

Ethnomedicinal Uses of Underground Plant Parts in Jhabua District of Madhya Pradesh, India

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Abstract: The study was conducted in and around of Jhabua district from June 2008 to May 2012. Several field trips were carried out in the study area to document the utilization of underground medicinal plant parts. Underground plant parts are well known in Jhabua district as Kandmool which are eaten at time of scarcity and used for curing various ailments by the tribal people. In the interior areas of Jhabua district, plants become the only source of medicine because lack of modern facilities and remoteness. In this paper, 64 traditional medicinal plants have been reported, belonging to 34 families. Mostly used families are Liliaceae (5 spp.) followed by Malvaceae, Fabaceae and Asclepiadaceae (4 spp.) each and Amaranthaceae (3 spp.), Araceae, Dioscoreaceae, Cucurbitaceae and Poaceae (3 spp.) each. The traditional medicinal plants have been mostly used for the treatment of fever, rheumatism, respiratory disorders, stomach disorders, cough and cold, antidote against snake bite and scorpion bite. The present study revealed that the tribal people of Jhabua district are primarily dependent on underground plant parts for treating various diseases.

Key words: Ethnomedicinal Uses • Underground Plant Parts • Tribal People • Jhabua District

INTRODUCTION

Medicinal plants constitute the base of health care system in many societies. Globally, about 85 % of the traditional medicines used for primary health care derived from plants [1]. Today, according to the World Health Organization (WHO), as many as 80% of the world's people depend on traditional medicine and in India, 65% of the population in the rural areas use Ayurvedic and medicinal plants to help meet their primary health care needs [2]. In India, more than 43% of the total flowering plants are reported to be of medicinal importance [3].

Underground plant parts mean plant parts found in the soil or embedded in soil in the form of root, rhizome, corm, bulb etc. In olden days sages and saints were used to live in the forests, they used to eat Kandmool (Underground parts). Kandmool gives them so much energy that they could live many days without taking any type of food materials. Some people believe that the underground plant parts have magic power so that they can live longer without hunger.

Jhabua district is situated in the western most part of Madhya-Pradesh state. Most of the village inhabitants of Jhabua district belong to tribal communities. Major part of the district is covered by dense forest area in which various tribes like *Bheel*, *Bhilala* and *Pataya* are living in majority. Out of these tribes *Bheel* and *Bhilala* stand high in strength, scattered in most of the villages of the district. These tribals live close to the forest and are largely dependent on the wild biological resources for their livelihood. Underground plant parts are well known in Jhabua district as 'Kandmool' or 'Kando' which are eaten at time of scarcity and used for curing various ailments by the tribal people. In the interior areas of Jhabua district, plants become the only source of medicine because lack of modern facilities and remoteness. Traditional knowledge in this area is rapidly degrading due to modernization of that area and the younger generation is not interested to learn from older generation. Thus, many important information may be lost in absence proper documentation.

Earlier floristic and ethnobotanical works of Madhya Pradesh and Jhabua district have been done by good number of workers, among them the prominent are Bhalla *et al.* [4], Brijlal [5], Dwivedi [6], Jain [7], Jain [8], Jain and Vairale [9], Jain [10], Jain [11], Kaushik and Singh [12], Maheshwari [13], Nagar [14], Oommachan *et al.* [15], Rai and Upadhyay [16], Sahu [17], Samvaster and Diwanji [18], Sharma [19], Sikarwar [20], Sikarwar [21], Venugopal and Raghunathan [22], Verma *et al.* [23], Wagh and Jain [24], Wagh and Jain [25] and Wagh and Jain [26]. No work on medicinal importance of the underground plants parts was carried out till date in the state. The objective of the study was to collect and document information on utilization of underground medicinal plant parts by the tribal practitioners in Jhabua district, Madhya Pradesh.

MATERIALS AND METHODS

Tribals of Jhabua district are secretive by nature. They do not want to communicate openly with strangers. They would not even allow you to photograph them.

Looking to this, frequent visits to tribal villages were made. Only after three to four visits, the tribals agreed to communicate. Several field trips were carried out from June 2008 to May 2012 in the study area to document the utilization of underground medicinal plant parts. The surveys were spread across in different seasons so as to get maximum information. A total of 8 tribal medicine men 'Badwa' were identified; they had sound knowledge on medicinal plants. The ethnobotanical data were collected through questionnaire, interviews and discussions among the tribal medicine men in their local language. Later, short field visits to the forest were organized with the herbalist to ascertain the correct identity of plant. Plant specimen collected during the survey were dried, processed and identified with the help of regional floras [27-29]. The voucher specimens were deposited in the herbarium of School of Studies in Botany, Jiwaji University, Gwalior, Madhya Pradesh. The plants enumerated alphabetically with botanical names with correct nomenclature and voucher specimen number, family names, local names, habit, mode of administration followed by medicinal uses Table 1.

Table 1: Ethnomedicinal uses of underground plant parts of Jhabua district.

S. No.	Botanical name of the plant with voucher number	Family	Local name	Habit	Administration	Medicinal uses
1	<i>Achyranthes aspera</i> L. (JBA-43)	Amaranthaceae	Chirchita	H	I	Decoction of root is given twice a day in biting of mad dog/ hydrophobia.
2	<i>Aerva lanata</i> (L.) Juss. ex Schult. (JBA-305)	Amaranthaceae	Gorakh Ganja	H	I	Root decoction is given in urinary disorders and also in cough and cold
3	<i>Alangium salvifolium</i> (L.f.) Wang (JBA-270)	Cornaceae	Okali	T	I	2-4 gm root bark powder mixed with water and given orally twice a day in constipation.
4	<i>Allium cepa</i> L. (JBA-556)	Liliaceae	Piyaz	H	I	About 8-10 ml of bulb juice administered orally with honey twice a day in cholera.
5	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson (JBA-131)	Araceae	Jangali Suran	H	I	Corm boiled with <i>Tamarind</i> leaf (Imli) and eaten in intestinal ulcers.
6	<i>Argemone mexicana</i> L. (JBA-210)	Papaveraceae	Katseriya	H	I	Root pounded in water overnight and the extract is given with honey in cough and cold.
7	<i>Arisaema tortuosum</i> (Wallich) Schott (JBA-418)	Araceae	Jangali Bhuta	H	I	Root decoction is given as antidote against snakebite.
8	<i>Aristolochia indica</i> L. (JBA-215)	Aristolochiaceae	Isharmul	C	I	Root decoction is used in worm infestation.
9	<i>Asparagus racemosus</i> Willd. (JBA-391)	Liliaceae	Shatavar	C	I	Tuberous roots are eaten for lactation.
10	<i>Bombax ceiba</i> L. (JBA-48)	Bombacaceae	Semala	T	I	Root decoction is given in spermatorrhoea.
11	<i>Capparis zeylanica</i> L. (JBA-575)	Capparadiaceae	Haisi	S	I	Root decoction is given as antidote against snakebite
12	<i>Cassia fistula</i> L. (JBA-50)	Caesalpinaceae	Garmala	T	I	Root bark decoction is given in constipation.
13	<i>Cassia occidentalis</i> L. (JBA-257)	Caesalpinaceae	Devpuadiya	S	I	Root infusion is given as an antidote against snake bite.
14	<i>Catunaregum spinosa</i> (Thunb.) Tirrvengadam (JBA-423)	Rubiaceae	Mainhar	S	I	Root decoction is given with honey in stomach disorder.
15	<i>Celastrus paniculatus</i> Willd. (JBA-412)	Celastraceae	Kangan	C	E	Root paste is applied on pimple and blemishes.
16	<i>Ceropegia bulbosa</i> Roxb. (JBA-17)	Asclepiadaceae	Bosiakanda	C	I	Raw tuber is eaten in urinary disorder.
17	<i>Chlorophytum borivilianum</i> Santapau & Fernands (JBA-99)	Liliaceae	Safed Musli	H	I	Tuberous root is used as tonic in weakness specially after delivery
18	<i>Clerodendrum serratum</i> (L.) Moon (JBA-188)	Verbinaceae	Bhrangi	S	I	Root decoction is given in asthma
19	<i>Corallocarpus epigaeus</i> (Rottl. & Willd.) Hook. (JBA-209)	Cucurbitaceae	Marchi Kando	C	I	Root pounded in water overnight and extract is given with honey in typhoid fever.
20	<i>Costus speciosus</i> (J. Koeing) Sm (JBA-189)	Costaceae	Jangali Aadu	H	I	Rhizome is given to the cattle in bronchial disorders.
21	<i>Cucumis calosus</i> (Rottl.) Cogn. (JBA-272)	Cucurbitaceae	Ban Kachro	C	I	Root decoction is given in stomach disorder
22	<i>Curculigo orchioides</i> Gaertn. (JBA-133)	Hypoxidaceae	Kali Musli	H	I	Root paste is administered orally in constipation

Table 1: Continued

S. No.	Botanical name of the plant with voucher number	Family	Local name	Habit	Administration	Medicinal uses
23	<i>Curcuma pseudomontana</i> L. (JBA-405)	Zingiberaceae	Haldi	H	E	Paste of rhizome with mustard oil is applied on chest twice a day for 3 days in pneumonia.
24	<i>Cyperus rotundus</i> L. (JBA-279)	Cyperaceae	Nagarmotha	H	I	Tuberous root is given in a urinary disorder.
25	<i>Desmodium gangeticum</i> (L.) DC. (JBA-20)	Fabaceae	Sarivan	S	I	Root decoction is given in the fever and general debility.
26	<i>Dioscorea bulbifera</i> L. (JBA-239)	Dioscoreaceae	Dang Kanda	C	I	Bulb eaten raw in muscular weakness.
27	<i>Dioscorea hispida</i> Dennst. (JBA-357)	Dioscoreaceae	Baichandi	C	E	Bulb paste is applied over affected part in eczema.
28	<i>Dioscorea pentaphylla</i> L. (JBA-393)	Dioscoreaceae	Suvar Kanda	C	I	Bulb powder is given with honey in constipation.
29	<i>Echinops echinatus</i> Roxb. (JBA-286)	Asteraceae	Oontkanto	H	I	Root paste in a dose of 3gm twice 3-5 days is given in leucorrhoea
30	<i>Elephantopus scaber</i> L. (JBA-256)	Asteraceae	Gaujihawa	H	I	Pounded root decoction is given internally to children in asthma.
31	<i>Eulophia herbacea</i> Lindl. (JBA-178)	Orchidaceae	Kandh	H	I	Bulbous root is eaten as a tonic.
32	<i>Ficus benghalensis</i> L. (JBA-65)	Moraceae	Bargad	T	I	The juvenile plant root is rubbed on stone and the formed paste is given twice a day in diabetes.
33	<i>Gloriosa superba</i> L. (JBA-176)	Liliaceae	Ranchendi	C	I	Decoction of tuberous root is used as antidote against snakebite and root paste is also applied on bitten area.
34	<i>Grewia hirsuta</i> Vahl (JBA-285)	Tiliaceae	Gudsakari	S	I	Root infusion is given in general weakness.
35	<i>Hemidesmus indicus</i> (L.) R.Br. (JBA-143)	Asclepiadaceae	Khutia Mul	C	I	Root powder is taken orally with honey in controlling the blood pressure.
36	<i>Holostemma ada-kodien</i> Schult. (JBA-477)	Asclepiadaceae	Chinahur	C	E	Root paste is applied on an affected part in skin diseases.
37	<i>Ichnocarpus frutescens</i> (L.) R.Br. (JBA-300)	Asclepiadaceae	Dhomar Bel	C	I	Root decoction is given in respiratory disorder.
38	<i>Jatropha curcas</i> L. (JBA-33)	Euphorbiaceae	Ratanjyot	S	I	Root bark decoction is given in diarrhea and dysentery.
39	<i>Leea asiatica</i> (L.) Ridsdale (JBA-426)	Leeaceae	Nanli Danhi	H	E	Root paste is massaged on affected part in arthritis.
40	<i>Leea macrophylla</i> Roxb. ex Hernem. (JBA-425)	Leeaceae	Motali Danhi	H	E	Tuberous root paste is applied on scabies and also in eczema.
41	<i>Leucas cephalotes</i> (Koenig ex Roth) Spreng. (JBA-203)	Lamiaceae	Kumbha	H	E	Root paste is applied on scorpion bite.
42	<i>Mucuna pruriens</i> (L.) DC. (JBA-31)	Fabaceae	Kewach	C	I	One teaspoonful root powder paste is given orally with water in snakebite and also applied on the bitten area.
43	<i>Nervillia aragoana</i> Gaud. (JBA-200)	Orchidaceae	Dudh goliya	H	I	Bulb is used after delivery for lactation and also used as a tonic.
44	<i>Ocimum basilicum</i> L. (JBA-165)	Lamiaceae	Jangali Tulsi	H	E	Take a bath with root powdered boiled in water in Jaundice.
45	<i>Phragmites karka</i> (Retz.) Trin.ex Steud. (JBA-202)	Poaceae	Sukala Ghas	H	I	Root extract is given orally to a patient; this reduces poisonous effect of snakebite.
46	<i>Physalis minima</i> L. (JBA-116)	Solanaceae	Kanfuta	H	E	Root paste is applied on the affected parts in arthritis.
47	<i>Plumbago zeylanica</i> L. (JBA-547)	Plumbaginaceae	Chitawal	S	E	Root paste is applied on forehead to relief from half headache also root paste is applied on affected part in skin diseases.
48	<i>Rauvolfia serpentina</i> (L.) Benth. Ex Kurz (JBA-246)	Apocynaceae	Sarpagandha	S	I	Root decoction is given with honey in snakebite.
49	<i>Saccharum spontaneum</i> L. (JBA-78)	Poaceae	Kans	H	I	Root decoction is given in failing lactation.
50	<i>Sauromatum venosum</i> (Aiton) Schott (JBA-249)	Araceae	Pebada	H	I,E	Tuber is used as anthelmintic and also applied on the pimple and blemishes.
51	<i>Sida acuta</i> Burm.f. (JBA-490)	Malvaceae	Mahabala	H	I	Root is used in spermatorrhoea.
52	<i>Sida alba</i> L. (JBA-326)	Malvaceae	Nagbala	H	I	Roots are used as tonic in general weakness.
53	<i>Sida cordata</i> (Burm.f.) Borss. (JBA-540)	Malvaceae	Rajbala	H	I	Root is used in uterine disorder and also in joint pain.
54	<i>Smilax zeylanica</i> L. (JBA-211)	Smilacaceae	Ramdatun	C	I	Root is used in amenorrhoea.
55	<i>Thespesia lampas</i> (Cav.) Dalz. & Gibs. (JBA-579)	Malvaceae	Van Kapas	T	I	Root decoction is given in jaundice.
56	<i>Trichodesma indicum</i> (L.) R.Br. ex Lehm. (JBA-03)	Boraginaceae	Andhahuli	H	I, E	Root is used against snakebite and also in eye disorder.
57	<i>Trichosanthes bracteata</i> (Lamk.) Voigt. (JBA-304)	Cucurbitaceae	Indrayan	C	I	Root powder is given in dropsy.
58	<i>Uraria picta</i> (Jacq.) Desv. (JBA-322)	Fabaceae	Pithwat	S	I	Root decoction is given in respiratory disorder.
59	<i>Urginea indica</i> (Roxb.) Kunth (JBA-196)	Liliaceae	Jangali pyaz	H	E	Bulb paste is bandaged on the swelling in rheumatism.
60	<i>Vernonia cinerea</i> (L.) Less. (JBA-83)	Asteraceae	Sahdevi	H	I	Pounded root extraction is given orally with honey twice a day for 3 days in fever.
61	<i>Vetiveria zizanioides</i> (L.) Nash (JBA-153)	Poaceae	Khas	H	I	Root infusion is administered orally in amenorrhoea.
62	<i>Vigna vexilata</i> (L.) A.Rich. (JBA-571)	Fabaceae	Jangali Mung	C	E	Bulb paste is applied over pimple and blemishes.
63	<i>Withania somnifera</i> (L.) Dunal (JBA-86)	Solanaceae	Asgandh	S	I	Whole plant is used as a tonic especially the root extract in milk is given daily in the morning to cure fever and weakness due to fever.
64	<i>Zingiber officinale</i> Roscoe (JBA-569)	Zingiberaceae	Adrak	H	I	Juice of rhizome is given in asthma.

RESULTS AND DISCUSSION

The survey gathered information on 64 plant species reported by the informants for their medicinal use Table 1. The reported species were distributed among 34 botanical families. Liliaceae (5 spp.) was best represented in terms of the number of species, followed by Malvaceae, Fabaceae and Asclepiadaceae (4 spp.) each and Amaranthaceae (3 spp.), Araceae (3 spp.), Dioscoreaceae (3 spp.), Cucurbitaceae (3 spp.) and Poaceae (3 spp.) Fig. 2. All the medicinal plants were reported in their local names since the local communities know of them only by their local names. Eight species are used as remedies against human gastrointestinal problems as well as 8 species in antidote against snakebite, 8 species in weakness and debility respectively followed by 7 species in skin disorder, 4 species in joint diseases and 3 species in asthma were used Fig. 3.

Usually, the plants are used when fresh or dry, essentially in the form of a decoction, maceration as an infusion in water. Sometimes ash infusion is used. In all these preparations, there is a standardized decoction in water, prepared with a handful of plants. The majority of the remedies are taken orally. 52 species of the total reported medicinal plants are taken orally, followed by 12 species which are externally used (Applied typically on skin) Fig. 4. To improve the acceptability of certain remedies, which are bitter and are taken orally, some additives are frequently used. The juice prepared from the bulb, rhizome and roots for instance is usually taken with honey to reduce its bitterness. Most of the remedies were taken once or twice a day as a full dose.

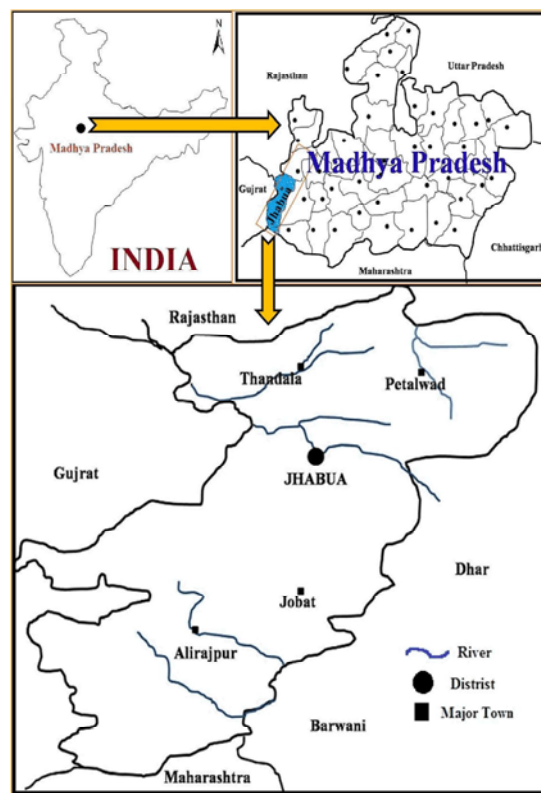


Fig. 1: Map of Jhabua District

Although variants like age, physical and health conditions of the patient determined the dose given it was noted that there was still a lot of inconsistency among the informants on doses of certain remedies prescribed. There were no reports on side effects by the informants in all the medicinal plants studied.

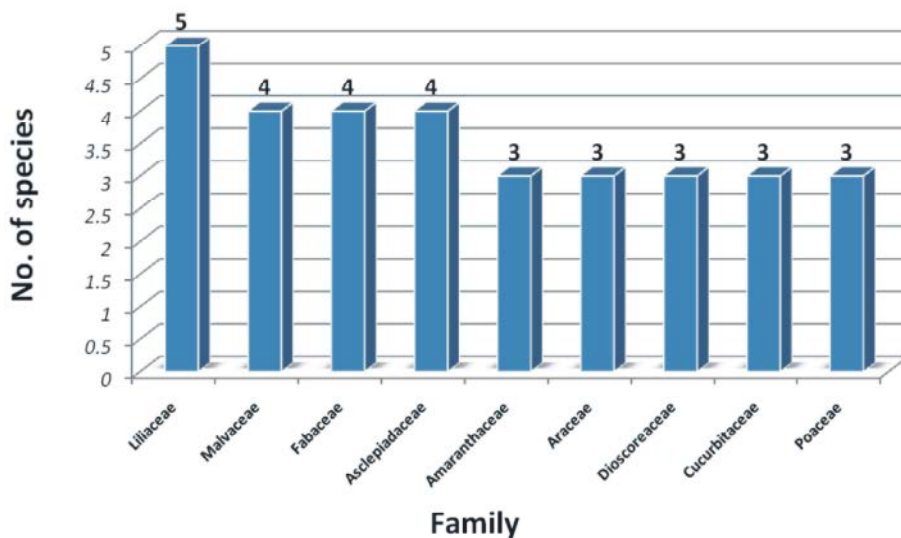


Fig. 2: Number of families used for curing various disease.

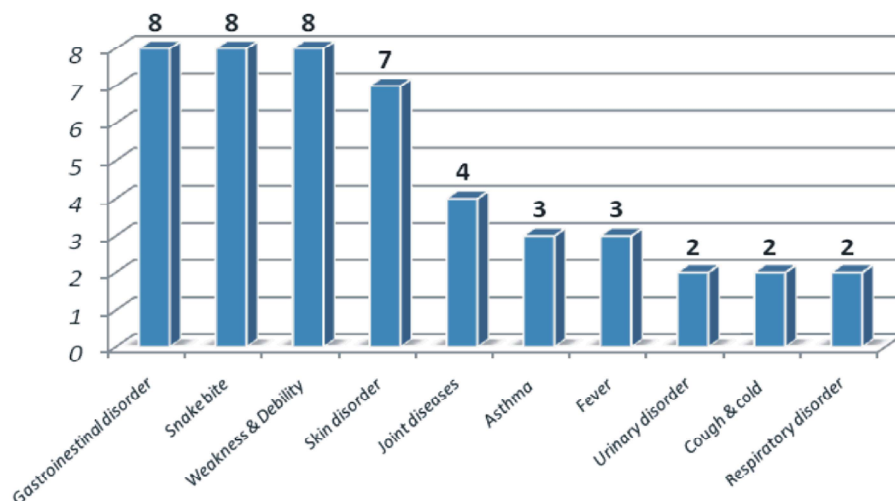


Fig. 3: Number of species used for curing various disease.

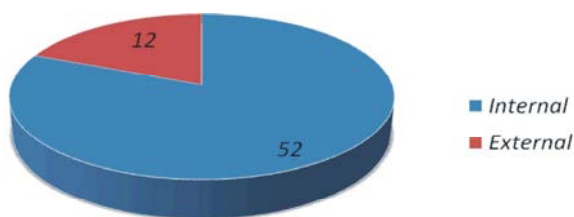


Fig. 4: Number of species used externally and internally for curing various diseases.

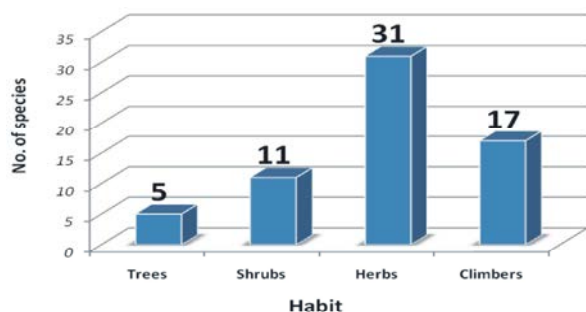


Fig. 5: Habitwise plant species used for curing various disease.

From the result it was found that herbaceous plant species was the highly used (31 spp.) followed by (17 spp.) of climbers, (11 spp.) of shrubs and (5 spp.) trees respectively for curing various diseases Fig.5.

The present research study have showed that traditional medicine is still playing a significant role in meeting the basic healthcare need of the peoples of Jhabua district for various diseases. It also provides information about some therapeutic uses of different medicinal plants.

In real sense root stocks are utilized as food by tribal and rural people, in famine years poor people rely on wild edible plants, particularly on underground parts of the plants. In India, nutritive value and mineral composition of some wild edible plants was studied by Seal *et al.* [30] from Meghalya state in India. Some taxa are cultivated in farms *Amorphophallus paeoniifolius*, *Asparagus racemosus*, *Costus speciosus*, *Dioscorea bulbifera* and *Urgenia indica*. Rest of some species available naturally in forest areas. Due to over usage and exploitation wild species of underground parts are now became endangered viz. *Arisaema tortuosum*, *Aristolochia indica*, *Celastrus paniculatus*, *Chlorophytum borivilianum*, *Coralocarpus epigaeus*, *Costus speciosus*, *Dioscorea bulbifera*, *Leea macropylla*, *Nervilea aragoana* and *Sauromatum venosum*. Similar observation was made by Singh *et al.* [31] in 'Chatra' block of district Sonbhadra, Uttar Pradesh, India.

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