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## Original Article

# Phytotherapeutic drugs used by the tribal folk of Achanakmar Amarkantak Biosphere Reserve, Central India

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The Ethnomedicinal information of *Baiga* tribes of Achanakmar Amarkantak Biosphere Reserve (AABR), Bilaspur, Madhya Pradesh and Chhattisgarh, India was collected through interviews and discussion regarding the plant prescribed, such as part of the plant used, medicinal uses, detailed information about mode of preparation, form of usage and method of application. A total of 39 species belonging to 35 genera and 31 families to treat various ailments. The documented medicinal plants were mostly used to cure cold, cough, diabetes, dysentery and skin diseases, etc. According to the informants the indigenous knowledge is drastically disappearing, the younger generations are not interested to practice traditional medicine due to the changes in life style and the intervention of modern medicine. Hence the documentation of traditional knowledge among the ethnic people is essential to the betterment of our future generation, since most of the lives saving medicines are derived based on ethnic wisdom of this traditional community those who directly depend on plants for their survival.

**Key words:** Baiga tribes, Crude drugs, Indigenous knowledge, Medicinal plants

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## 1. INTRODUCTION

“Prevention is better than cure”. Right diagnosis and right treatment in the right time play a vital role in curing diseases. Farmers residing in the forest regions

of India are well aware of preventing, diagnosing and treating the diseases in time with locally available materials especially plant products. As they residing in biosphere as one among the biota, availability of modern day's medicine is not easier. Each and every organism has the tendency to adapt themselves in the habitat where they are living. They learn to utilise the resources available at that particular area, develop resistance towards harsh conditions and transfer the gained wisdom from generation to generation. Likewise human being also receiving wisdom from forefathers for the survival and fitness from time immemorial and transferring generation to generation that is known as traditional wisdom.

In the last two decades documenting the ethnic wisdom is getting much importance as it is crucial for the invention of innovative medicines for various diseases.<sup>1-5</sup> In India revolution in the documenting of ethnic wisdom is because of the initiation of National Institute of Science Communication and Information Resources (NISCAIR) publication, *Indian Journal of Traditional Knowledge*. Recently many studies have been done to document the ethnic knowledge associated with the indigenous inhabitants of the country.<sup>6-10</sup> Despite the vast flora and varied ethnic tribes in Chattisgarh, the ethnobotanical knowledge has not been documented sufficiently. In view of this the present investigation was conducted to document the ethnomedicinal knowledge associated with the *Baiga* tribes, who resides on the buffer zone of the ABR, Bilaspur, Chhattisgarh, India.

## 2. MATERIALS AND METHODS

### 2.1 Study area

Achanakmar-Amarkantak biosphere reserve lies between 22° 15' to 20° 58' N latitude and 81° 25' N to 82° 5' E longitude, and spreads south to north along the Maikala hill Range in northern Chhattisgarh and eastern Madhya Pradesh. About 68.10% out of the

total area of this reserve lies in the Bilaspur district in Chhattisgarh. The area of the Achanakmar-Amarkantak Biosphere Reserve is considered as one of the major watershed at peninsular India. Vegetation of the reserve represents tropical mixed deciduous, tropical moist deciduous and dry scrub and thorn forest, ravines, grasslands and aquatic types.

### 2.2 Ethnobotanical survey

In the present study, ethnobotanical surveys were carried out in the following villages situated in the periphery of the biosphere reserves includes Achankmar, Baigababa, Davanpur, Jhingatpur, Karkha, Karpaha, Manpur, Mohtara, Piperkhurti, Saraipali, and Shivtarai during July 2010 to June 2011. The data were collected through interviews and discussion among the elderly people of the community in their local dialect. The discussion was mainly focussed on the plant prescribed, such as part of the plant used, medicinal uses, detailed information about mode of preparation, form of usage either fresh or dried and mixtures of other plants used as ingredients. During the stay, their daily activities were closely observed and interpersonal contacts were established in several of their social and religious ceremonies. The flowering plants of ABR were used to ascertain the nomenclature of the plant species for identification and authentication of the plants. The data of ethnomedicinal plants represent their botanical names followed by family and vernacular names were collected.

## 3. RESULTS

The results of the ethnobotanical survey of *Baiga* tribes of ABR are presented in Table 1 in which the plants are arranged alphabetically by botanical names. For each species the following ethnomedicinal information were provided: botanical name, family, local name, part used, mode of preparation, route of

administration/application and ailments treated. A total of 39 species belonging to 35 genera and 31 families

**Table 1: Traditional uses of plants by the *Baiga* tribe of ABR.**

Sl. No	Plant species	Family	Vernacular name	Parts used	Nature of Drug	Preparation	Diseases	Application
					Powder/Paste/Juice	Additives/Carrier		(Oral/External)/
1	<i>Ocimum sanctum</i>	Lamiaceae	Tulsi	Leaf, Seed	Juice	Soya bean oil	Skin diseases	Dose Apply externally at the spot of infection before sleep/3 days
				Leaf	Paste	10g dry leaf powder mixed with ghee to make in paste form	Pneumonia	Orally after meal, twice in a day, morning and evening after meal
				Buds	Juice	Single tender twig (5 leaves) along with black tea	Common cold	Orally morning evening before meal/ 3 days
2			Nilkanth	Root	Powder	50 g dried roots grinded in to fine powder	Post delivery tiredness	Two teaspoon powder/ orally along with water for 5 days/before meal
3			Raktbidar,	Bark	Powder	Dried bark crushed in to powder	Heamoglobin	Two teaspoon mixed with 1 cup of water/ orally 15 days/before meal
4	<i>Terminalia arjuna</i>	Combretaceae	Triksjali Arjun	Bark	Powder		Blood purification	Two teaspoon mixed with 1 cup of water/ orally 15 days/before meal
							Blood strengthening	Two teaspoon mixed with 1 cup of water/ orally 15 days/before meal
5	<i>Emblica officinalis</i>	Euphorbiaceae	Amla	Fruit	Powder	Dried fruit powder	Sperm loss	One teaspoon powder and sugar mixed with 1 cup of water/ orally 15 days/1 h before sleep
							Increase sperm count	5 g of powder mixed with 1 cup of sugar cane juice/orally twice in a day/15 days
							Intestinal problem	5g powder with 1 spoon of honey/ morning before meal/7 days
6	<i>Sphaeranthus indica</i>	Asteraceae	Gorakhmundi	Full plant	Powder	Dried plant ground with equal amount of sugar	White hair (Young)	1 spoon powder mixed with 1 cup of milk/orally/twice in a day for 15 days

7	<i>Mimosa pudica</i>	Mimosaceae	Lajvanti	Leaf	Paste		Anal problem	1 spoon of powder and milk mixed together in to paste form/orally twice in a day/30 days or more
8	<i>Ficus religiosa</i>	Moraceae	Peepal	Fruit and seed	Powder		Respiratory illness Asthma	2-3 g of powder mixed with 1 cup of water/orally twice in a day for 10 days
				Seed	Paste	2g of powder mixed with honey to prepare the paste	Blood purify	Orally/ twice in a day for 15 days
9	<i>Jasminum sambuc</i>	Oleaceae	Mokhra	Leaf	Paste	Powder mixed with oil	Wound healing	
10	<i>Azadirachta indica</i>	Meliaceae	Neem	Leaf	Powder		Skin diseases	1 spoon of powder mixed with water/orally thrice in a day/3 days
11	<i>Butea monosperma</i>	Fabaceae	Palas	Bark	Powder		Testes problem	4g of powder with 1 cup of water/ twice in a day/ 3days
12	<i>Mangifera indica</i>	Anacardiaceae	Mango	Bark	Paste	20 g of powder mixed with 2 g of lime	Vithai veekam Dysentery	5 g of paste/3 times in a day
13	<i>Trachyspermum ammi</i>	Apiaceae	Ajowan	Leaf	Powder		Allergy/ Sneezing	3 g of powder with 1 cup of warm water/twice in a day/ 2 days
14	<i>Cassia fistula</i>	Caesalpiniaceae	Amaltash	Seeds	Dried seeds		Brain pain	Prepare a chain using seed and wear around the throat (neck)
15	<i>Punica granatum</i>	Punicaceae	Pomegranate	Leaf	Powder		Teeth pain	Brush the teeth with this powder daily
							Heart pain	5g of powder with 1 cup of water/twice in day for 3 days
16	<i>Alangium salvifolium</i>	Alangiaceae	Ankol	Root	Powder		Worm problems	5 g of powder mixed with 1 cup water/before sleep/2 days
17	<i>Achyranthus aspera</i>	Amaranthaceae	Latjera	Seed	Powder		Appetiser & Body building	3g of powder mixed with 1 cup of water/before sleep/2 days
18	<i>Clitorea ternatea</i>	Fabaceae	Aparajitha	Root	Paste		Hyper thyroidism	3g powder with ghee
19	<i>Oroxylum indicum</i>	Bignoniaceae	Indian trumpet tree	Bark	Powder		Joint pain	2g powder/3times in a day

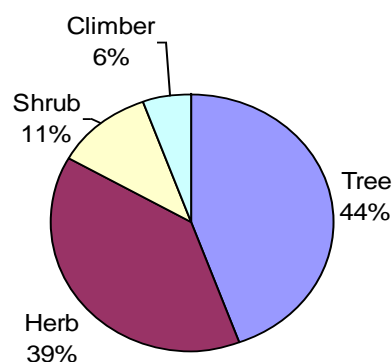
			Ashok tree	Bark			Fracture	Powder along with milk/two time
20	<i>Withania somnifera</i>	Solanaceae	Ashwagandha	Leaf	Powder		Heart pain	Powder/warm water
							Healthy body	5g powder, sugar and milk
21	<i>Acontium heterophyllum</i>	Ranunculaceae	Indian Atis	Leaves	Powder		Fever	1 g powder along with water/4 times/day
22	<i>Acacia nilotica</i>	Mimosaceae	Babul	Fruit		Crush the fruit with sugar	Yellow colour skin	10g powder only/two time per day/15 days
23	<i>Ficus benghalensis</i>	Moraceae	Bargad	Prop root	Powder		Night fall	4 g powder with water/2 times/day
							Uncontrolled sperm release during sleeping	
24	<i>Terminalia bellirica</i>	Combretaceae	Baheda	Fruit	Powder		Cough and cold	2 g powder with 1 cup of water/3 time
				Fruit&	Powder		Respiratory problem	2 g powder/ twice in day/ 15 day
				Bark				
25	<i>Sida cordifolia</i>	Malvaceae	Balihari	Leaves, fruits & stem	Paste	Crush the plant material with sugar	Voice box problem	2 g powder with Honey/ twice in a day/5 days
26	<i>Aegle marmelos</i>	Rutaceae	Bael	Leave and fruit	Powder	Sugar	Hydrosil and	10 g Powder with water/ twice in a day/30 days
27	<i>Eclipta prostrata</i>	Asteraceae	Bhangra	Leaves	Paste	Mix the powder with honey and ghee	Anal problem	5 g powder with honey and ghee / two time/ 15 to 30 days
							Increase sperm & Healthy body	
28	<i>Bacopa monnieri</i>	Scrophulariaceae	Bramhi	Leaves, fruits & stem	Powder		Hair growth	2 g powder/ two time/30 days
29	<i>Hydnocarpus pentandra</i>	Flacourtiaceae	Chalmongra	Fruit	Powder	Water	Diabetes	1 spoon/ thrice in a day
30	<i>Plumbago zeylanica</i>	Plumbaginaceae	Chitrak	Root	Powder		Leprosy	5g powder / two time/ 30 days
31	<i>Cinnamomum Zeyanicun</i>	Lauraceae	Dalchini	Bark	Paste	Honey	Dysentery	5g powder with 1 spoon honey/ two time
32	<i>Plantago ovata</i>	Plantaginaceae	Songel seeds	Flower	Powder	Warm milk	Gastric problem	2 spoon powder/ two time/ 10 days
33	<i>Gmelina arborea</i>	Verbenaceae	Gamthari	Fruit	Powder	Sugar & milk	Body building healthy body	1 spoon powder with milk/ 2 time/ daily

34	<i>Tribulus terrestris</i>	Zygophyllaceae	Gokhru	Fruit	Powder		Unfertility in female (for pregnancy)	30g powder/two time/30 days
35	<i>Curcuma longa</i>	Zingiberaceae	Haldi	Root	Powder	Sugar & water	Skin problem	2 g powder 2 time / 7 days
36	<i>Tamarindus indica</i>	Caesalpiniaceae	Imli	Seed	Powder	Sugar & water	Powerful sperm	5 g of powder with water and sugar/2 time/ 30 days
37	<i>Syzygium cumini</i>	Myrtaceae	Jamun	Seed	Powder		Diabetes	2 g powder/ 2 time/ daily
38	<i>Solanum surratense</i>	Solanaceae	Bhaskateli	Flower	Paste	Honey	allergy in Children / sneezing	1 g powder with honey/ 2 time/ 3 days.
39	<i>Raphanus sativus</i>	Brassicaceae	Muli	Seed	Powder		Menstrual disorder	5 g powder/ two times/ 7 days.

**Table 2: Family-wise distribution of medicinal plants used by the Baiga tribes**

Family	Genus	Species		
Caesalpiniaceae	2	2	Zingiberaceae	1
Combretaceae	1	2	Zygophyllaceae	1
Fabaceae	2	2	Punicaceae	1
Mimosaceae	2	2	<b>Grand Total</b>	<b>35</b>
Moraceae	1	2		<b>39</b>
Solanaceae	2	2		
Alangiaceae	1	1		
Amaranthaceae	1	1		
Anacardiaceae	1	1		
Apiaceae	1	1		
Asteraceae	1	1		
Asteraceae	1	1		
Bignoniaceae	1	1		
Brassicaceae	1	1		
Euphorbiaceae	1	1		
Flacourtiaceae	1	1		
Lamiaceae	1	1		
Lauraceae	1	1		
Malvaceae	1	1		
Meliaceae	1	1		
Myrtaceae	1	1		
Oleaceae	1	1		
Plantaginaceae	1	1		
Plumbaginaceae	1	1		
Ranunculaceae	1	1		
Rutaceae	1	1		
Scrophulariaceae	1	1		
Verbenaceae	1	1		

were used as medicine to treat various ailments. Of these two species were unidentified, their botanical name and family name also unknown. Since these two species having potent medicinal uses among the Baiga tribes, the species has been included in the present communication with their local names.



**Fig 1: Habit-wise distribution of medicinal plants used by the Baiga tribes of AABR to cure various ailments.**

A high number of ethnobotanically important plants belong to monospecific families (80%). In terms of number of species used the family Caesalpiniaceae, Combretaceae, Fabaceae, Mimosaceae, Moraceae and Solanaceae with two species each appeared as the most

prominent families (Table 2). Regarding the plants used trees with 16 species were found to be most used, followed by herbs (14 species), shrubs (4 species) and climbers (2 species) (Fig. 1). Generally plant collection is made preferably in the morning and also depending on their seasonal availability. They collect the above ground plant parts such as leaves, barks and fruits for the preparation of remedies.

#### 4. DISCUSSION

None of the plant in the universe is neither medicinal (beneficial) nor weed (harmful). Each and every organism in the biosphere has its own role in maintaining ecological balance. But we the *Homo sapiens* most dominative and destructive species of the globe, categorized plants and animals based on his need and deed into beneficial and harmful or medicinal and weed. Plants are the gift of God, to serve infinite need among living and non living things. Each and every species belongs to animal kingdom directly or indirectly depend upon plants for their day to day need and also for the proper completion of its life cycle. Based on the environment, availability each and every organisms especially herbivores chose their host plants. Human beings are the only species, who can cultivate their hosts, which are easily cultivable.<sup>11</sup> More than 90% of food plants are cultivated while more than 90% of medicinal plants are exploited from the wild.<sup>12</sup> Because of lack of knowledge, production cost, time, environmental condition and differential usage of plants between traditional medicines till now we are depend on wild medicinal plants.

During the survey period it has been observed that although tribals of this sanctuary are still in primitive stage of economic life and depend upon wild resources around them for their needs, they possess fairly good knowledge about the medicinal uses of plants. Due to the constant association with the forest environment and in the absence of any other medical facility

available to them in their localities, they have evolved curious knowledge by the method of tribal and have developed their own way of treatment of ailment.

Plants used by Gond and Baiga women in ethnogynaecological disorders in Achanakmar wildlife sanctuary indicate that tribal women of the study area have deep faith in traditional medicine. They seem to depend upon the plants for curing various diseases including abortion, sterility, conception disorders, menstrual troubles, leucorrhoea etc. prevailing among them.<sup>13</sup> Likewise, Gond tribe relies on medicine procured from plant origin because medicinal plant or forest flora is a part of their life.<sup>14</sup> Traditionally they do not go to a doctor or a clinic but depend upon herbal treatment suggested by old ladies (Chief trainers) or experienced medicine men of the village.<sup>15</sup> Thus the present study, along with the previous studies, provides evidence that medicinal plants continue to play an important role in the healthcare system of indigenous community.<sup>16-20</sup>

#### 5. CONCLUSION

The plant based crude drugs are prevalently practiced among the *Baiga* tribes to cure various ailments. Further investigation is necessary to conduct rigorous, well designed clinical trials to evaluate their effectiveness and safety measures in the treatment of pathogenic infections. Such information is likely to help in the conservation of biodiversity and providing important lead for drug discovery.

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**Conflict of interest statement**

We declare that we have no conflict of interest.