Promising medicinal plants their parts and formulations prevalent in folk medicines among ethnic communities in Madhya Pradesh, India

Abstract
India is a reservoir of medicinal plants rich in herbal treasure and floristic wealth. Plants are being used since ancient times as a source of drugs as depicted from Indian ancient Hindu scriptures like Rigveda (4500-1600 BC), Charak samhita (1000-800 BC), Sushrut Samhita (800-700 BC). The medicinal plants play an important role in folk-medicines among 104.2million ethnic communities inhabited in 5000 villages in India where no such modern facilities of hospitals exits, and also plays a significant role in socio-cultural, spiritual, health needs of communities, across the globe developing and developed countries. Gradually, 85% of the herbal and folk-medicines are derived from plants on which 4.3billion people rely, across the globe. In Indian sub-continent folk-medicines are still prevalent among 25.2% of ethnic community in Madhya Pradesh are inhabited in 15% of the total geographical population of the country, who had accumulated a great amount of knowledge on use of plants. The paper precisely depicts some of the promising plants prevalent in Ethnic pockets viz. Chhatarpur; Satna; Jabalpur; Seoni; Chhindwara and Hoshanagabad districts in Madhya Pradesh in India.

Keywords: medicinal plants, herbal treasure, floristic wealth, drugs, hindu scriptures, folk-medicines, ethnic communities, artharva veda, charak, sushruti, tribal communities, gond, baiga, bhariya, bhil, bhilala, korku, kol, bediya, pardhi, khairewar, sahariya

Introduction
India has a rich knowledge on plant based drugs both for use in preventive and curative medicines. The classical work of the “Artharva Veda”, many ancient Indian Scholars like “Charak” “Sushruti” and others had played a vital role in describing Indian medicinal Plants. The history of herbal medicines in India is thus very old, perhaps the oldest use of plants in herbal medicine had been documented in Hindu scriptures like Rigveda (4500-1600 B.C.), Charak Samhita (6th-2nd century BC), Atharvaveda (200 BCE-1000 BCE) who are known to had accumulated a great amount of knowledge on use of various plant species. The ethnic communities comprises of Gond, Baiga, Bediya, Bhil, Bhilala, Bhariya, Korku, Pardi tribes been reported to be used in India sub-continent, but 500 of them are most commonly employed by different ethnic communities prevailing in the country. The Indian sub-continent is inhabited by large number of ethnic communities and they live in forest and forest fringe areas. The Indian state of Madhya Pradesh 22.9734° N, 78.6569° E wherein the present study has been carried out, is inhabited by various tribal communities, who are known to have accumulated a vast knowledge on use of various plant species. The review of literature reveal’s that much work has been done on ethno-medical plants in Madhya Pradesh along with the documentation of floristic study and herbal medicines carried out by numerous ethnobotanist’s but still there are some interior areas with pre-dominance of ethnic communities which need to be intensively surveyed.

Materials and methods

Study site
The present study had been carried out in state of Madhya Pradesh in India, lies between latitude 17° 48′ N and 26° 52′ S and between longitude 74° 2′ N to 84° 24′ E in state of Madhya Pradesh; where by large number of tribal communities with wide diversity in ethnic races viz. Gond, Baiga, Bhariya, Bhil, Bhilala, Korku, Kol, Bediya, Pardi, Khairewar, Sahariya etc. Ethno-medical data was collected in during survey conducted between theyears 2013-2016 in six tribal dominated districts of Jabalpur, Seoni, Chhattarpur Satna, Hoshangabad and Chhindwara in states of Madhya Pradesh, India between 2013 September to 2016 February

Data collection
The present investigation was carried out during 2013 September to 2016 February and data was collected from six clusters as shown in Figure 1. The study was conducted by interviews followed by focus group discussions with local indigenous communities. During the visits a number of traditional herbal healers and, elderly persons of tribal communities, were contacted and information was collected through interview, observations and discussion held during field survey. These medicinal plants were collected from wild. The local traditional herbal healers (vaids) had specialized knowledge about availability of these plants (trees, shrubs, herbs, and climbers) as well as their seasonal availability and time of collection for roots, leaves, seeds and fruits in cure of various ailments and preparation of herbal formulations.

Interview with informants of knowledge
The informants were asked about ethnobotanical uses from 25 respondents habitat in districts of Jabalpur, Seoni, Chhattarpur, Satna, Hoshanagabad and Chhindwara comprising of local vaidraj, traditional healers for 25 ailments and prescription presented in Table
I for the ethno-botanical data (Local name of plant, Family, plant part used, formulation in medicine in cure of ailments were recorded for descriptive response. Moreover, these findings indicate awareness about folk medicines prevalent among ethnic communities in different tribal localities. The information is presented in Table 1.

**Table 1** Cure of ailments from herbal folk medicines prevalent among ethnic communities in MP

| S.No | Disease      | Medicinal plant                      | Local name | Family       | Plant category | Plant part | Formulation | Locality               |
|------|--------------|--------------------------------------|------------|--------------|----------------|------------|--------------|------------------------|
|      | Arthritis    | *Vitex negundo* Linn.                | Nirgundi   | Verbenaceae  | Shrub          | Leaf       | Oil          | Turkakhapa, Hoshangabad |
|      |              | *Celastrus paniculata* Wild.         | Malkangni  | Celastraceae | Climber        | Seed       | Oil          | Majhganganwan, Satna    |
|      | Asthma       | *Abelmoschus esculentus* Linn.       | Vanbhindri | Malvaceae    | Shrub          | Seed       | Decoction    | Nibhora, Jabalpur       |
|      |              | *Zingiber purxiven* Wild.            | Jangali adrk | Zingiberaceae | Herb          | Rhizome    | Paste        | Mandikoh, Hoshangabad   |
|      | Baldness     | *Adhatoda vassa* Nees               | Adusa      | Acanthaceae  | Herb          | Stern      | Paste        | Satai, Chhattarpur      |
|      |              | *Eclipta alba* (Linn.) Hassr.       | Bhrusa     | Asteraceae   | Herb          | Leaf       | Paste        | Baldeoagoan, Satna      |
|      | Blood Pressure| *Terminalia arjuna* (Roxb.) Wgt & Arn.| Arjun      | Combretaceae | Tree          | Bark       | Decoction    | Kundam, Jabalpur        |
|      |              | *Embelia ribes* Burm.f.              | Vaividang  | Myrsinaceae  | climber       | Root       | Paste        | Banjari, Seoni          |
|      | Bronchitis   | *Lygodium Spps.*                     | Choti Bhulan | Lygodiaceae  | Root          | Powder     | Dhuma, Seoni |
|      | Cancer       | *Grewia hirsuta* Vahile              | Gursakri   | Tiliaceae    | Shrub         | Whole Plant| Powder       | Chhapara, Seoni         |
|      |              | *Grewia tilifolia* Vahile            | Dhaman     | Tiliaceae    | Tree          | Bark       | Powder       | Banjari, Seoni          |
|      |              | *Litsea glutinosa* (Lour)Rob.       | Maidakdli  | Lauraceae    | Tree          | Bark       | Powder       | Gwari, Jabalpur         |
|      | Dysentry     | *Rubia cordifolia* Linn.             | Moyen      | Rubiaceae    | Tree          | Bark       | Paste        | Patalkot, Chhindwara    |
|      | Fracture     | *Cuscuta reflexa* Roxb               | Amarbel    | Convolvulaceae | Climber     | Panchang   | Paste        | Banjari, Seoni          |
|      |              | *Casus quadrangularis* Linn.         | Hadjiodi   | Vitaceae     | Climber      | Stem       | Paste        | Chitrakoot, Satna       |
|      | Jaundice     | *Gytersus scarios* R.BR.             | Gundla     | Cyperaceae   | Herb         | Root       | Powder       | Patalkot, Chhindwara    |
|      |              | *Boerhavia diffusa* Linn.           | Punarnava  | Nyctaginaceae | Herb        | Panchang   | Powder       | Majhganganwan, Satna    |
|      | Headache     | *Ocimum sanctum* Linn.               | Tulsi      | Lamiaceae    | Herb         | Leaf       | Paste        | Pondi, Jabalpur         |
|      |              | *Achyranthus asper* Linn.            | Apamarg    | Amarathaceae | Herb         | Root       | Paste        | Kishangarh Chhattarpur  |
|      | Joint Pain   | *Curcma amada* Roxb.                 | Ama Haldi  | Zingiberaceae | Herb        | Rhizome    | Paste        | Patalkot, Chhindwara    |
|      |              | *Jatropha curcas* Linn.              | Ratanjot   | Euphorbiaceae | Shrub       | Seed       | Oil          | Kishangarh, Chhattarpur |

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| S.No | Disease | Medicinal plant | Local name | Family | Plant category | Plant part | Formulation | Locality          |
|------|---------|-----------------|------------|--------|----------------|------------|-------------|-------------------|
|      | Impotency in Males | Asparagus racemosus Willd. | Satawar | Liliaceae | Climber | Root | Powder | Paghdal, Hosangbad |
|      |         | Amorphophallus paeoniifolius (Dennst.) Nicolson. | Jimikand | Araceae | Herb | Rhizome | Powder | Batka khapa Chhindwara |
|      |         | Curculigo anchowerica Gaerthn. | Kali Musli | Amaryllidaceae | Herb | Root | Powder | Chitrakoot, Satna |
|      |         | Bryonia laciniosa Linn. | Shivlingi | Cucurbitaceae | Climber | Seed | Powder | Sohagpur, Hosangbad |
|      | Impotency in Females | Phyllanthus niruri Linn. | Bhui Amla | Euphorbiaceae | Herb | Panchang | Powder | Patalkot Chhindwara |
|      |         | Citrullus colocynthis (L.) Schrad | Badi Indrayan | Cucurbitaceae | Herb | Seed | Powder | Panagar Jabalpur |
|      | Jaundice | Evolvulus alsinoides Linn. | Shankhpuspi | Convolvulaceae | Herb | Flower | Powder | Nibhora, Jabalpur |
|      |         | Smilax persiciflora Lour. | Ramdatun | Smilaceae | Climber | Stem | Powder | Patalkot, Chhindwara |
|      | Leucorrhoea | Ocimum sanctum Linn. | Tulsi | Lamiaceae | Herb | Leaf | Paste | Buxoi, Chhatarpur |
|      |         | Euphorbia hirta Linn. | Badi durhi | Euphorbiaceae | Herb | Leaf | Paste | Shahpura, Jabalpur |
|      | Lactation | Anantmool Apocynaceae | Anantmool | Apocynaceae | Shrub | Root | Decoction | Banjari, Seoni |
|      |         | Andrographis paniculata (Burm.f.) | Kalmedh | Acanthaceae | Herb | Whole Plant | Decoction | Thanakgheda, Chhindwara |
|      | Memory Loss | Nyctanthes arbor-tristis Linn. | Harsingar | Oleaceae | Tree | Leaf | Decoction | Majhgaoan, Satna |
|      | Migraine | Citrullus colocynthis (L.) Schrad | Badi Indrayan | Cucurbitaceae | Climber | Seed | Powder | Nayagaon, Jabalpur |
|      |         | Terminalia bellirica (Gaertn.) Roxb. | Bahera | Combretaceae | Tree | Fruit | Powder | Kishangarh, Chhattarpur |
|      |         | Bacopa monnieri (Linn.) Pennell | Bramhi | Scrophulariaceae | Herb | Leaf | Decoction | Thanakgheda, Chhindwara |
|      |         | Evolvulus alsinoides Linn. | Shankhpuspi | Convolvulaceae | Herb | Whole Plant | Decoction | Nibhora, Jabalpur |
|      | Memory Loss | Dioscorea bulbifera Linn. | Baichandi | Dioscoreaceae | Climber | Rhizome | Powder | Ratan, Chhindwada |
|      | Piles | Eranthemum purpureum Nees. | Van Tulsi | Acanthaceae | Herb | Stem | Powder | Devara, Chhatarpur |

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Table Continued..

| S.No | Disease          | Medicinal plant                      | Local name | Family       | Plant category | Plant part | Formulation | Locality                  |
|------|------------------|--------------------------------------|------------|--------------|---------------|------------|-------------|----------------------------|
|      | Skin Diseases    | *Theop sia potulnea* (L.) Sol. ex Corrêa | Paras peepal | Malvaceae.   | Tree          | Seed       | Paste       | SeoniMalwa, Hoshangabad   |
|      |                  | *Pongamia pinnata* (L.) Pierre        | Karanj     | Fabaceae     | Tree          | Seed       | Oil         | Banjari , Seoni           |
|      |                  | *Boerhavia diffusa* Linn.             | Punarnava  | Nyctaginaceae| Herb         | Leaf       | Paste       | Buxoi, Chhatpur           |
|      |                  | *Mucuna pruriens* (L.)DC             | Kemach safed | Fabaceae     | Seed         | Paste       | Sihora, Jabalpur         |
|      | Snake Bite       | *Tinospora cordifolia* (Thunb) Miers  | Giliy      | Menispermacae| Shrub        | Root       | Paste       | Batka Khapa, Chhindwada   |
|      | Stomach worm     | *Embelia ribes* Burm. F               | Vaividang  | Myrsinaceae  | Herb         | Root       | Paste       | Harrai, Chhindwara        |
|      | Toothache        | *Spilanthus oleracea* Linn.           | Akarkara   | Areaceae     | Herb         | Flower     | Powder      | Barela Jabalpur           |
|      |                  | *Solanum nigrum* Linn.                | Bhatkatiya | Solanaceae   | Herb         | Root       | Decoction   | Chhind, Chhindwara        |
|      |                  | *Amaranthus aspera* Linn.             | Apamarg    | Amaranthace  | Herb         | Root       | Paste       | Majhgaon, Satna           |
|      | Ulcer            | *Gloriosa superb* Linn                | Kalihari   | Liliaceae    | Climber      | Root       | Paste       | Patalkot, Chhindwada      |
|      |                  | *Leea macrophylla* (Roxb.) ex. Horn. | Hathphan   | Vitaceae     | Herb         | Root       | Powder      | Nayagoan, Jabalpur        |

**Results and discussion**

The Ethno-medicinal survey was conducted in six districts of Madhya Pradesh, India which are having predominance of ethnic communities as shown in Figure 1. The study reveals that a large number of traditional healers (Vaidraj) belonging to different ethnic communities residing in different pockets of Madhya Pradesh are utilizing medicinal plant and their parts collected from herbs, shrubs, climbers and trees comprising from different plant families (Figure 2). The information was recorded from 25 traditional healers and elderly persons of ethnic communities belonging to Gond, Bhaiya, Korku, Parduhi, Bhilala, Bediya and Kol tribes on 49 plant species with 54 uses of plants and their parts in different formulations such as powder, paste, decoction, extract, oil, raw and cooked parts of root, leaf, stem, whole plant (panchang), rhizome, bark and flower (Figure 4) used in cure of ailments viz. Arthiritis, Asthma, Baldness, Bronchitis, Cancer, Joint Pain, Dysentery, Fracture, Headache, Jaundice, in cure of Impotency in males and females, Leucorrhoea, Leucoderma, Loss of appetite, Malarial fever, Migraine, Memory loss, Piles, Skin infection/disease, Snake-bite, Stomach worms, Tooth-ache and Ulcer as presented in Table 1 & Figure 3. The plant species listed are found in abundance in forest eco-system.

The study revealed medicinal plants and their parts as rhizome, root, stem, leaves, seeds, fruits flower, and bark of trees, herbs, shrubs and climbers are used in preparation of formulations viz. powder, paste, decoction, oil, raw edible and roasted forms (Figure 2) (Figure 4) are being used by traditional healers and vaidraj. They have vast knowledge about plants available in and around their habitat and plant parts used in preparation of different formulation, dosages and mode of administration (Figure 3) in primary health care of localities in dense forest.

![Madhya Pradesh (District Map)](image_url)

**Figure 1** Study districts: Chhatarpur, Satna, Jabalpur, Seoni, Chhindwara & Hoshanagbad.
The results of plants used, formulations and dosages were different and not previously reported in any similarly conducted studies to document ethno-medicinal uses. As it is very clear from literature reviewed that different plant species were used in different tribal pockets of Madhya Pradesh like Gond tribes in Sagar district, Kol tribes in Rewa district, Baiga and Gond tribes in Mandla district in MP, Chambal eco-region and Bheel tribes in Jhabua district, Sahariya and Baiga primitive and other tribes in Madhya Pradesh, Bheel tribes in Jhabua district in Khargone districts, Bhilala tribes in Alirajpur district, Sahariya tribe in Guna district. The medicinal plants and their parts to cure ailments were documented (Figure 3) are used to prepare various formulations are prevalent since hundreds of years and are orally communicated from one generation to another, the discussions with local healers and villagers further revealed that the preferences in species to cure of ailments vary from one species to another species as a number of plants are used in cure of a particular ailment and the species, plant part used, formulation such as powder, paste, decoction, extract also vary from village to village in different tribal pockets, based on the ethnic culture and seasonal availability of medicinal plants as presented in Table 1. Based on the findings of present study, it has been found that tribal communities had rich knowledge on herbal folk medicines and distribution of plants around their habitat and used by them in cure of various ailments, and this vital knowledge is transmitted from one generation to another through oral communication as reported by. The villagers use different forest plant species in their daily life. Documentation of such information’s is useful for further generation as well as for their daily life. Hence due to changing life style detailed study of ethno-botanical studies became necessary to document traditional knowledge as it is at the stage of disappearance.

Figure 2 Plant parts of species prevalent in Folk-Medicines.

Figure 3 Plant formulations in folk medicines to cure promising ailments in Madhya Pradesh.
Figure 4 Different formulations in folk medicines prepared from plant parts.

Figure 5 Some of the promising plants used in folk-medicines in Madhya Pradesh.
Conclusion

The indigenous knowledge system of herbal practice is still very rich and available among tribal community of Madhya Pradesh. The establishment of modern medicinal health centres is in progress in many rural areas that may gradually change the existing pattern of indigenous knowledge system of health care. Hence it is necessary to document the traditional knowledge of useful plants and their therapeutic uses before being lost forever from the community.

Recommendation

Plants documented in the study needs to be examined for phytochemical studies to know active principle component present in them which are beneficial in cure of ailments as recorded during study and presented. The investigation can lead to formulation of new drugs by pharmacological companies for benefit of mankind.

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Conflict of interest

Author declares that there is no conflict of interest.
11 Jain SK. Studies on Indian Ethnobotany. Plants used in medicine by tribes of M.P. Bull Reg Res Lab Jammu. 1962;1:126–129.
12 Jain SK. Studies in Indian Ethnobotany-Plants used in medicines by the tribes of Madhya Pradesh. Bull Regional Research Lab. 1963;2:126–129.
13 Jain SK. Observation on Ethnobotany of tribes of M.P. Vanyajati. 1963;11(4):177–187.
14 Jain SK. Medicinal plant lore of the tribes of Bastar. Economic Botany. 1965;19(3):236–250.
15 Jain SK. Glimpse of Indian Ethnobotany. India: Oxford & IBH Pub; 1981.
16 Jain SK. Dictionary of Indian Folk Medicines and Ethnobotany. India: Deep Publications; 1991.
17 Maheshwari JK, Dwivedi RP. Ethnobotany of Abujmahar tribe of Bastar District. J Ind Bot Soc. 1985;64:53–56.
18 Maheshwari JK. Ethnobotanical documentation of primitive tribes of Madhya Pradesh. J Eco Taxon Bot Additional series. 1996;12:206–213.
19 Oommachan M, Mash SK. Multifarious Uses of plants by the tribes of Bastar of Madhya Pradesh, Medicinal plants. J Applied & Pure Bio. 1987;2(2):55–63.
20 Sahu TR. Life support promising food plants among aboriginals of Bastar, India. In: S.K. Jain, editor. In: Ethnobotany in Human Welfare. India: Deep Publication; 1996:26–30.
21 Jayson EA. An ecological survey at Satpura National Park ,Pachmarhi and Bori sanctuaries, Madhya Pradesh. Indian Journal of Forestry. 1991;13(4):288–294.
22 Jain AK, Virale MG. Some Threatened Angiosperm Taxa of Chambal Eco-region. Phytotaxonomy. 2007;7:107–110.
23 Jain AK, Virale GM, Singh R. Folklore claims on some medicinal plants used by Bheel tribes of Guna district Madhya Pradesh. Indian Journal of Traditional knowledge. 2010;9(1):105–107.
24 Jain AK, Wagh VV, Kadel C. Some ethnomedicinal plants species of Jhabua district, Madhya Pradesh. Indian Journal Of Traditional Knowledge. 2011;10(3):538–540.
25 Rai Rajiv. Traditional Uses of Genus Curcuma in Folk Medicines prevalent in Central India. Indian J Trop Biiodiv. 2006;14(2):153–159.
26 Rai Rajiv. Some Traditional Plants used in cold, cough &Fever by Tribals of Bastar (Chhattisgarh). Indian Journal of Botanical Science. 2007;86(1&2):27–36.
27 Rai Rajiv (2008) Indigenous ad Herbal Medicines Prevalent among Tribal Communities in Madhya Pradesh. Journal of Non-Timber Forest Products. 2008;15(3):183–191.
28 Rai Rajiv. Ethno-Medicinal Uses of Promising Plants in Various Formulations in Cure of Ailments in Chhindwara District, Madhya Pradesh. Pharmacy & Pharmacology International Journal. 2016;4(7):100.
29 Rai Rajiv. Folk Medicines in cure of ailments prevalent among ethnic communities in Madhya Pradesh. XIX Commonwealth forestry Conference. 2017. 25p.
30 Rai Rajiv, Nath V, Shukla PK. Ethnobotanical documentation of primitive tribes of Madhya Pradesh. Bull Bot Survey India. 2004;46(1–4):398–402.
31 Rai Rajiv, Nath V, Shukla PK. Ethnobiology of Hill Korwa Tribes. Journal of Tropical Forest. 2003;19(1&2):35–46.
32 Rai Rajiv, Nath V, Shukla PK. Ethnobotanical documentation of primitive tribes of Madhya Pradesh. In “Recent progress in Medicinal Plants”, ‘Ethno-medicine and Pharmacognosy’. India: Govil Publication; 2004;8(37):543–552.
33 Rai Rajiv, Nath V. Ethnobotanical studies in Patalkot Valley in Chhindwara district of Madhya Pradesh. Journal of Tropical Forest. 2004;20(2):38–50.
34 Mahajan SK. Traditional herbal remedies among the tribes of Bijnagar of West Nimar district, Madhya Pradesh. Indian Journal of Traditional Knowledge. 2007;6(2):375–377.
35 Kala CP. Aboriginal uses and management of ethnobotanical species in deciduous forests of Chhattisgarh state in India. Journal of Ethnobiology and Ethnomedicine. 2009;5:1–12.
36 Kala CP (2010) Home gardens and management of key species in the Pachmarhi Biosphere Reserve of India. International Journal of Medicinal and Aromatic Plants. 2010;1(2):153–161.
37 Srivastava JL, Jain Seema, Dubey Abhlasha. Ethno-medicine for anti-fertility used by tribes in Bastar district of Madhya Pradesh. In Ethnobotany and Medicinal Plants of Indian Sub-continent. India: Scientific Publisher; 2000. p. 297–300.
38 Shukla PK. Role of Research in sustainable and profitable management of NWFP. Vaniki Sandesh. 2004;28(2–3):1–4.
39 Satpathy KB, Panda PC. Medicinal use of some plants among tribes of Sundergarh district. J Econ Tax Bot Addl Series. 1992;10:241–249.
40 Wagh VV, Jain AK. Herbal remedies used by the tribal people of Jhabua district, Madhya Pradesh for the treatment of joint diseases. Inter J of Phytotherapy. 2014;4(2):63–66.
41 Kadel C, Wagh VV, Jain AK. Some Ethno-medicinal plants of Jhabua district Madhya Pradesh. Indian Journal of Traditional Knowledge. 2011;10(3):538–540.
42 Patel P, Mahajan SK. A note on medico ethnotobany of Vijaygarh (Khargone) Madhya Pradesh. Bull Bot Survey India. 2004;46(1–4):398–402.
43 Jadhav D, Rawat SS. Ethno-medicinal plants used in treatment of various ailments by Bhilala tribe of Alirajpur district Madhya Pradesh. J Econ Taxon Bot. 2011;3(5):654–657.
44 Kumar R, Srivastava PN, Manju Jain. Ethnobotanical study of Traditional Medicinal plants used by tribes of Guna district. International Journal of Current Microbiology and Applied Sciences. 2015;4(7):466–471.