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Enumeration of medicinal plants and their uses by the tribals of Anuppur district (M.P.) India

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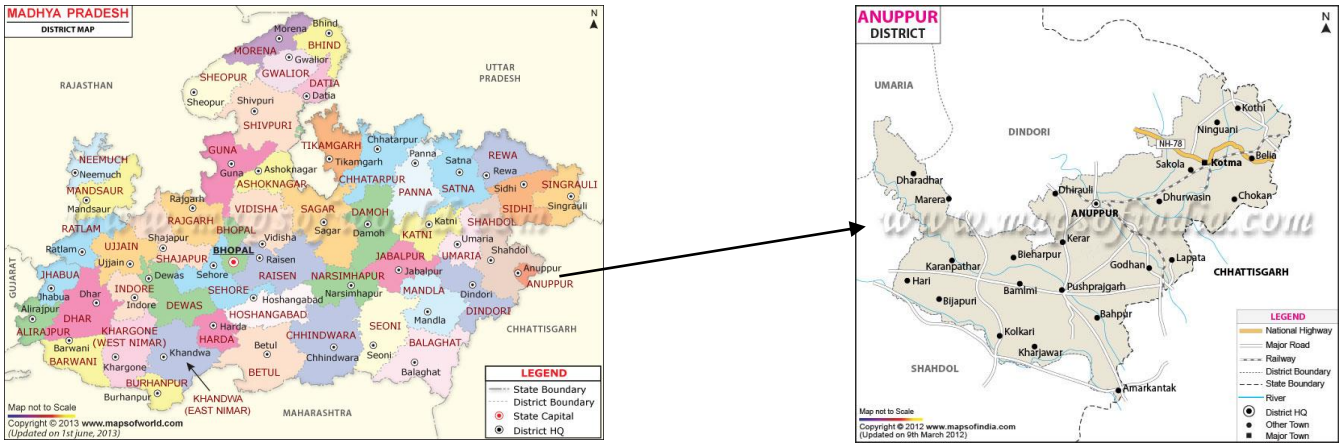
Abstract
The paper presented to the traditional ethnographic knowledge of various tribes of Anuppur district in Madhya Pradesh, India. With the help of standardized questionnaires, traditional healer and resource persons were interviewed on medicinal use of local flora during July, 2017 to December, 2018 in all tribal villages of Anuppur district and again some places for this purpose during July revised again December of 2018. A total of 46 plant species belonging to 42 genera and 27 families were used to treat 33 different diseases. In terms of the number of medicinal plant species, Fabaceae (5 species) and Euphorbiaceae (4 species) are the dominant families. Among the various plant parts used for pharmaceutical preparations, leaves were often used to treat diseases.
In all the tribal villages we found medicinal plants, especially to treat common physical problems like minor injuries, abdominal pain and stomach disease. However, the unavailability of such plants in the nearby area is banning the use of medicinal plants. Further research on these species may lead to the discovery of novel bioactive molecules on one hand and may open a new horizon of sustainable development.

Keywords: Medicinal plants, *Tribal population, Anuppur, Madhya Pradesh, India*

1. Introduction
In India most of the population lives in rural areas where adequate formal medical facilities are not available. Due to the rising cost of treatment through allopathic science and adverse effects of synthetic medicines, people all over the world are seeking medicinal plants for their health needs.
In view of these conditions, the scheme of community health workers under the Ministry of Health and Family Welfare was launched on the occasion of Gandhi Jayanti on 2 October 1977, to provide medical care to every villager in the country. The Central Council for Research Ayurveda and Siddha, New Delhi has recently started a comprehensive program of ethno-medico-botanical survey in tribal pockets to collect data related to folk medicine, disease and other health problems. The Central Council for Research in Yunani Medicine, New Delhi has also conducted ethno botanical research on Unani herbal medicines. These studies have also been done at the National Botanical Research Institute, Lucknow, Regional Research Laboratory, Jammu and Tawi; Botanical Survey of India, Howrah; Birbal Sahni Institute of Paleobote, Lucknow; University of Madras, Madras; Bihar Tribal Welfare Research Institute, Ranchi; Calicut University, Calicut; Central Medicinal and Aromatic Plants, Lucknow etc.
Information on medicinal plants presented here was not recorded in the famous literature (Ambasta 1986; and Chopra *et al.* 1956) [1-2] and research papers - Bhalla *et al.* (1982) [3]; Bhatnagar *et al.* (1973) [4]; Jain (1963 & 1965) [5-6]; Maheshwari *et al.* (1985) [7]; Rai (1985 & 1987) [8-9]; Sahu (1984) [10]; Saxena (1986) [11]; Verma (1982) [12]; Jain *et al.* (2010) [13]; Jayprakash, *et al.* (2011) [14]; Chaudhary, *et al.* (2012) [15]; Bharti, (2015a & 2015b) [16-17] and Maliya, 2016)[18] published on this aspect.
Despite the rash of researches regarding the use and status of medicinal plants in various parts of India, no such scientific document has been produced in Anuppur district of Madhya Pradesh till now. We undertook this study to survey the use of medicinal plants among the tribal people of Anuppur district, as well as to examine the recent status of medicinal plants in the region through an in-depth survey.

2. Material and Methods
Study area : The study site lies between 23°6'0" N Latitude and 81°41'1" E Longitude. Anuppur district situated in the north eastern part of Madhya Pradesh. This District came into existence on 15th August 2003 by reorganising Shahdol District. Anuppur District has total area of 3701 sq.km., extends 80 km from east to west and 70 km from north to south. District Anuppur is surrounded by Koria District (C.G.) in east, Shahdol & Umaria district in west. Shahdol district in north and Dindori (M.P.) Bilaspur (C.G.) in the south.



Map 1: Location map of Madhya Pradesh and study area of Anuppur disctrict.

Data collection

A simple but very basic work plan was adopted for this survey work. At first various government departments like Forest Department, Department of Backward Classes, Panchayet Offices, *etc*. were approached for getting information about checklist of forest villages with relevant demographic information and to get detailed information about tribal population and tribal villages of the district. Relevant information was also collected from internet. On the basis of that information a plan of work was chalked out for our survey. Then extensive survey was conducted during the period of July, 2017 to December, 2018 and some of the places were revisited again during July to December of 2018.

During field survey, detailed information on types, traditional method of preparation, mode of consumption, shelf life and ethnic value of the medicinal plants were collected from elderly persons and traditional healers of tribal communities. Information was collected through well structured pretested questionnaires and discussions among the informants in their local language.

The plant specimens were collected as directed by the resource persons in flowering and fruiting conditions. Collected specimens were dried, chemically treated, and herbarium sheets were prepared for possible identification. Identifications were made using available literature (Prain, 1963 and Bhattacharyya, 1997) [19, 20].

3. Results

In this study 46 plant species of 27 families (Table 1) were found to be used for medicinal purposes by various tribes of Anuppur district as reported by medicine men or traditional healers. Most of this knowledge was transmitted from one generation to next. The traditional medicine men are integral part of the community and take care of the common ailments of the folk in their home setting (Jain, 1981)[21]. The botanical name, family, local distribution, status and uses are tabulated as follows-

Table 1: Medicinal plants used by tribals of Anuppur district.

S.No.	Name	Family	Local distribution status	Uses
1.	*Andrographis paniculata*	Acanthaceae	Commonly cultivated	Leaf extract to treat jaundice; dried leaf extract to treat body pain
2.	*Hydrophila schulli* (Buch. Ham.)	Acanthaceae	Restricted wild	Leaf extract used to treat anemia
3.	*Justicia adhatoda* L	Acanthaceae	Common wild and cultivated	Leaf juice taken for several days as expectorant to treat chronic bronchitis, caugh and cold
4.	*Amaranthys spinosus*	Amaranthaceae	Common wild	Leaves taken as vegetable to treat anemia; root paste applied on stomach to treat urinary disorder
5.	*Mangifera indica* L	Ancardiaceae	Common wild and cultivated	Bark used for the treatment of loose motion
6.	*Centella asiatica*	Apiaceae (Umbelliferae)	Common wild	Leaf used to treat diarrhea and dysentery; leaf extract to treat eczema
7.	*Alstonia scholaris*	Apocynaceae	Common wild	Bark extract used to treat intestinal worm; bark juice used to treat fever
8.	*Rauvolfia serpentina* (L) ex Kurz	Apocynaceae	Rare wild	Root extract used in stomach pain and to treat intestinal worm
9.	*Rauvolfia tetraphylla* L	Apocynaceae	Uncommon cultivated	Root extract used in stomach pain and to treat intestinal worm
10.	*Calotropis gigantea* L	Asclepiadaceae	Common wild	Leaves used to treat rheumatism
11.	*Calotropis procera*	Asclepiadaceae	Common wild	Leaves used to treat rheumatism and cuts; latex used in dog bite
12.	*Ageratum conyzoides*	Asteraceae	Common wild	Leaves used to treat cut
13.	*Eclipta prostrata*	Asteraceae	Common wild	Leaf extract used to disinfect cut and wounds
14.	*Eupatorium odoratum*	Asteraceae	Common wild	Fresh leaf juice externally applied to cuts and wouds to stop bleeding
15.	*Heliotropium indicum*	Boraginaceae	Common wild	Juice of plant used to treat eye infection

16.	*Drymaria diandra*	Caryophyllaceae	Common wild	Dried leaves smoked to treat cough
17.	*Chenopodium album* L	Chenopodiaceae	Common wild and cultivated	Leaves used to treat intestinal worm
18.	*Cleome rutidosperma*	Cleomaceae	Common wild	Seeds used in menstrual problems
19.	*Coccinia grandis* (=*indica*)	Cucurbitaceae	Common wild	Leaves used to treat hypertension
20.	*Cyperus rotundus*	Cyperaceae	Common wild	Root extract used to treat cuts
21.	*Croton bonplandianum*	Euphorbiaceae	Common wild	Leaf extract used to treat cut and wounds
22.	*Euphorbia hirta*	Euphorbiaceae	Common wild	Leaves used to treat menstrual problems and extract used to stop irregular periods
23.	*Jatropha curcas* L	Euphorbiaceae	Common wild and cultivated	Latex used to treat wounds and dysentery
24.	*Ricinus communis*	Euphorbiaceae	Common wild	Seed oil is used as pain killer
25.	*Cajanus cajan* (=*indicus*)	Fabaceae	Commonly cultivated	Leaf decoction for jaundice; leaf extract to treat dysentery
26.	*Cassia occidentalis*	Fabaceae	Common wild	Root extract applied to treat snake bite
27.	*Dalbergia sissoo* Roxb.	Fabaceae	Cultivated for timber	Leaf juice used to treat stomach disorder
28.	*Glycosmis arboroea* (=*pentaphyla*)	Fabaceae	Uncommon wild	Root powder used in fever, hepatopathy, eczema, skin diseases, to treat wounds and liver complaint
29.	*Sesbania grandiflora*	Fabaceae	Cultivated	Extract of leaves used in jaundice
30.	*Leucas plukenetii* syn. L. *aspera*	Labiatae	Common wild	Leaf juice used in jaundice
31.	*Ocimum basilicum* L	Labiatae	Cultivated in marshy places	Seed paste applied against stings of wasps, bees and other venomous insects
32.	*Ocimum gratissimum*	Labiatae	Uncommon wild	Leaf extract applied on cut to stop bleeding
33.	*Hibiscus rosa-sinensis* L	Malvaceae	Commonly cultivated	Leaves used to treat burning sensation, fatigue and skin diseases; root extract used to treat cough and fever
34.	*Malvaviscous arboreous*	Malvaceae	Common cultivated	Flower buds are used to stop bleeding
35.	*Sida acuta*	Malvaceae	Common wild	Root extract used against blood urea, boils and nephritis
36.	*Azadirachta indica*	Meliaceae	Common wild	Young twig used in cleaning teeth; leaf extract to treat liver ailment
37.	*Stephania glandulifera*	Menispermaceae	Common wild	Root used in headache
38.	*Psidium guajava*	Myrtaceae	Common	Bark used as contraceptive; young leaf used to treat stomach pain
39.	*Ludwigia perennis*	Onagraceae	Common wild	Boiled plant extract used externally to reduce fever
40.	*Sesamum indicum*	Pedaliaceae	Cultivated	Fried fruit taken in case of fever
41.	*Plumbago zeylanica*	Plumbaginaceae	Uncommon cultivated	Root used to treat high fever; leaves used to treat cut
42.	*Scoparia dulcis*	Scrophulariaceae	Common wild	Leaf juice against stomach disorder
43.	*Solanum indicum*	Solanaceae	Common wild	Seed applied on teeth and gum to treat infection
44.	*Gmelina arborea* Roxb.	Verbenaceae	Commonly cultivated for timber	Root extract used in stomach disorder
45.	*Vitex negundo*	Verbenaceae	Common wild	Extract of leaves used against whitening of hair and memory loss, also to treat cancer
46.	*Curcuma longa*	Zingiberaceae	Commonly cultivated	Rhizome paste applied in cuts and wounds

The reported plants were arranged according to their scientific name, family, vernacular names (as recorded during the field work), local status on availability, parts used, therapeutic uses and method of usage of herbal preparations. However, I was not able to collect information about method of usage of herbal preparations in all cases; because many of the traditional healers believe that upon disclosure of the knowledge (particularly to urban people) of the effect of medicine will diminish.

They use these forty six species of medicative plants to treat thirty three varied sorts of physical ailments. Most of the plants reportable during this study were collected from natural vegetation (72.00%) and few of them from home gardens (28.00%). Rosid dicot family is pictured by the very best variety of species (five species), followed by family Euphorbiaceae (four species), family Apocynaceae, Acanthaceae, Asteraceae, family Malvaceae and Labitae every comprising 3 species. 2 families (Asclepiadaceae, and Verbenaceae) contained 2 species every and eighteen families pictured by just one species.

Among totally different plant components used for the preparation of drugs (Fig.1) $y=-7.7429x + 42.6$, $R^2 = 0.7169$, leaves (48.00%) were found to be the foremost oftentimes used plant components followed by roots (21.00%), seeds (8.00%), stem bark (8.00%), latex (4.00%), whole plant components(4.00%), and solely in one occasion every by tuber, fruit, flower and stem.

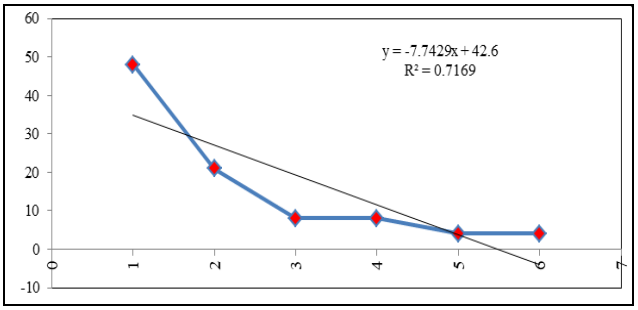


Fig 1: Graphics analysis plant parts used for the preparation of medicine by tribal people

Most of the ethnobotanical studies confirmed that leaves are the major portion of the plant used in the treatment of diseases (Rajendran, *et al.* 2002; Mahishi, *et al.* 2005; Jagrap, *et al.* 2006; Choudhury, *et al.* 2012)[22–25]. The methods of preparation fall into four categories, *viz.* plant parts applied as a paste, juice extracted from the fresh parts of the plant, and plants used to prepare decoction in combination with water and powder made from fresh or dried material.

4. Discussion

In every nook and corner of the Anuppur district plants are used as medicine. The herbal preparations made from the traditional medicinal plants were mostly used to treat cut and wounds, and stomachache and abdominal disorder (ten species each), for treatment of jaundice and liver problems (six species), and to treat intestinal worm, and fever (four species each). The study showed that a good number of the collected plants were used for the treatment of multiple diseases. *Glycosmis arboroea* (=*pentaphyla*) are used for the treatment of six diseases; *Hibiscus rosa-sinensis* L for the treatment of four diseases; *Sida acuta* and *Vitex negundo* are for the treatment of three diseases; and 14 other plants are used to treat two diseases.

Use of medicinal plants among tribals of Anuppur district in treatment of various diseases has definitely been out numbered today by the allopathic treatment. But still their dependence on plants of their surroundings to get relieved from day to day ailments is unquestionable. However, all persons, who are using plants as medicine, are complaining about the gradual fading out of many of the medicinal plants from their surroundings. It is presumable that availability of such plants in the vicinity may increase the use of plants as medicine. So possibilities of propagation and cultivation of these plants in this area should be explored to achieve the goal of sustainable development. Also further research on the medicinal plants mentioned in this study might provide some potential leads to fulfill the needs of search for bioactive compounds and the discovery of new drugs to fight diseases.

5. Acknowledgements

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