Cultural, Practical, and Socio-Economic Importance of Edible Medicinal Plants Native to Central India

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Netra Prasad Neupane, Ekta Yadav, and Amita Verma

Abstract

The medicinal plants have made a significant contribution to human health from the origin of life. Central India contains a wide variety of medicinal plants, these medicinal plants are used by tribal communities to treat their various ailments and their role in health care and the local economy was important. These medicinal plants are needed to complete their rituals, ceremonies, festivals, and religious work but most of them do not know the medicinal value of these types of plants that work in their daily lives. Our publications provide information on a number of medicinal plants used by the tribal communities of Madhya Pradesh and Chhattisgarh to treat various ailments. Traditional medicine remains an integral part of the health system in the Central India region. Research shows that medicinal plants from Central India cure life-threatening diseases such as cancer, diabetes, cardiovascular diseases, inflammation, viral diseases, neurological dysfunction and renal disorders, so medicinal plants demand in the global market was increasing gradually. Phytochemicals present in medicinal plants make the plants valuable as vincristine and vinblastine obtained from vinca plant are costlier, 1gm value several thousand and have great importance in the preparation of drug molecules. Most of the dosage forms are prepared in Central India according to the traditional medical system such as Ayurveda, Unani, Siddha. Knowledge of economic medicinal plants should be provided to a new generation that preserves medicinal plants and provides employment opportunities, improving and enhancing the health of the indigenous and rural communities of Central India.

N. P. Neupane · E. Yadav · A. Verma (✉)
Bioorganic and Medicinal Chemistry Research Laboratory, Department of Pharmaceutical Sciences, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, India
e-mail: amita.verma@shiats.edu.in

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Keywords

Medicinal plants · Central India · Socio-cultural · economic · Tribal communities · Traditional system

8.1 Introduction

Edible medicinal plants have been reported using tribal practices and the use of various diseases. (Suroowan et al. 2017) Wild edible medicinal plants have special significance for livelihoods of Central Indian. (Rana et al. 2012; Goswami et al. 2016) Edible medicinal plants were reported for existing traditional practices, customs or traditions. In central India, starch-based foods are a staple food that provides energy and protein as well as antibodies to various ancient diseases. Wild plants have a better nutrition or can be compared to that of new research based varieties.(El-Anssary 2018) These wild species secure food, therapeutics requirement of the geographically remote regions of people from ancient times. Edible medicinal plants constitute an important alternative to conventional medicine (Huie 2002) (Hamza and Azmach 2017), especially for poor communities without access to basic health care services. The World Health Organization (WHO) showed that approximately 80% of the world's inhabitants rely on traditional system of medicine for health care services. (Cazap 2012) Economic, culture, religious beliefs of central Indian are based on edible medicinal plants. Traditional culture and folklore tend to have immense knowledge about the use of wild plant species (Von Lewinski 2008), which are localized to the remote region of central India. The traditional life is based on nature and natural resources, so ancient people explored the importance of wild species in cultural, medicinal, religious, and economic benefits better than a recent generation. The medicinal importance of some plants are not tested in modern laboratories but their therapeutic property, efficacy, and safety profile cannot be denied based on daily use by local communities (Bandaranayake 2006; Guerrini and Sacchetti 2013). Central India mainly includes states of Madhya Pradesh and Chhattisgarh. Madhya Pradesh has 1, 35, 164 km^2 of forests which accounts for 30.48% of total geographical area of the state. Particularly, in Satpura plateau contains the more tribal population due to the presence of dense forests with a lot of rare medicinal plants (Mall et al. 2005; Pande 2005; Rajasekhar and Mishra 2008). Pandey et al. described a different 92 medicinally importance plant used by local communities in Central India.

8.2 History of Edible Medicinal Plants in Central India

The concept of medicinal plant is not new in the Indian scenario. Since pre-historic times a human has known to identify plants useful for their medicine and food from nature (Srujana et al. 2012). However, the oldest literature available is Kautilya's Arthashastra of the fourth century deals with vast information regarding emergency

food and medicine (Muniapan and Shaikh 2007). 5000 years old evidence of medicinal plants has been found on a Sumerian clay from Nagpur which had information about the preparation of 12 recipes of a drug referring to over 250 different medicinal plants, such as poppy, henbane, and mandrake (Hermann 2017). The holy books of India Vedas mention treatment with plants, which are abundant in central India, such as nutmeg, pepper, clove, etc. Ayurveda, Siddha, Unani, and Amchi, has strong evidence of their effectiveness and medicinal herbs derived ingredients are major components of these systems. It was estimated that Ayurveda, Unani, and Siddha use more than 1200, 900, and 700 species of medicinal plants (Dixit et al. 2016; Selvi and Paramasivam 2017). About 8000 medicinal plants were believed to be used in folk medicine with more than 25,000 plant-based formulations (Spałek et al. 2019).

Central India is rich in edible medicinal plants, these plants have direct medicinal value or indirectly beneficial for human health. Different medicinal plants used as drugs, pharmaceutical, nutraceutical and health benefits are rigorously explored nowadays because of the adverse effects associated with synthetic drugs. These plant-based drugs can be classified as follows.

8.2.1 Direct Medicinal Value

The chemical constituents present in these plants are extracted, isolated and formulated and used to cure diseases (Negulescu and Uglea 2006; Ahmad et al. 2017). Different parts (leaves, roots, bark, fruit, seeds, flowers, etc.) of the same plant may have different medicinal values. Some of the medicinal plants present in central India are Aloe Vera, Senna Alexandrian, Saraca ascoa, etc. (Shil et al. 2014).

8.2.2 Pharmaceutical Importance

Different plant parts are used to achieve definite therapeutic outcomes that improve the quality of life (Farnsworth et al. 1987). Medicinal plants are recognized as a mainstream product for herbal medicine, utilized in API as well as excipients (Azmir et al. 2013). For example, *Ocimum canum*, *Cyamopsis teragonoloba*, etc.

8.2.3 Nutraceutical Importance

Nutraceuticals are food or part of food and the normal nutritional value provides health benefits such as prevention and controlling of diseases (de Sousa Araújo et al. 2016). Numerous nutraceuticals are present in the form of vitamin, minerals, antioxidant, etc. Macro and micronutrient are the key components for the prevention of diseases. For example, *Allium sativum, Capsicum annum, Curcuma longa, Commiphora wightii*, etc. (Keservani et al. 2017).

8.2.4 Cosmeceutical Importance

Cosmeceutical is a cosmetic product containing ingredients that have medicine or drug-like effect and apply to the skin to improve the aesthetic property of the skin. Herbal cosmeceuticals are traditional remedies or preparation applied in the skin to treat skin diseases or glowing skin. For example, *Phyllanthus emblica, Acacia concinna, Curcuma longa,* etc. (Dweck 2009; Dorni et al. 2017).

8.2.5 Immuno Booster

Different edible medicinal herbs have an activity to boost the immune system that provides immunity for different diseases (Archana et al. 2011). Researches have shown that phytochemicals such as flavonoids, lignans, terpenoids, polyphenol, sulfides, saponin, carotenoids, curcumins, have immune-stimulating activity. For example, *Curcuma longa, Tinospora cordifolia, Cucurbita moschata,* etc. (Yadav et al. 2017).

8.2.6 Economic Importance

The forest of Central India is the reservoir of medicinal plants, which provides the raw material for different drugs. Forests of central India are rich in medicinal herbs (more than 100) rare medicinal plants are present, the economy of rural areas people was based on these medicinal plants. For example, *Acacia catechu, Eclipta alba, Rauvolfia serpintina,* etc. (Mishra 2016; Pradesh et al. 2017).

8.2.7 Cultural and Religious Importance

Plant species are necessary to complete the rituals, festival, religions and celebration purpose. Most of the plants used in cultural and religious purpose have medicinal value in India. The some medicinal plants from central India having culture value are *Ocimum sanctum, Aegle marmelos, Santalum album,* etc. (Ramesh Kumar Ahirwar 2015).

8.3 Cultural and Religious Importance of Edible Medicinal Plants

Nature and plant worship is an ancient central Indian tradition (Gupta and Sharma 2013). This tradition of linking medicinal plant with the culture of that society showed socio-cultural biodiversity of medicinal plants in that particular area. Central India is one of the major areas of socio-cultural biodiversity in India. Traditionally used plants of central India express out the socio-cultural roots of various medicinal

plants (Verma 2014). These plants not only express their medicinal value but also asserting, they are ecologically important to our survival. Several species of medicinal plants in central India considered as scared due to their medicinal, economic, cultural, and religious value (Verma 2014). Thus, one of the ancestors linked these plants to the god or goddess for their conservation. Traditional beliefs of linking medicinal plants to the god were helpful for the conservation of vulnerable species (Singh et al. 2019). This type of socio-cultural biodiversity is rare to observe, people are using various medicinal plants at their ceremony, religion, culture, and so on (Pandey and Pandey 2016).

8.4 Socio-Cultural Adverse Effects

However, the socio-cultural effect also causes the depletion of medicinally important plants in different rural areas of Central India (Walter 2011). Increasing population and urbanization of rural areas causing flood irrigation problems in medicinally important crops. Sometimes poor drainage of flood results in the development of salinity in the soils (Arora and Sharma 2017). Acid-raining and global warming is another challenge, which is creating extinction and reduction of medicinal plants. Most of the medicinally important plant in the rural area of Central India is destroyed by the local due to unaware of their medicinal value (Bhardwaj et al. 2011). Some plants are used in almost all rituals of Central Indian over use of medicinal plants creating vulnerability of particular species (Verma 2014; Sharma et al. 2016) (Table 8.1).

8.5 Geographical Distribution of Medicinal Plants

Central India mainly includes middle part of India and states like Madhya Pradesh, Chhattisgarh, some parts of Jharkhand and Uttar Pradesh, while the Madhya Pradesh is considered as the land of tribes. Madhya Pradesh contains nearly 60 tribal communities and about 24% of the total population of the state of Madhya Pradesh (Sujatha 2002). The major tribes of Madhya Pradesh are Gonds, Bhils, Bhilala, Abujhmaria, Marias, Murias, Korku, Kols, Bajgas, Mariagonds, Khsssond, Birhors, Dhanwars, Halbas, Kamars, Bhumia, Bharia, Urave, Oraon, Kareba, Pradhans, Durgonds, Dorlas, Bhaina, Hijwars, Majhwars/Majhi, Sawar, and Sahariya. The major tribal districts are Sheopur, Morena, Shivpuri, Guna, Gwalior, Hoshangabad, Betul, Shahdol, Jhabua, and Ashoknagar (Sujatha 2002; Pandey and Tiwari 2001). The medicinal plants in the forests of Central India are not uniform (Tripathi et al. 2012). Medicinal plants of highly dense districts of Madhya Pradesh and Chhatisgarh are Jhabua, Dhar, Indore, Neemuch, Mandsoure, Ratlam, Ujjain, Shajapur, Shivpuri, Gwalior, Bhopal, Sehore, Raisen, Narsimhapur, Hoshangabad, Dewas, Harda, Betul, Sagar, Damoh, Jawalpur, Katani, Umaria, Shahdol, Mandla, Annuppur, Bilaspur, Jaspur, Durg districts are mention in the Fig. 8.1 (Dwivedi et al. 2020; Khare 2007).

Table 8.1 List of Medicinally important plants linked with religion and culture of people of Central India.

S. N.	Local Name	Biological Name	Religious/ Cultural belief	Medicinal value
1.	*Bel Sriphla, Bilva*	*Aegle marmelos*	*Bel* leaves are used in enchanments and twings are essential for scared fire in *Yagyas* and it is believed that without bel leaves and fruits worship of lord *Shiva* and *Ganesh* is incomplete.	The pulpy parts of fruits are given to children during anastigmatic for diarrhea. Ripe fruits juice is used during mild laxative. Every morning chewing and swallowing of leaves help in healing of ulcer and sugar in diabetic patients.
2.	*Neem*	*Azadirachta indica*	Hindus believes that eating leaves of neem will acquire freedom and also used in religious ceremonies.	The twigs of A. indica are tooth cleaner and toothache. Leaves are useful in skin and eye diseases.
3.	*Palash, kinsuka, Palasa*	*Butea monosperma*	In Hindu mythology, it is believed that *Navagraha* (nine planets) pacification was done by using dry twigs of *B. monosperma*. Dried powder is useful in making dye for celebration of *Holi* and *Rang Panchami.*	Bark and seeds are used in snakebite antitoxin. Ringworm infection in children are cured by giving leaves of *B. monosperma* with honey.
4.	*Safed Aak, Arka*	*Calotropis gigantea*	Flowers are useful in *Mahadev* and *Hanuman* worship. Plant is believed to modify from sun in ancient time.	Latex is applied on skin during boils and wounds after scorpion sting.
5.	*Bhang*	*Cannabis Sativa*	Plants leaves with milk are used during *Mahashivratri* festival.	Mixture of bhang oils of *C. sativa* and camphor are used in boils. Plant is also useful in curing diarrhea with coconut water.
6.	*Haldi*	*Curcuma longa*	Turmeric paste is applied in face during marriage festival and other ceremonies in Central India.	Rhizome with milk is taken for cough, cold, and healing injuries.
7.	*Doob*	*Cynodon dactylon*	*Doob* are essential for lord *Ganesh Pooja*, without it *Ganesh Pooja* is incomplete.	Plant decoction gives cooling effect as well as reduces the blood pressure. Washed leaves paste applied in cut for quick healing. Whole plant juice is used as an antidote for cobra bites.

(continued)

Table 8.1 (continued)

S. N.	Local Name	Biological Name	Religious/ Cultural belief	Medicinal value
8.	*Amla*	*Embelica officinalis*	*Amla* is worship on *Amla Navami* by the women of Central India on the month of *Kartik.* In *Kartik* month food should be cooked and eaten under this tree and also feed to *Brahmin* to washed sins.	Root bark of *Amla* is astringent and useful in ulcerative stomatitis and gastric ulcer. Fruits have cooling, laxative, diuretic, carminative, digestive, aphrodisiac, antipyretic effects.
9.	*Kusha*	*Desmostachya bipinnata*	This grass ring is worn in all auspicious occasions of *Hindu* culture in Central India.	It increases the concentration power and promotes the intellect. It also acts as an antimicrobial agent. Herb is also called as detoxifying herb.
10.	*Coconut*	*Cocos nucifera*	It is called fruit of aspiration, a coconut is split in any inauguration ceremonies to invite the god in Central Indian culture.	Fibres, vitamins and minerals contained in coconut are useful in burns, hair growth, blood pressure, heart diseases and dissolving kidney stones.

The present study is based on various already published literature giving information of flora found in Central India having Medicinal value.

8.6 Medicinal Plants from Central India

The World Health Organization (WHO) estimates that about 80% of people in developing countries rely heavily on traditional medicine systems such as Ayurveda, Siddha, Unani, etc. (Dixit et al. 2016). The major portion used by them was medicinal plant extracts or their active ingredients (Palombo 2006). In India, there are about one million traditional medicine practitioners and 10,000 licensed pharmacies manufacturing plant drugs (Wakdikar 2004). Edible medicinal plants are considered to be rich resources of active medicinal ingredients, these can be used in the manufacture of drugs either pharmacopoeial, non-pharmacopoeial or synthetic. Medicinal plants play a vital role in the treatment of deadly diseases. As we already classified, some plants have high nutritional value with power of preventing from getting ill so, that they are called as nutraceutical. Some of these medicinal plants include ginger, green tea, walnuts, and turmeric. Various drugs preparation are mentioned in traditional system of medicine for treating some common diseases such as diarrhea, constipation, etc. (Bassam Abdul 2012). The detailed study of

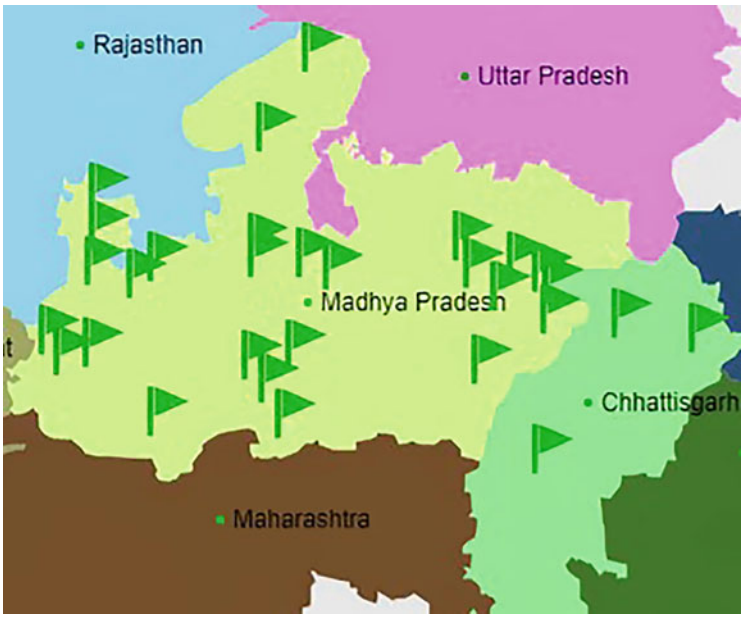

Fig. 8.1 Geographical distribution of medicinal Plants from various districts of Madhya Pradesh and Chhattisgarh

30 species from Central India with major phytoconstituents and pharmacological activity were elucidated in Table 8.2 and Fig. 8.2.

The wild flora of central India contains a great variety of useful plants, which have been used in either for treatment or prevention of disease. Millions of people in Central India still do not reach modern medicine and are dependent on medicinal plants (Pandey and Savita 2017). Different plant parts are used in medicinal value such as leaves, fruits, flowers, seeds, rhizome, juice, oil, root, husk, stem, tuber, etc. (Kumari et al. 2011). These medicinal plants contain terpenoids, flavonoids, alkaloids, coumarins, glycoside, essential oils, sterols, phenolic acids, etc. as secondary metabolites (Teoh and Das 2018). The specific phytochemicals present in plants determined the medicinal value of particular medicinal plant so, scientists attention towards natural/herbal medicine was increases and race to find out harmless herbal medicine increased (Kambli et al. 2014). These medicinal plants have a variety of medicinal properties and are used in the treatment of various diseases such as cancer, diabetes, high blood pressure, heart disease, severe ulcer, memory, Alzheimer's disease, age-related neurological disorders, kidney disorders, cognitive function, etc. (Thatoi et al. 2016; Karar and Kuhnert 2017). Most of the medicinal plant's pharmacological *activities* were proved in modern *laboratories,* e.g. vincristine, vinblastine is the chemical constituents of Vinca used for the treatment of cancers (Lee et al. 2015). Various other medicinal plants present in Central India are elucidated in Table 8.3.

Table 8.2 Detailed summary of medicinal plants used in daily basis from Central India.

S. N.	Medicinal Plants	Family	Useful parts	Medicinal value	Major Phytochemical	References
1	*Ashwagandha (Withania somnifera)*	Solanaceae	Root	Anti-stress, skin disease, blood pressure, anti-anxiety, swelling, wounds, filler, joint pain	Withanine, Somniferine	Mirjalili et al. (2009); Candelario et al. (2015)
2	*Sarpagandha (Rauvolfia serpentina)*	Apocynaceae	Root	High blood pressure, psychiatric, hysteria	Reserpine, Rescinnamine	Mittal et al. (2012); Singh (2017); Mahalakshmi et al. (2019)
3	*Kalmegh (Andrographis paniculata)*	Acanthaceae	plant	Skin disease, anti-pyretic, malaria, fever, anti-inflammatory, antibacterial, blood purifier	19-norandrographolides A, B and C	Chao and Lin (2010); Niranjan et al. (2010)
4	*Safed musli (Chlorophytum borivilianum)*	Liliaceae	Rhyzome, root	Diabetics, arthritis, cancer, improving sexual performance	Hecogenin	Adhikari et al. (2018)
5	*Satawar (Asparagus racemosus)*	Liliaceae	Root	Ulcer, skin disease, eye disease, increase milk production in cow.	ShatavarinI,II	Sharma et al. (2014); Shah et al. (2014)
6	*Senna (Cassia angustifolia)*	Leguminosae	leaf	Stomach disease	Sennoside A and B	Mehrafarin et al. (2012)
7	*Gudmar (Gymnema sylvestre)*	Apocynaceae	leaf	Liver tonic, diabetics, heart disease, fever, white spot, reduce itching, burning sensations, snake bite, stomach pain, eye pain	Gymnemic acid and gymnema saponins	Spasov et al. (2008); Sarker et al. (2019)
8	*Chandrasur (Lepidium sativum)*	Brassicaceae	Leaf, seed	Useful in production of milk in mother, cow and buffalo, digestion, eye disease, loose	Gallic acid, protocatechuic acid, 7,10- hexadecadienoic acid, caffeic acid, 11- octadecenoic	Alqahtani et al. (2019)

(continued)

Table 8.2 (continued)

S. N.	Medicinal Plants	Family	Useful parts	Medicinal value	Major Phytochemical	References
				motion, ladies disease, asthma, piles, leaf-anti scorbutic	acid, 7,10,13- hexadecatrienoic acid and behenic acid	
9	*Ratanjot (Jatropha curcas)*	Euphorbiaceae	Plant branch	Skin disease	Pyrogallol, Gallic acid, vanillic acid	Laxane et al. (2013)
10	*Isabgol (Plantago ovata)*	Plantaginaceae	Husk	Piles, constipation, loose motion.	Aldobionic acid, pentosans	Shojaii and Abdollahi Fard (2012)
11	*Tulsi (Ocimum sanctum)*	Labiatae	Leaf	Cough syrup, insect bites, respiratory problems, digestion, ear pain	Eugenol, methyl eugenol, Carvecrol	Cohen (2014); Verma (2016)
12	*Bhui Aonla (Phyllantus amarus)*	Phyllanthaceae	Plant	Urinary disease, antioxidant, hepatoprotective, jaundice, stomach pain, ulcer.	Phyllanthin, Securinine, Amarosterol A and B	Gbadamosi (2015); Danladi and Idris (2018)
13	*Mulaithi (Glycyrrhiza glabra)*	Leguminosae	Underground stem	Heart disease, anti-inflammatory, antioxidant.	Glycrrhizin,18-B-glycyrrhetinic acid	Sharma et al. (2018)
14	*Kalihari (Gloriosa superba)*	Liliaceae	Rhizome	Anticancer, antipyretic, antimalarial, anti-jaundice, piles, asthma	Colchicines and Gloriosine	Ravi et al. (2011); Misra et al. (2020)
15	*Giloy (Tinospora cordifolia)*	Menispermaceae	Root, stem, Leaf, fruit	Leprosy, stem-jaundice, cough, fever, white discharge, control of heart beating, control blood pressure, jaundice, chicken pox, immune booster, jaundice, tonic	Amristoside A, B, C and D, 1-diphenyl, 2-picrylhydrazyl	Sharma et al. (2019)

16	*Brahmi (Bacopa monnieri)*	Scrophulariaceae	Plant	Alzheimer's disease, nerve tonic, allergic conditions, hysteria	Bacosides A and B	Al-snafi (2013)
17	*Pattharchur (Coleus aromaticus)*	Lamiaceae	Leaf	Stomach pain, carminative, kidney stone, urine disease.	Rosmarinic acid, carvacrol	Khare et al. (2011)
18	*Makoy (Solanum nigrum)*	Solanaceae	Plant	Fruit-fever, burns, itching, stomach irritation, loose motion, eye disease, plant-piles, liver disease	Solanine, Sapogenin, Diosgenin	Chauhan et al. (2012)
19	*Bia vidung (Embelia ribes.)*	Myrsinaceae	Fruit	Anti-worms, loose motion, , acne, tonic snake and crabs bites	Tigogenin, christembine, Embelin, Embelia	Bist and Prasad (2016)
20	*Ajwain (Hyoscyamus niger)*	Solanaceae	Seed	Loose motion, lower blood pressure, ulcer, anti-inflammatory, teeth pain relief, eye disease, asthma, cough, urine, infection	Atropine, Scopolamine hyoscine	Sajeli (2010); Jun et al. (2011)
21	*Pan (Piper betle)*	Piperaceae	Leaf	Aphrodisiac, cough, digestion, heart disease	Eugenol, allylpyrocatechol	Rekha et al. (2014)
22	*Kanghi (Abutilon indicum)*	Malvaceae	Seed, leaf	Seed-laxative, leaf-ulcer, boils	Fumaric, p-coumaric acid	Saraswathi et al. (2011)
23	*Khair (Acacia catechu)*	Leguminosae	Bark	Chronic diarrhea	Acacatechin, quercetin	Hazra et al. (2017)
24	*Vasaka (Adhatoda vasica)*	Acanthaceae	Leaf	Asthma and bronchial troubles	Vasicine and Vasicinone	Ullah et al. (2013)
25	*Bel (Aegle marmelos)*	Rutaceae	Fruit	Dysentery, diarrhea, intermittent fever	Marmelosin and Furocouram	Ruhil et al. (2011); Patkar et al. (2012)

(continued)

Table 8.2 (continued)

S. N.	Medicinal Plants	Family	Useful parts	Medicinal value	Major Phytochemical	References
26	*Neem (Azadirachta indica)*	Meliaceae	Seed and bark	Skin disease, malaria fever	Azadirechtin, Nimbin, Nimbidin	Babu et al. (2016)
27	*Sadabahar (Catharanthus roseus)*	Apocynaceae	Leaf and flowers	Diabetes	Vincristine, Vinblastine	Tiong et al. (2013)
28	*Harjori (Cissus quadrangularis)*	Vitaceae	Stem	Bone fractures	Sigma-Amyrin acetate, Hexadecanoic acid, Trans-resveratrol-3-0 glucoside	Rao et al. (2011); Suhashini and Chandra (2015)
29	*Nirgundi (Vitex negundo)*	Lamiaceae	Leaf	Body pain, skin diseases, diabetic	P-cymene, Beta-curcumene	Suganthi and Dubey (2016)
30	*Keotic (Ventilago calyculata)*	Rhamnaceae	Bark and seed	Diabetic rheumatic pain	Ventiloquinone, 2-hydroxyislandicin	Yadav and Joshi (2011)

Fig. 8.2 Edible medicinal parts of 1. Ashwagandha, 2. Sarpgandha, 3. Kalmegh, 4. Safed musli, 5. Satawar, 6. Senna, 7. Gud mar, 8. Chandrasur, 9. Ratanjot, 10. Isabgol, 11. Tulsi, 12. Bhui Aonla, 13. Mulethi, 14. Kalihari, 15. Giloe, 16. Brahmi, 17. Pattharchur, 18. Makoy, 19. Bia vidung, 20. Ajwain, 21. Pan, 22. Kanghi, 23. Khair, 24.Vasaka, 25. Bel, 26. Neem, 27. Sadabhar, 28. Harjari, 29. Nirgundi, 30. Keotic

Fig. 8.2 (continued)

8.7 Economic Value of Medicinal Plants

In recent years, the demand for medicinal plants has increased worldwide, leading to the indiscriminate collection of these plants in their natural habitat (Alam and Belt 2009; Iqbal et al. 2017). Approximately 6000–7500 species are used as medicine in

Table 8.3 Summary of Medicinally important plants from Central India

S. N.	Medicinal plants	Family	Useful parts	Medicinal value	References
31.	*Chironji (Buchananialanzan)*	Anacardiaceae	seeds	Blood purification, Scabies, Leprosy, Abdominal discomfort and acne vulgaris.	Pattnaik et al. (2013)
32.	*Vayvidang (Embelia ribes)*	Myrsinaceae	Whole plant	Worm infection, wound healing, and lymphadenopathy.	Srinath and Jyothi (2010)
33.	*Dikamali (Gardenia gummifera)*	Rubiaceae	leaf	Wound healing, splenomegaly, encephalitis, anorexia, flatulence.	Chen et al. (2020)
34.	*Jivanti (Leptadenia reticulata)*	Asclepiadaceae	root	Gynecological disorders, UTI, and used to produce milk (lactogenic)	Verma et al. (2014)
35.	*Dhai (Woodfordia fruticosa)*	Lythraceae	Flower	Ulcer, wound, cough, and pneumonia.	Das et al. (2007)
36.	*Sarphonka (Tephrosia purpurea)*	Fabaceae	Leaf and root	Dental infection, dental pain, oral cavity infection, ulcers, splenomegaly, cough, cold, and various other skin diseases.	Sahayaraj et al. (2015)
37.	*Shami (Prosopis cineraria)*	Fabaceae	Bark	Leprosy, dysentery, bronchitis, asthma, leukoderma, and piles.	Islam et al. (2018)
38.	*Malkangni (Celastrus paniculatus wild)*	Celastraceae	Seed	Arthritis	Kulkarni et al. (2015)
39.	*Dhaman (Grewia tilifoliavohile)*	Tiliaceae	Bark	Cancer	Chang et al. (2018)
40.	*Moyen (Rubia Cordifolia Linn.)*	Rubiaceae	Bark	Cancer	Verma et al. (2016)
41.	*Amarbel (Cuscuta reflexa Roxb.)*	Convolvulaceae	Panchang	Dysentry	Saeed et al. (2014)
42.	*Punarnava (Boerhavia diffusa Linn.)*	Nyctaginaceae	Panchang	Jaundice	Oburai et al. (2015)
43.	*Apamarg (Achyranthes aspera Linn.)*	Amaranthaceae	Root	Headache	Bhosale et al. (2012b)

(continued)

Table 8.3 (continued)

S. N.	Medicinal plants	Family	Useful parts	Medicinal value	References
44.	*Satawar (Asparagus racemosus wild)*	Liliaceae	Root	Joint pain	Singla and Jaitak (2014)
45.	*Hathphan (Leea macrophylla Roxb.)*	Vitiaceae	Root	Ulcer	Al Mahmud et al. (2017); Mawa et al. (2019)
46.	*Apamara (Amaranthus aspera Linn.)*	Amaranthaceae	Root	Toothache	Bhosale et al. (2012a, b)
47.	*Akarkara (Spilanthes aspera Linn.)*	Areaceae	Flower	Stomach worm	Morshed et al. (2011)
48.	*Karanj (Pongamia pinnata (L.) pierre*	Fabaceae	Seed	Skin disease	Jayaram and Shashidhara (2011)
49.	*Punarnava (Boerhavia diffusa Linn.)*	Nyctaginaceae	Leaf	Skin disease	Mishra et al. (2014)
50.	*Kaunch Safed (Mucuna pruriens (L.) DC)*	Fabaceae	Seed	Skin disease	Manyam et al. (2004)
51.	*Baichandi (Dioscorea bulbifera Linn)*	Dioscoreaceae	Rhizome	Memory loss	Galani Varsha (2017)
52.	*Van tulsi (Eranthemum purpuras Nees.)*	Acanthaceae	Stem	Piles	Mathew (2006)
53.	*Shankhpushpi (Evolvulus alsinoides Linn.)*	Convolvulaceae	Whole plant	Memory loss, jaundice	Naikawadi et al. (2016)
54.	*Bahera (Terminalia bellirica (Gaertn.) Roxb.)*	Combretaceae	Fruit	Migraine	Abraham et al. (2014); Jayesh et al. (2017)
55.	*Harsingar (Nyctanthes arbor tristis Linn.)*	Oleaceae	Leaf	Malaria fever	Nirmal et al. (2012); Santosh and Manojkuma (2016)

56.	*Badi indrayan (Citrullus colocynthis (L.) schrad)*	Cucurbitaceae	Seed	Malaria fever, Jaundice	Hussain et al. (2014)
57.	*Anantmool (Hemidesmus indicus Linn.)*	Apocynaceae	Root	Loss of appetite	Desai et al. (2017)
58.	*Ramdatun (Smilax perfoliata Lour.)*	Smilaceae	Stem	Leucorrhea	Borkataky (2014)
59.	*Buch/Sweet flag (Acorus calamus)*	Acoraceae	Rhizome	Rheumatoid arthritis and stroke	Rajput et al. (2014)
60.	*Lemon grass (Cymbopogon flexuosus)*	Poaceae	Leaf and oil	Fever, diabetes, rheumatism, bone fracture, hypertension, wounds healing	Silveira et al. (2012)
61.	*Nagarmotha (Cyperus rotundus)*	Cyperaceae	Rhizome	Diuretic, carminative, analgesic, antispasmodic	Peerzada et al. (2015)
62.	*Arjuna (Terminalia arjuna)*	Combretaceae	Bark	Asthma, bile duct disorders.	Kapoor et al. (2014); 1999
63.	*Harra (Terminalia chebula)*	Combretaceae	Fruit	Dysentery, Respiratory cough, and sore throat	Jokar et al. (2016)
64.	*Khus (Vetiveria zizanioides)*	Poaceae	Root	Blood purifier, ringworm, indigestion, and loss of appetite	Bhushan et al. (2013)
65.	*Mentha (Mentha arvensis L.)*	Lamiaceae	Oil	Carminative, flatulence, anorexia, expectorant, stomach disease, cough and cold, throat infection, fever, and gas.	Pandey et al. (2003)
66.	*Panchouli (Pogostemon cablin Bentham)*	Lamiaceae	Oil and juice	Anti-worms and T.B.	Chakrapani et al. (2013)
67.	*Jasmine (Jasminum grandiflorum)*	Oleaceae	Leaf, flower or whole plant	Mouth ulcer, Ear disease, crab bite, skin disease, loose motion, aphrodisiac, urine disease.	Demole et al. (1962); Umamaheswari et al. (2007)
68.	*Ghughuchi (Abrus precatorius L.)*	Fabaceae	Root, seed & leaf	Contraceptives, Purgative, emetic.	Garaniya and Bapodra (2014)

(continued)

Table 8.3 (continued)

S. N.	Medicinal plants	Family	Useful parts	Medicinal value	References
69.	*Bach (Acorus calamus L.)*	Araceae	Rhizome	Stimulant, stomachache, anti-emetic.	Zahin et al. (2009); Sharma et al. (2014)
70.	*Gheekumar (Aloe vera L.)*	Liliaceae	Leaf, pulp and dried juice of leaf	Enhancement of sexual vitality, stomachictonic.	Mukherjee et al. (2013)
71.	*Bichiya Kanta (Acanthospermum hispidum)*	Asteraceae	Whole plant	Scorpion sting	Lagnika et al. (2011)
72.	*Kulanjan (Alpinia Galanga (Linn.) Swartz)*	Zingiberaceae	Rhizome	Bronchial troubles, cough and cold	Tang et al. (2018)
73.	*Bhandari (Anisomeles indica Linn)*	Lamiaceae	Leaf	Cough and cold	Singh and Kumar Singh (2019)
74.	*Sitaphal (Annona Squamosa Linn)*	Annonaceae	Leaf	Reduce blood sugar	Pandey and Barve (2011)
75.	*Dhawara (Anogeissus latifolia (Roxb.))*	Combretaceae	Leaf and gum	Anti-diarrheal and tonic	Kala (2016)
76.	*Palas (Butea monosperma (Lom.) Taub)*	Fabaceae	Seed and petioles	Ringworms, skin disease, and avoid skin stroke	Sutariya and Saraf (2015)
77.	*Gataran (Caesalpinia bonduc (Linn.) Roxb)*	Leguminosae-Caesalpinioideae	Seed	Stomach disorders	Kakade et al. (2017)
78.	*Chitrak (Plumbago Zeylanica Linn.)*	Plumbaginaceae	Seed	Boils and ulcer	Jalalpure (2011)
79.	*Jamun (Syzygiumcumini (Linn.))*	Myrtaceae	Seed	Diarrhea, dysentery, and diabetes.	Bijauliya et al. (2017)
80.	*Sanjana (Moringa oleifera Lam)*	Moringaceae	Leaf	Application in wounds.	Goyal et al. (2007)

Table 8.4 Economical value of Medicinal plants in local market of Central India

S.N.	Botanical Name	Hindi Name	Medicinal part	Price Rs./kg
1.	*Jatropha curcas*	*Ratanjot*	Seed	5-6
2.	*Phyllanthus amarus*	*Bhumi Amla*	Leaf	40
3.	*Rauwolfia serpentina*	*Sarpagandha*	Root	1195
4.	*Terminalia bellerica*	*Bahed*	Seed	15
5.	*Tinospora cordifolia*	*Giloy*	Stem	150-200
6.	*Withania somnifera*	*Ashwagandha*	Root	1,200
7.	*Aegle marmelos*	*Bel*	Fruit/leaf	10
8.	*Andrographis paniculata*	*Kalmegh*	Whole plant	30-75
9.	*Terminalia arjuna*	*Arjuna*	Bark	600
10.	*Terminalia chebula*	*Harra*	Seed	50
11.	*Embelia ribes*	*Baibidung*	Seed	520
12.	*Cymbopogon martini*	*Lemon grass*	Plant	1
13.	*Gymnema sylvestre*	*Gudmar*	Leaf	40
14.	*Cassia tora*	*Chirota*	Seed	20
15.	*Dioscorea daemia*	*Bechadi*	Root	75

India in various traditional herbal remedies, such as Ayurveda, Siddha, Unani, Homeopathy, Herbo-mineral, traditional, etc. (Khyade et al. 2014; Parasuraman et al. 2014). India's medicinal herbs were estimated Rs. 2300 crore and which is expected to reach Rs. 5000 crore by the turn of the century (Phondani 2011).

Various literatures showed that the tribal community of Central India is rich in ethnobiological knowledge. Elder people have more knowledge on season, date, and time to harvest medicinal plants. The plants that harvested at that particular date and time have better therapeutics value and contain an optimum quantity of active ingredients. Medicinal plants have enormous opportunities for local tribal communities as well as the government because medicinal plants demand in the global market at premium prices. (Kala 2009). The tribal communities are collecting gums, leaves, bark, seeds, flowers, fruits, and rhizome of medicinal plants to manage their economic income (Tiwari et al. 2012). However the proper study of these medicinal herbs in modern laboratories to extract the detailed knowledge about the active ingredients and optimum time for harvesting may increase the economic income of tribal community as well as government and this will also helpful for the farmer to commercial production of medicinal plants. (Premila and Conboy 2007; Pant 2011) Some of the medicinal plants and their prices in local market was elucidated in Table 8.4.

8.8 Conclusion

In a recent study, it was found that the forest of Central India is rich in medicinal plants and tribal communities are still collecting gum, bark, leaf, the root of different plants based on traditional ethnobiological knowledge, which has been transferred

from one to another generation. Medicinal plants of Central India covered an important position in the socio-cultural, spiritual, and religious arena of rural and tribal of Central India. Medicinal plants used are found different in communities because of their religious and cultural value. The people of Central India are dependent on their ecological surrounding to cure disease, celebrate the religious and cultural festival, which seems conservative.

The people of Central India have traditional knowledge relating to the collection, processing, storage, and utilization of medicinal plants. However, the knowledge of medicinal herbs (planting, processing, collecting, and storage) should be given to newer generation to improve economic status and to attract youth. The government need to decide the minimum support price of medicinal plants that avoid the involvement of a mediator.

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