea	Shrivastava and Kanungo (2014)
<i>Crataeva nurvala</i>		Capparidaceae/ tree	Bark	Antifertility	Rai and Nath (2005)
<i>Calotropis gigantea</i>	Junjhumi	Fabaceae/herb	Seed, roots	Blood pressure, anti-fertility drug	Vinodia et al. (2019); Rai and Nath (2005)

(continued)

Table 10.1 (continued)

Botanical name	Local name	Family/habitat	Part used	Ethnomedicinal uses	References
<i>Curcuma aromatica</i>	Vanhaldi	Zingiberaceae/ herb	Rhizome	Diarrhea, fever, blood purification,	Gupta and Gupta (2017); Lal et al. (2015); Yadav et al. (2019); Cha et al. (2017)
<i>Curcuma longa</i>		Zingiberaceae/ herb	Rhizome	Anti-fertility	Rai and Nath (2005)
<i>Cucumis sativus</i>	Khira	Cucurbitaceae/ climber	Fruit, seed	Tonic, diuretic	Sharma et al. (2016)
<i>Cuscuta reflexa</i>	Amarbel	Convolvulaceae/ climber	Leaves	Anti-fertility	Rai and Nath (2005)
<i>Cynodon dactylon</i>	Dubi	Poaceae/herb	Leaf	Cough, cold	Vinodia et al. (2019); Sharma (2016)
<i>Cyperus rotundus</i>	Kissilattee	Cyperaceae/herb	Tubar	Stomachic, abdominal pain	Ekka and Dixit (2007)
<i>Dalbergia paniculata</i>	Dhobni	Fabaceae/tree	Bark	Respiratory disease	Shrivastava and Kanungo (2013b)
<i>Datura stramonium</i>	Dhatura	Solanaceae/shrub	Leaf	Joint complaints	Ahirwar (2015)
<i>Desmodium diffusum, DC</i>	Sabarbhaj	Fabaceae/herb	Root	Respiratory disease	Shrivastava and Kanungo (2013b)
<i>Dioscorea bulbifera</i>	Gurudhaar	Dioscoreaceae/ climber	Stem	Jaundice, anti-fertility, cancer, diabetes	Vinodia et al. (2019); Rai and Nath (2005); Sharma et al. (2017)
<i>Dioscorea hispida</i>		Euphorbiaceae/ climber	Tuber	Ulcer, bites of rabbit and dog, diabetes	Sharma et al. (2017); Chandel et al. (2018); Toppo et al. (2016)
<i>Diospyros melanoxylon</i>	Tela, Tendu	Ebenaceae/tree	Root, pulp, fruit, leaf, bark, seed	Blood clotting, dysentery, asthma, diarrhea, skin diseases	Sinha (2017); Ekka and Dixit (2007); Cha et al. (2017)
<i>Daucus carota</i>	Gagger	Apiaceae/herb	Root	Carminative, stimulant, diuretic	Sharma et al. (2016)
<i>Elephantopus scaber</i>	Meejurchundi, anola	Compositae/herb	Tuber	Abdominal pain	Ekka and Dixit (2007)

<i>Embllica officinalis</i>	Amla.	Euphorbiaceae/ tree	Fruit, leaf, bark, root	Indigestion, respiratory disease, diarrhea, vomiting, cough, anemia, asthma, cardiotonic, chronic constipation	Kujur and Ahirwar (2015); Sharma et al. (2016); Shrivastava and Kanungo (2013b)
<i>Euphorbia hirta</i>	Dudhia grass, Dudhi	Euphorbiaceae/ herb	Whole plant, latex, fruits	Snake bite, diarrhea, piles asthma, skin disease,	Tiwari and Mehta (2013); Ekka and Dixit (2007)
<i>Euphorbia prostate</i>	Chottadudhia grass	Euphorbiaceae/ herb	Whole plant	Lactagogue	Ekka and Dixit (2007)
<i>Ficus hispida</i>		Moraceae/tree	Fruit	Cancer, skin diseases	Sharma et al. (2017)
<i>Ficus racemosa</i>	Dumar, gular	Moraceae/tree	Fruit, root, latex	Piles, dysentery, diarrhea, urinary trouble, diabetes, and ulcer, antifertility	Gupta and Gupta (2017); Rai and Nath (2005)
<i>Ficus religiosa</i>	Pepal	Moraceae/tree	Bark, leaf, fruits	Gonorrhea, skin diseases, anti- fertility	Ahirwar (2015); Rai and Nath (2005)
<i>Galium aparine</i>	Goosegrass	Rubiaceae/herb	Leaf	Kidney infection, hypertension, anticancer, diuretic	Prabhas et al. (2016)
<i>Gmelina arborea</i>	Gamari	Verbenaceae/tree	Fruit	Dyspepsia, fever, skin disease	Raj and Toppo (2014)
<i>Helicteres isora</i>	Attain	Sterculiaceae/ shrub	Root	Diarrhea	Shrivastava and Kanungo (2014)
<i>Hemidesmus indicus</i>	Anantamul	Asclepiadaceae/ herb	Root	Antidote	Sinha et al. (2012)
<i>Helianthus annus</i>	Surajmukhi	Asteraceae/shrub	Leaves, seed, flower	Kidney stone, cough, cold, fever	Sharma et al. (2016)
<i>Hibiscus sabdariffa</i>	Jhirra/ KhattaBhaji	Malvaceae/shrub	Leaves	Hypertension, dysentery, diarrhea, liver disease, stomach pain,	Sharma (2019)
<i>Ipomoea batatas</i>	Kanda Bhaji Mitha aloo	Convolvulaceae/ herb	Leaves and tubers	Asthma, tumors, fever, antidiabetic, fever, hypertension, heart disease, reduce cholesterol	Sharma (2019); Sharma et al. (2016); Sharma et al. (2017)
<i>Jussiaea suffruticosa</i>	Parsauti.	Onagraceae/herb	Root	Fever	Sinha (2017)

(continued)

Table 10.11 (continued)

Botanical name	Local name	Family/habitat	Part used	Ethnomedicinal uses	References
<i>Lantana camara</i>	Lantana	Verbenaceae/ shrub	Seed, fruit, flower	Fever, asthma	Chandel et al. (2018); Toppo et al. (2016)
<i>Leucas aspera</i>		Lamiaceae/herb	Leave	Rheumatism, skin disease	Sharma et al. (2017)
<i>Limonia acidissima</i>	Kaith	Rutaceae/tree	Fruit	Stomach related disorder	Dixena and Patel (2019a)
<i>Litsea glutinosa</i>	Madabokla	Lauraceae/tree	Bark	Diarrhea, dysentery	Sinha (2017)
<i>Leucas cephalotes</i>	GumeeBhaji	Lamiaceae/herb	Leave	Cough cold	Prabhas et al. (2016)
<i>Lycopersicon esculentum</i>	Tamater	Solanaceae/herb	Fruit, seed	Stimulate, bronchitis, secretion, dyspepsia	Sharma (2016)
<i>Madhuca longifolia</i>	Mahua	Sapotaceae/tree	Flower, bark	Diabetes	Shrivastava and Kanungo (2013a)
<i>Madhuca indica</i>	Mahua	Sapotaceae/tree	Barks, fruit	Diabetes, bleeding gums, diarrhea, headache, vomiting, stomach pain, intrinsic hemorrhage	Tiwari and Mehta (2013); Vinodia et al. (2019); Yadav et al. (2019)
<i>Mangifera indica</i>	Aam	Anacardiaceae/ tree	Fruit	Vomiting, stomach pain, syphilis, diphtheria	Dixena and Patel (2019a); Toppo et al. (2016); Raj and Toppo (2014); Chandel et al. (2018)
<i>Marsdenia tenacissima</i>	Chinhor	Asclepiadaceae/ climber	Tuber	Diarrhea	Shrivastava and Kanungo (2014)
<i>Melia azedarach</i>	Bakain	Meliaceae/tree	Leaves	Respiratory disease	Shrivastava and Kanungo (2013b)
<i>Mentha arvensis</i>	Pudina	<b>Lamiaceae</b> /herb	Leaf	Anthelmintic, rheumatism, irregular menstruation, diuretic	Sharma et al. (2016)
<i>Mentha longifolia</i>	Mint	Lamiaceae/herb	Leaf	Intestinal worms	Gupta and Gupta (2017)
<i>Mentha piperita</i>	Piperment	Lamiaceae/herb	Leaf	Analgesic, antioxidant, bronchitis	Prabhas et al. (2016)
<i>Mentha spicata</i>	Pudina	Lamiaceae/herb	Leaf	Gastrointestinal disorder, cough, cold fever, cholera	Sharma (2017)
<i>Mimosa pudica</i>	Chunimui	Mimosaceae/ herbs	Seed	Veneral disease	Ahirwar (2015)

<i>Momordica charantia</i>	Karela	Cucurbitaceae/ climber	Fruit, leave,	Diabetes, kidney stones, laxative, carminative, leprosy, jaundice	Gupta and Gupta (2017); Sharma (2016); Sharma (2019); Shrivastava and Kanungo (2013a)
<i>Moringa oleifera</i>	Munga	Moringaceae/tree	Bark	Cough and cold, diabetes, anemia, liver disease, respiratory disease, arthritis	Vinodia et al. (2019); Sharma et al. (2017)
<i>Morus alba</i>	Shahtoot	Moraceae/shrub	Roots, leaves, fruits	Hypertension, jaundice	Yadav et al. (2019)
<i>Musa paradistaca</i>	Kela	Musaceae/herb	Leaves, roots, fruits	Diabetes, diarrhea, dysentery, bronchitis, cough, asthma	Yadav et al. (2019)
<i>Ocimum basilicum</i> , L.	Vantulshi	Lamiaceae/herb	Root, stem	Respiratory disease	Shrivastava and Kanungo (2013b)
<i>Ocimum sanctum</i>	Tulsi	Lamiaceae/shrub	Leaf, seed, roots	Cough and cold, antidote, asthma, common cold, bronchitis	Vinodia et al. (2019); Sinha et al. (2012); Yadav et al. (2019)
<i>Oxalis corniculata</i>	AwaliBhaji	Oxalidaceae/herb	Leaves, stem, root	Urinary infection, dysentery, fever, diarrhea, insect bites, dyspepsia, anemia	Sharma (2016); Sharma (2019)
<i>Phyllanthus emblica</i>	Amla	Euphorbiaceae/ tree	Fruit	Purgative, cooling agent to stomach	Lal et al. (2015)
<i>Phyllanthus niruri</i>	Bal aawla	Euphorbiaceae/ herb	Root	Jaundice	Vinodia et al. (2019)
<i>Phyllanthus simplex</i>	Bhuiaonla	Euphorbiaceae/ herb	Whole plant	Diarrhea	Shrivastava and Kanungo (2014)
<i>Picrorhiza kurroa</i>	Kutkichirat	Plantaginaceae/ herb	Leaf, stem	Fever	Vinodia et al. (2019)
<i>Plumeria rubra</i>		Apocynaceae/ shrub	Leave	Anti-fertility	Rai and Nath (2005)
<i>Portulaca oleracea</i>	Non/dal/ GholBhaji	Portulacaceae/ herb	Leave	Diuretic, stomach pain, skin diseases,	Sharma (2019)

(continued)

Table 10.1 (continued)

Botanical name	Local name	Family/habitat	Part used	Ethnomedicinal uses	References
<i>Psidium guajava</i>	Amrud	Myrtaceae/tree	Leaf, fruit	Diabetes and blood pressure control, asthma,	Vinodia et al. (2019); Yadav et al. (2019)
<i>Pterocarpus marsupium</i>	Beeja	Fabaceae/tree	Bark	Diabetes	Shrivastava and Kanungo (2013a)
<i>Punica granatum</i>	Anar	Punicaceae/shrub	Fruits	Diarrhea	Tiwari and Mehta (2013)
<i>Raphanus sativus</i>	Mooli/Bhaji	Brassicaceae/ herb	Leaves, seeds and roots	Asthma, indigestion, bronchitis, stomach pain, diarrhea, rheumatism, purgative	Sharma (2019); Sahu et al. (2014)
<i>Rauvolfia serpentina</i>	Chotachand	Apocynaceae/ shrub	Root, plant	Hypertension, epilepsy, insomnia, fever, urinary retention, nervous disorders	Sinha (2017); Gupta and Gupta (2017); Sahu et al. (2014); Yadav et al. (2019)
<i>Saraca asoca</i>	Ashok	Caesalpinaceae/ tree	Barks	Menstrual disorders	Tiwari and Mehta (2013); Sharma (2017)
<i>Senna tora</i>	Charota	Fabaceae/herb	Leaf	Anemia	Vinodia et al. (2019)
<i>Smilax Zeylanica</i>	Ram Dataun	Smilacaceae/ climber	Roots	Menstrual disorders, blood pressure	Tiwari and Mehta (2013)
<i>Solanum nigrum</i>	Bhatkatayi	Solanaceae/herb	Whole plant	Liver disorder, skin disease, dysentery	Yadav et al. (2019)
<i>Solanum tuberosum</i>	Aloo Bhaji	Solanaceae/herb	Leaves and tubers	Tumors, diuretic	Sharma (2019)
<i>Solanum xanthocarpum</i>	Chaskatiya	Solanaceae/herb	Flower	Cough and cold	Sinha (2017); Vinodia et al. (2019)
<i>Terminalia alata</i>	Sajja	Combretaceae/ tree	Bark	Diarrhea	Gupta and Gupta (2017)
<i>Terminalia arjuna</i>	Kuaha	Combretaceae/ tree	Bark	Heart disease, liver disease	Sahu et al. (2014); Yadav et al. (2019)

<i>Terminalia bellirica</i>	Baheda	Combretaceae/ tree	Fruit/pulp, leaf	Respiratory disease, digestive trouble, gastric troubles, cough and cold, asthma, diarrhea	Sahu et al. (2014); Sharma et al. (2016); Dixena and Patel (2019a); Shrivastava and Kanungo (2013b)
<i>Terminalia chebula</i>	Harra	Combretaceae/ tree	Fruit	Digestive disorders snake bite, fever, constipation, high cholesterol	Sahu et al. (2014); Sharma et al. (2016); Yadav et al. (2019)
<i>Trachyspermum ammi</i>	Ajwain	Apiaceae/herb	Fruit, seed	Stomach disorder, carminative, antispasmodic, diarrhea	Sharma et al. (2016); Shrivastava (2019)
<i>Tribulus terrestris</i>	Gokharu	Zygophyllaceae/ herb	Whole plants, fruits	Skin disease, weakness, spermatorrhea, diuretic, tonic	Tiwari and Mehta (2013); Ahirwar (2015); Sahu et al. (2014)
<i>Trigonella foenumgraceum</i>	Methi/Bhaji, fenugreek	Fabaceae/herb	Leaves, seeds, fruit, stem	Rheumatism and diabetes, reduce blood cholesterol, reduce labor pain, anemia, lactagogue, asthma, bronchitis	Sharma (2019); Sahu et al. (2014); Sharma et al. (2016); Prabhas et al. (2016)
<i>Triticum aestivum</i>	Ganhu	Poaceae/herb	Leaves, seed	Jaundice, constipation, ulcerative colitis	Sharma et al. (2016)
<i>Ventilago madraspatana</i>	Kewati	Rhamnaceae/ climber	Root	Respiratory disease	Shrivastava and Kanungo (2013b)
<i>Vitex negundo</i>		Verbenaceae/ shrub	Seed	Anti-fertility	Rai and Nath (2005)
<i>Vitex quadrangularis</i>	Hadjod	Vitaceae/herb	Stem, whole plant	Irregular menstruation, bone fracture	Ahirwar (2015); Gupta and Gupta (2017)
<i>Withania somnifera</i>	Asgandh	<i>Solanaceae</i> /tree	Root, plant	Impotency, nerve weakness, Oligospermia, aphrodisiac	Gupta and Gupta (2017)
<i>Woodfordia fruticosa</i>	Dhawai	Lytharaceae/ shrub	Flower	Dysentery, stomach related problems	Dixena and Patel (2019a)
<i>Wrightia tinctoria</i>	Safed Korea	Apocynaceae/ tree	Leaves	Diabetes	Shrivastava and Kanungo (2013a)
<i>Xanthium strumarium</i>	Chotadhatura	<i>Asteraceae</i> /herb	Root, fruit	Digestive, laxative, antipyretic, memory enhancer, appetizer	Gupta and Gupta (2017)

(continued)

Table 10.1 (continued)

Botanical name	Local name	Family/habitat	Part used	Ethnomedicinal uses	References
<i>Zingiber cassumunar</i>	Vansonthi	Zingiberaceae/ herb	Rhizome	Respiratory diseases, diarrhea	Shrivastava and Kanungo (2013b, 2014)
<i>Zingiber officinale</i>	Ginger and Adrak	Zingiberaceae/ herb	Root	Cancer, cough, breast	Gupta and Gupta (2017)
<i>Ziziphus jujube</i>	Ber	Rhamnaceae/tree	Fruit, leaf, bark, stem	Ulcer, abdominal pain, fever and asthma, dysentery, ulcer,	Sharma (2017); Sahu et al. (2014)
<i>Ziziphus oenoplia</i>	Makoi	Rhamnaceae/ shrub	Root	Dysentery and diarrhea	Shrivastava and Kanungo (2014)



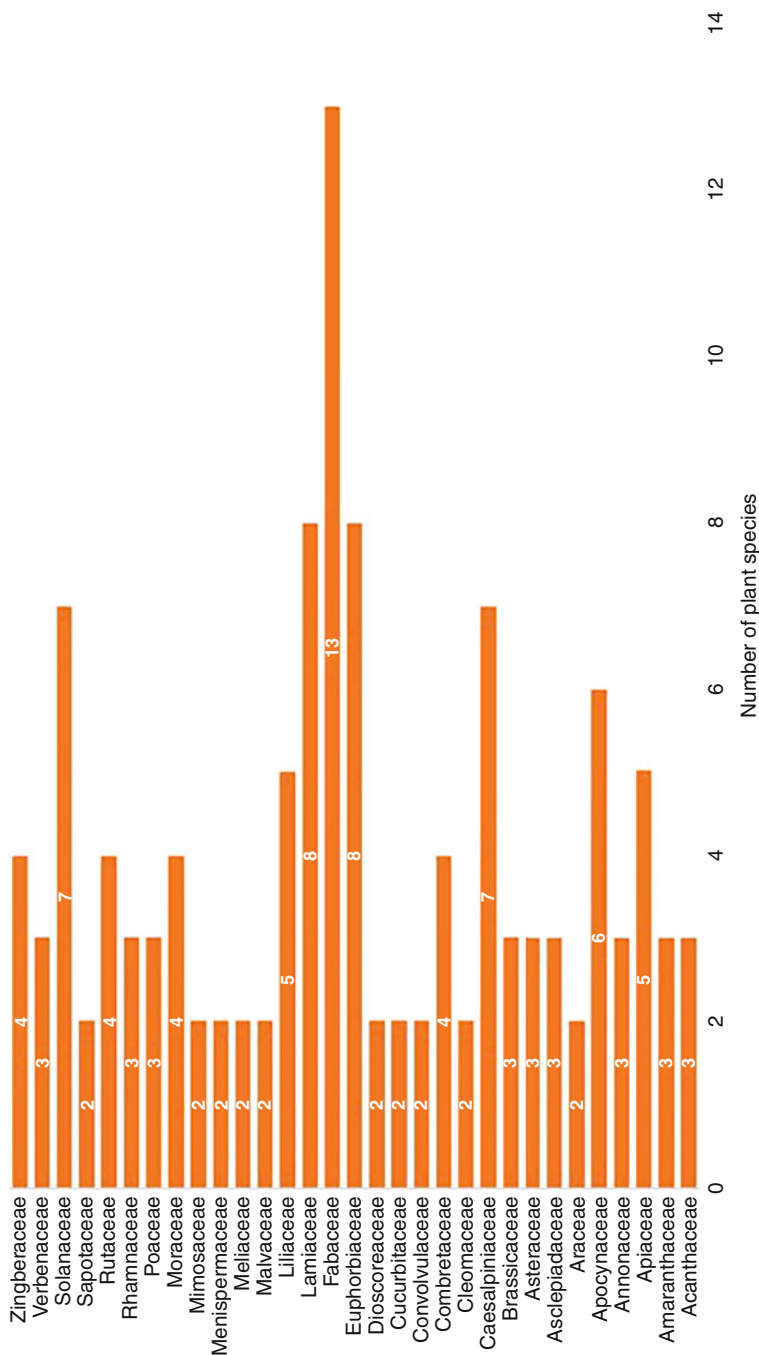
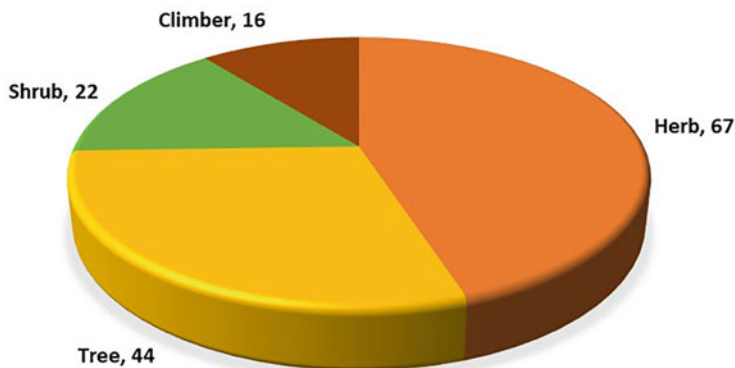
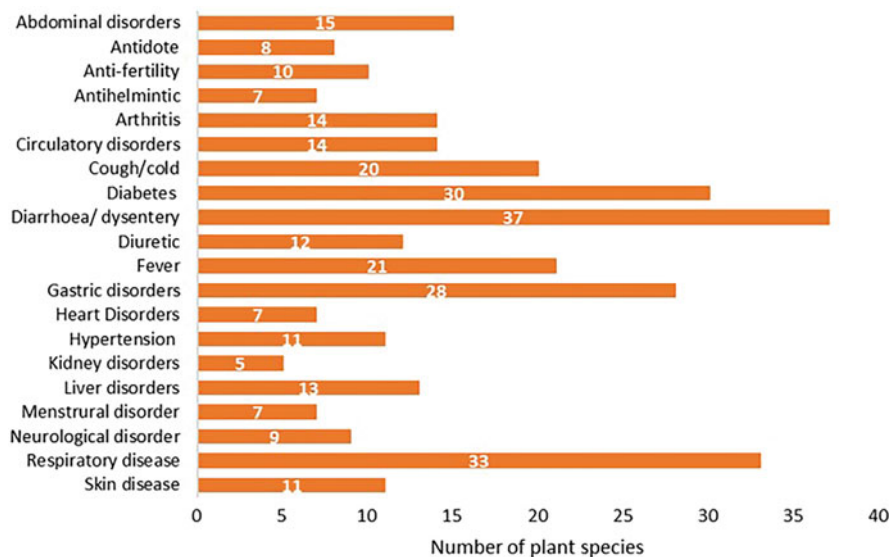


Fig. 10.1 Family distribution of medicinal plants



**Fig. 10.2** Morphological distribution of medicinal plant species



**Fig. 10.3** Ailment categories treated by medicinal plants

### 10.3.1 Ailment Categories Treated

A total of 20 major ailment categories were treated with medicinal plant species (Fig. 10.3). The main ailment categories that are treated include diarrhea (37 species), respiratory disease (33 species), diabetes (30 species), gastric disorders (28 species), Fever (21 species), cough/cold (20 species), abdominal disorders (15 species), circulatory problems and arthritis (14 species each), liver disorders (13 species), diuretic (12 species), skin problems, and hypertension (11 species each). The majority of plant species were used to treat multiple ailments, some

were used to treat few ailments, while only a small proportion of plant species were used to treat only a single ailment (Table 10.1).

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## 10.4 Economic Importance

The world has witnessed the scientific and commercial interests in edible plant and plant-based products due to their immense economic potential and widespread cultural acceptability, but only less than 5 percent of species have been analyzed as potential medicinal products while rest of the plant remain to be unexplored. Varieties in family diet and food security in houses are due to the diversity in edible plants. It is clear that edible plant use is not negligible in many parts of the world, but this is the truth that today human plant foods are based on a very small number of crops (Hood 2010).

The cultural consumption of wild edible plants by various tribal and non-tribal groups living in rural and semi-urban areas as food and medicine has been extensively exercised. Particularly, the accessibility of plants collected from anthropogenic landscapes (i.e., homesteads, forest patches, the vicinity of rice fields, or fallow lands) which allows large group of people to rely on them as a valuable nutritional resource due to their easy access. The nutritional value of conventional edible plant is often higher than many known fruits and vegetables. Edible plants throughout the world, and especially in developing countries, make a marked contribution to the local community life (Ray et al. 2020).

The actual guardians of nature's wealth and herbal medicine experts are mainly the ethnic groups of various regions of the world. For centuries, the traditional native knowledge passed orally is disappearing rapidly due to the developments in technologies and cultural change of ethnic groups. Despite all these disruptions, the ancient phytocure methods among the various tribes are being restored, as it is a part of their culture. Besides, ethnic tribal people the people in ethnic tribes are against cultural changes and changing mode of their life. Also, there is a need to preserve this traditional medical knowledge in various forms for future generation as it is diminishing slowly. The native ethnic groups possess their own evident religious rituals, culture, food habit, and a rich knowledge of traditional medicine. Due to the topographic diversity and variable climatic condition, Chhattisgarh has a rich and varied flora. In four different zones like Eastern, Western, Central, Northern, and Southern zones around 20–25 tribes are living either isolated or in combination. About one-third (10%) of the total population of the state in India is contributed by tribes of Chhattisgarh. Among all the tribes found in Jashpur region of Chhattisgarh, Oraon is one of the populous areas (Painkra et al. 2015). Agriculture is the major occupation of tribal people, even though forest and their products are also essential livelihood of tribal's and folk people, which meets their numerous day-to-day requirements like fibers, food, medicine, etc. Food requirement is fulfilled mainly through agriculture, but flowers, fruits, leaves, roots, and tubers are also collected from the forest as supplementary foods (Ekka and Ekka 2016b). For deprived communities, medicinal plants acts as the alternate income generating source

(Lacuna-Richman 2002; Myers 1990). Thus, this sector helps to improve socio-economic with living standard of rural people/tribes.

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## 10.5 Conclusion and Future Prospective

The worldwide utilization of medicinal plants particularly in India is inevitable. Around 80% of world's population relies primarily on medicinal plants as a first source of therapy. Chhattisgarh is considered as an "Herbal state" because of its rich biodiversity of medicinal plants. These medicinal plants not only provide food but also are the promising source of future drug candidates. Further these plants have high economic importance and acts as a source of income for the people. In this chapter an attempt is made to review the details of edible medicinal plants of Chhattisgarh used by tribal communities to cure many ailments such as respiratory disorders, digestive disorders, etc. The aim of documentation of these medicinal plants is to broaden the scope and importance of the local use of medicinal plants. With time the knowledge of medicinal plants among tribal people is disappearing, therefore it is imperative to record traditional knowledge about the medicinal plants. Measures aimed at improving the efficacy, effectiveness, and appropriate use of the medicinal plants must be implemented mainly by incorporating them in regional, national, and health policies and programs. In view of economic significance of the medicinal herbs, it is crucial to cultivate them consistently and save them from extinction by taking conservative measures for their sustainable use. Research need to be conducted to further analyze the nutritional and medicinal values of the plants.

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## References

- Ahirwar RK (2015) Diversity of Ethnomedicinal plants in Boridand Forest of district Korea, Chhattisgarh, India. *Am J Plant Sci* 06:413–425. <https://doi.org/10.4236/ajps.2015.62047>
- Ahvazi M, Khalighi-Sigaroodi F, Charkhchiyan MM, Mojab F, Mozaffarian V-A, Zakeri H (2012) Introduction of medicinal plants species with the most traditional usage in Alamut region. *Iran J Pharmaceut Res* 11(1):185–194
- Aslam MS, Ahmad MS (2016) Worldwide importance of medicinal plants: current and historical perspectives. *Recent Adv Biol Med* 2:88–93
- Atanasov AG, Waltenberger B, Pferschy-Wenzig E-M, Linder T, Wawrosch C, Uhrin P, Temml V, Wang L, Schwaiger S, Heiss EH, Rollinger JM, Schuster D, Breuss JM, Bochkov V, Mihovilovic MD, Kopp B, Bauer R, Dirsch VM, Stuppner H (2015) Discovery and resupply of pharmacologically active plant-derived natural products: a review. *Biotechnol Adv* 33(8):1582–1614. <https://doi.org/10.1016/j.biotechadv.2015.08.001>
- Balamurugan S, Vijayakumar S, Prabhu S, Morvin Yabesh JE (2017) Traditional plants used for the treatment of gynaecological disorders in Vedaranyam taluk, South India - an ethnomedicinal survey. *J Tradit Complement Med* 8(2):308–323. <https://doi.org/10.1016/j.jtcme.2017.06.009>
- Bandaranayake WM (2006) Quality control, screening, toxicity, and regulation of herbal drugs. *Modern Phytomedicine*:25–57
- Calixto J (2000) Efficacy, safety, quality control, marketing and regulatory guidelines for herbal medicines (phytotherapeutic agents). *Braz J Med Biol Res* 33(2):179–189

- Cha J, Suh W, Lee T, Subedi L, Kim S, Lee K (2017) Phenolic glycosides from *Capsella bursa-pastoris* (L.) Medik and their anti-inflammatory activity. *Molecules* 22(6):1023
- Chandel PK, Prajapati R, Dhurwe RK (2018) Documentation of NTFP's and medicinal plants available in Dhamtari forest area. *J Pharmacog Phytochem* 7(1):1524–1530
- Chauhan D, Shrivastava A, Patra S (2014) Diversity of leafy vegetables used by tribal peoples of Chhattisgarh, India. *Int J Curr Microbiol App Sci* 3(4):611–622
- Dar RA, Shah Nawaz M, Qazi PH (2017) General overview of medicinal plants: a review. *J Phytopharmacol* 6(6):349–351
- Dar PA, Rashid N, Parwez A, Kalam A (2018) Ethnomedicinal practices of Kashmir Valley: a review. *J Pharmacogn Phytochem* 7(6):278–284
- Dixena D, Patel D (2019a) Plants as a source of medicine among the tribes residing in Kota block of Bilaspur district (CG) India. *Flora and Fauna* 25(2):195–203
- Dixena D, Patel D (2019b) Plants as a source of medicine among the tribes residing in Kota block of Bilaspur district (CG) India. *Flora and Fauna* 25(2):195–203
- Ekka NR, Dixit VK (2007) Ethno-pharmacognostical studies of medicinal plants of Jashpur district (Chhattisgarh). *Int J Green Pharm* 1(1)
- Ekka NS, Ekka A (2016a) Wild edible plants used by Tribals of north-East Chhattisgarh (part-I), India. *Res J Recent Sci* 5:127–131
- Ekka NS, Ekka A (2016b) Wild edible plants used by Tribals of north-East Chhattisgarh (part-I), India. *Res J Recent Sci* 2277:2502
- Ekor M (2014) The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety. *Front Pharmacol* 4:177–177. <https://doi.org/10.3389/fphar.2013.00177>
- Faruque MO, Uddin SB, Barlow JW, Hu S, Dong S, Cai Q, Li X, Hu X (2018) Quantitative ethnobotany of medicinal plants used by indigenous communities in the Bandarban District of Bangladesh. *Front Pharmacol* 9:40. <https://doi.org/10.3389/fphar.2018.00040>
- Gupta DK, Gupta SG (2017) Diversity of ethno Medician Plant in Dist. Balod (CG). *J Pharm Biol Sci* 12(3):80–89
- Hood L (2010) Biodiversity: facts and figures. *Sci Dev Net* 8(10)
- Husain SZ, Malik RN, Javaid M, Bibi S (2008) Ethnobotanical properties and uses of medicinal plants of Morgah biodiversity park, Rawalpindi. *Pakistan J Bot* 40(5):1897–1911
- Jain JB, Kumane SC, Bhattacharya S (2006) Medicinal flora of Madhya Pradesh and Chhattisgarh—a review. *Indian J Tradit Knowl* 5(2):237–242
- Kujar M, Ahirwar RK (2015) Folklore claims on some ethno medicinal plants used by various tribes of district Jashpur, Chhattisgarh, India. *Intern J Curr Microbiol Appl Sci* 4(9):860–867
- Kurre RK (2015) Wide variety of medicinal plants and their uses in Jashpur District of Chhattisgarh. *J Environ Sci Toxicol Food Technol* 1(1):01–05
- Lacuna-Richman C (2002) The socioeconomic significance of subsistence non-wood forest products in Leyte. *Philippines Environ Conserv* 8:253–262
- Lal S, Masih V, Sahu PK, Soni I (2015) Observation of traditional knowledge of tribe peoples of Gurur, district Balod, CG. *Int J Pharm Life Sci* 6(8/9):4746–4750
- Larayetan R, Ololade ZS, Ogunmola OO, Ladokun A (2019) Phytochemical constituents, antioxidant, cytotoxicity, antimicrobial, Antitrypanosomal, and antimalarial potentials of the crude extracts of *Callistemon citrinus*. *Evid Based Complement Alternat Med* 2019:5410923. <https://doi.org/10.1155/2019/5410923>
- Malik AH, Khuroo AA, Dar G, Khan Z (2018) Ethnomedicinal uses of some plants in the Kashmir Himalaya. *Int J Res Analyt Rev* 5(3):665–671
- Mukeshwar P, Debnath M, Gupta S, Chikara SK (2011) Phytomedicine: an ancient approach turning into future potential source of therapeutics. *J Pharmacogn Phytother* 3(2):27–37
- Myers N (1990) The world's forests and human populations: the environmental interconnections. *Popul Dev Rev* 16:237–251
- Painkra V, Jhariya M, Raj A (2015) Assessment of knowledge of medicinal plants and their use in tribal region of Jashpur district of Chhattisgarh, India. *J Appl Nat Sci* 7(1):434–442

- Pan S-Y, Zhou S-F, Gao S-H, Yu Z-L, Zhang S-F, Tang M-K, Sun J-N, Ma D-L, Han Y-F, Fong W-F, Ko K-M (2013) New perspectives on how to discover drugs from herbal medicines: CAM's outstanding contribution to modern therapeutics. *Evid Based Complement Alternat Med* 2013:627375–627375. <https://doi.org/10.1155/2013/627375>
- Pandey MM, Rastogi S, Rawat AKS (2013) Indian traditional Ayurvedic system of medicine and nutritional supplementation. *Evid Based Complement Alternat Med* 2013:376327. <https://doi.org/10.1155/2013/376327>
- Pandey D, Khandel P, Verma P (2018) Exploration of the unique blend of traditional knowledge and medicinal plants from Bastar, Chhattisgarh, India. *J Chem Biol Res* 35(2):517–526
- Patel PK, Janghel V, Chandel SS, Sahu J (2019) *Madhuca indica* (Mahua)-pharmaceutical, nutraceutical and economical importance for tribal people of Chhattisgarh state. *Int J Pharmaceut Phytopharmacol Res* 9(3):16–28
- Prabhas L, Agrawal M, Tamrakar V (2016) Prologue phytochemical analysis of traditional medicinal plants used by tribes in GARIYABAND district (Chhattisgarh)-India. *Int J Innov Res Sci Eng* 2(11):123–130
- Rai R, Nath V (2005) Some lesser known oral herbal contraceptives in folk claims as anti-fertility and fertility induced plants in Bastar region of Chhattisgarh. *J Nat Remed* 5(2):153–159
- Raj A, Toppo P (2014) Assessment of floral diversity in Dhamtari district of Chhattisgarh. *J Plant Dev Sci* 6(4):631–635
- Ray A, Ray R, Sreevidya E (2020) How many wild edible plants do we eat—their diversity, use, and implications for sustainable food system: an exploratory analysis in India. *Front sustain food Syst* 4: 56 doi: 103389/fsufs
- Sahu PK, Masih V, Gupta S, Sen DL, Tiwari A (2014) Ethnomedicinal plants used in the healthcare systems of tribes of Dantewada, Chhattisgarh India. *Am J Plant Sci* 5:1632–1643
- Samal J (2016) Medicinal plants and related developments in India: a peep into 5-year plans of India. *Ind J Health Sci Biomed Res* 9(1):14–19. <https://doi.org/10.4103/2349-5006.183698>
- Seca AML, Pinto DCGA (2019) Biological potential and medical use of secondary metabolites. *Medicines (Basel)* 6(2):66. <https://doi.org/10.3390/medicines6020066>
- Shakya AK (2016) Medicinal plants: future source of new drugs. *Int J Herb Med* 4(4):59–64
- Sharma R (2016) Medicinal plants diversity in Bhillai city district Durg, Chhattisgarh, India. *Int J Pharm Life Sci* 7(3):4952–4966
- Sharma RK (2017) Study of ethnomedicinal of plants used for various ailments of Bagicha Jashpur (C.G.) India. *Eur J Biotechnol Biosci* 5(6):41–43
- Sharma HS (2019) A survey on the leafy vegetables of Kondagaon area of Bastar Chhattisgarh. *J Emerg Technol Innov Res* 6(6):325–337
- Sharma S, Sahu K, Chandrol G, Jain P, Sharma V (2016) Ethnobotanical survey of five villages of Durg District of Chhattisgarh, (India). *Int J Adv Res Biol Sci* 3(10):104–110
- Sharma M, Sharma RP, Sharma A (2017) Ethnomedicinal edible wild plants of Pendra road, forest region of Chhattisgarh. *Int J Bot Stud* 2(3):29–33
- Shrivastava P (2019) Ethnobotanical survey in APIACEAE plants in KABEERDHAM, Chhattisgarh, India. *World J Pharmaceut Res* 8(6):1579–1585
- Shrivastava S, Kanungo V (2011) Ethnobotanical Survey of Surguja District with Special Reference to Plants Used By Uraon Tribe in Treatment of Diarrhea
- Shrivastava S, Kanungo V (2013a) Ethnobotanical survey of Surguja district with special reference to plants used by Uraon tribe in treatment of diabetes. *Int J Herb Med* 1(3):127–130
- Shrivastava S, Kanungo V (2013b) Ethnobotanical survey of Surguja District with special reference to plants used by uraon tribe in treatment of respiratory diseases. *Int J Herb Med* 1(3):131–134
- Shrivastava S, Kanungo V (2014) Ethnobotanical survey of Surguja District with special reference to plants used by Uraon tribe in treatment of diarrhea. *Int J Herb Med* 1(5):19–22
- Shrivastava A, Patra S, Chauhan D (2017) Biochemical studies of weed plants used as leafy vegetables by tribes and people of Chhattisgarh with special reference to the secondary metabolites confer nutraceutical properties. *Ind J Appl Pure Biol* 32(1):19–25
- Singh R (2015) Medicinal plants: a review. *J Plant Sci* 3(1–1):50–55

- Singh RS, Shahi SK (2017) Diversity of medicinal plants of Ratanpur region of Bilaspur district (Chhattisgarh). *J Med Plant Stud* 5(2):276–281
- Sinha MK (2017) Ethnomedicinal plants used in tribes of Bharatpur block (Koriya district) CG. *J Med Plants* 5(4):17–21
- Sinha M, Patel D, Kanungo V (2012) Medicinal plants used as antidotes in northern part of Bastar district of Chhattisgarh. *J Ecobiotechnol* 4(1):58–60
- Süntar I (2020) Importance of ethnopharmacological studies in drug discovery: role of medicinal plants. *Phytochem Rev* 19(5):1199–1209. <https://doi.org/10.1007/s11101-019-09629-9>
- Tiwari AK, Mehta R (2013) Medicinal plants used by traditional healers in Jashpur District of Chhattisgarh. *Life Sci Leaflets* 35:31–41
- Toppo P, Raj A, Jhariya M (2016) Wild edible plants of Dhamtari district of Chhattisgarh, India. *Van Sangyan* 3(4):1–6
- Vinodia S, Dixit A, Das B, Sahu B, Dhiwar H, Sheikh D, Kerketta M (2019) Traditional Phytotherapy among the Gond tribes of Janjgir-Champa, Chhattisgarh (India). *Res J Life Sci Bioinf Pharmaceut Chem Sci* 5(1):765–772. doi:<https://doi.org/10.26479/2019.0501.64>
- Yadav KC, Saraf A, Sarkar AK (2019) Study of important ethno medicinal plants in sacred sgroves of bhoramdev wildlife sanctuary of kabirdham district. *J Pharm Biol Sci* 9(2)