

**ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS
COMMONLY USED BY TRIBAL PERSON OF TIKAMGARH
DISTRICT MADHYAPRADESH.**

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ABSTRACT

Use of plants resources for fulfilment of various requirements of any community may be regarded as a part of a cultures traditional knowledge. The tribes of Madhya Pradesh are found to be rich in traditional knowledge system and are using their indigenous methods in treatment of different diseases. The present paper deals with the detail study of medicinal plants used by Tikamgarh district Madhya Pradesh using a quantitative consensus analysis. A total of 106 plants species belonging to 51 families used for medicinal and general health purposes were identified and included with relevant information. An informant consensus (F_{IC}) analysis revealed a high level of

homogeneity among the informants knowledge on various ethnomedicinal plants. High consensus factor was observed for dermatological disorder (0.64) and low in oral and dental problem (0.5).among different plant parts leaves were used in most of the cases for treatment of various diseases.

KEYWORDS: Ethno medicine, Tribal person, Informant Consensus, Traditional knowledge, Tikamgarh.

INTRODUCTION

Medicinal plants grow naturally around us. Over centuries, cultures around the world have learned how to use plants to fight illness and maintain health. These readily available and culturally important traditional medicines form the basis of an accessible and affordable health-care regime and are an important source of livelihood for indigenous and rural populations Medicinal plants as a group comprise approximately 8000 species and account

for around 50% of all the higher flowering plant species of India. Millions of rural household's use medicinal plants in a self-help mode. Over one and a half million practitioners of the Indian System of Medicine in the oral and codified streams use medicinal plants in preventive promotive and curative applications. Ethnobotanical studies have become increasingly valuable in the development of health care and conservation programs in different parts of the world (Balick, 1996). Our study offers a model to investigate changes in plant use as people migrate to urban centers where they are surrounded by diverse cultures, healing systems, and new environments. Several studies have reported the continued use of traditional practices as people migrate to urban centers (Baca, 1978; Gordon, 1994; O'Connor, 1998).

There is little information about the traditions of people living in Hispaniola (the island consisting of Haiti and the Dominican Republic) before the Europeans arrived to the New World. Writings from Father Bartolome´ Las Casas, a Spanish chronicler and 'protector of the Indians' depict some of the ancient customs of the Tainos based on archaeological findings (Wilson, 1997). During the colonial period, the use of herbs was influenced by European medical concepts, as well as by the introduction of European species of plants (Weniger et al., 1992; Cunningham, 1997). Healing systems used on the island were also influenced by African slaves who were subjected to severe workloads and unbearable living conditions and were forced to cure their own illnesses by substituting medicinal plants from the New World (Bonnely de alventi et al., 1985; Weniger, 1991). These outside influences have certainly shaped the present day use of medicinal plants in the Dominican Republic, where the majority of the population uses herbs in rural and urban areas (Robineau, 1986). The high cost of pharmaceuticals, insufficient health supplies, limited availability of biomedical doctors, and the difficulty of reaching clinics and hospitals in rural areas of the Dominican Republic most likely contribute to the widespread continued use of herbs as medicine. Cultural and religious practices also reinforce the faith that individuals place in the curative properties of medicinal plants (Deive, 1979; LaGuerre, 1987).

on the ethnomedicinal uses of plants by the local people are often significant because it provides a gateway for the exploration of new drugs source from the herbal origin (Teklehaymanot and Giday, 2007). Right from its beginning, the documentation of traditional knowledge, especially on the medicinal uses of plants, has provided many important drugs of modern day (Balick and Cox, 1997; Flaster, 1996). According to WHO (2001), 80% of the

world population uses natural remedies and traditional medicines for their primary healthcare. Documentation of medicinal usages of plants in Bangladesh has already been started. Some noticeable studies include Hassan and Khan (1986,1996), it is necessary to determine the species that are most used to treat a particular illness. A useful tool to find a particular species is the Informant Consensus Factor (Freiet *al.*, 1998; Heinrich *et al.*, 1998).

Various contributors have worked on medicinal plants of Central India (Jain, 1963 a, b and c; Jain and Tarafdar,1970; Bhatnagar *et al.*, 1973; Sahu, 1982, 1983; Mishra and Sahu, 1984; Saxena, 1986; 1989; Lal,1988, 1993; Rai and Ojha, 1989; Oommachan *et al.*, 1990; Shah and Singh, 1990; Pandey *et al.*, 1991; Jain,1992; Rai and Nonhare, 1992; Bhalla *et al.*, 1992, 1996; Khan *et al.*, 1994; Maheshwari, 1996; Khan and Singh,1996; Bajpai and Mitra, 1997; Kumar and Jain, 1998; Dubey *et al.*, 2001). Few ethno-botanical works have been done in Pataalkot valley (Rai, 1987a; Rai *et al.*, 1999). Ethno-botanical studies have also been done in Central India and Chhattisgarh (Rai and Nath, 2005; Rai *et al.*, 2002) but there are some tribal pockets in Tikamgarh district where indigenous knowledge of herbal healer could not be properly documented due to lack of scientific manpower in such remote areas for the search of traditional medicines. Therefore, the study has been taken up in Tikamgarh districts of Madhya Pradesh, India.

MATERIALS AND METHODS

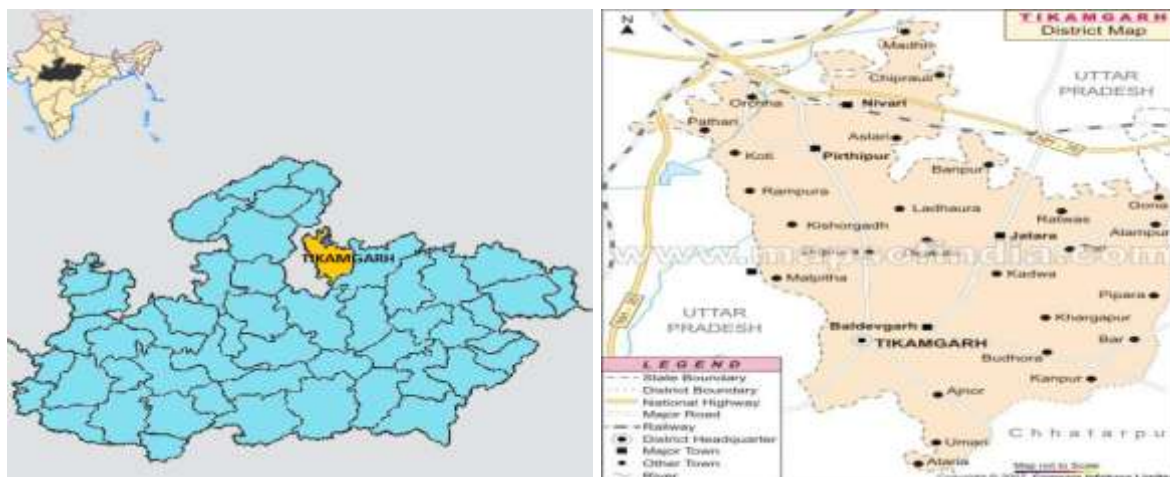
Tikamgarh Districts of Madhya Pradesh, are located on region of Bundelkhand in India Tikamgarh is spread from 78.26 to 79.21°.(longitude) and 24.26 to 25.34° (latitude). The total Geographical area of Tikamgarh District is 5 048.00 km² and the total population is 1 202 998. The northern margin is very irregular. The maximum length of the district is about 119 km from North to South and width about 80 km. Tikamgarh District is bounded by Chhatarpur district to east, Lalitpur district to West, Jhansi to North and Sagar to South.

The climate of Tikamgarh district may be divided into Four seasons. The winter from December to February is followed by the summer from March to the middle of June. The period from mid-June to the end of September is the rainy season. The months of October and November constitute the post-monsoon or transition season. After February temperature rises gradually. May is the hottest month with mean daily maximum temperature at about 43°C and low 29°C. On individual day temperature may raise up to about 47°C. The relative humidity is high during the monsoon season, generally above 70% while rest of the year the air is comparatively dry. The driest part of the year is summer season when the relative

humidity is less than 20% in the afternoons. There is no Meteorological observatory but one rain gauge station located in the district at Tikamgarh. The average rainfall of the district is 40 inch varying from 33 inch to 54 inches. Rainfall in the district generally increases from north-west to south-west. Parts of the NiwariTahsil, and Mohangarh of Jataratahsil also come 4 in the low rainfall zone. About 90% of the annual rainfall in the district is received during the south-west monsoon season, July being with heavy rainfall month.

The forest is spread over 804.36 sq.km. Tikamgarh district falls under tropical dry (mixed) deciduous forests, growing particularly teak, kardhai and khair. In addition to Acacia and Euphorbia shrubs, the tropical thorn forests can also be seen in small patches. The following sub-types have been found in the district. 1. Teak forest: In this type palas, kardhai, belchirol, khaora, seja, kakai are the main species found in the district. Common shrubs are karonda, dhawai, nirgudi, kurchi, pawar and gokhan. Most common climbers are makorraoni and ramdaton. 2. Mixed forest: Mixed forest are found where the soil is not well drained and proportion of clay is higher for development of teak. The chief species of the trees are teak, seja, kardhai, dhaora, Salai, Jhingan, Ghont, Khair and Tendu. The undergrowth of shrubs and weeds are Marorpahati, Karonda, Thuar, Harsingar, Panwar, Jharbori and Gokhru. Bamboo is found in certain localities only

Showing Map of Madhya Pradesh and map of Tikamgarh district



Data collection

Secondary information was collected from various sources like office booklets, statistical abstracts, books and journals before field study to collect data on the locality, people etc. Detailed Ethnobotanical surveys were conducted during the year from 2014 to 2016 to collect the data. Over 130 informants were interviewed of which 85 key informants were chosen

equally distributed among different age groups. Informants were selected by making discussion with the Head of the respective village to document the plants. Relevant information was collected on the basis of frequent interviews with the selected experienced old people and the same has been noted down in household schedules and field diary. Voucher specimens for all the ethno medicinally important plants were collected to ensure proper identification of the plant. The Plants species were identified with the help of available floras. Some doubtful Folk Medicinal Plants are confirmed at the herbaria of Forest Research Institute (F.R.I) Jabalpur (M.P) India.

To evaluate the variability of the use of medicinal plants and to determine homogeneity on the informant's knowledge, the informants consensus factor (F_{IC}) was calculated (Heinrich et al., 1998) given as below:

$$F_{IC} = \frac{Nur - Nt}{(Nur - 1)}$$

This factor ranges between 0 and 1, where a high value means a good indicator for high rate of informant consensus. Nur is the number of use reports by informants for usage of particular illness and Nt refers to number of species used for particular illness category by all informants.

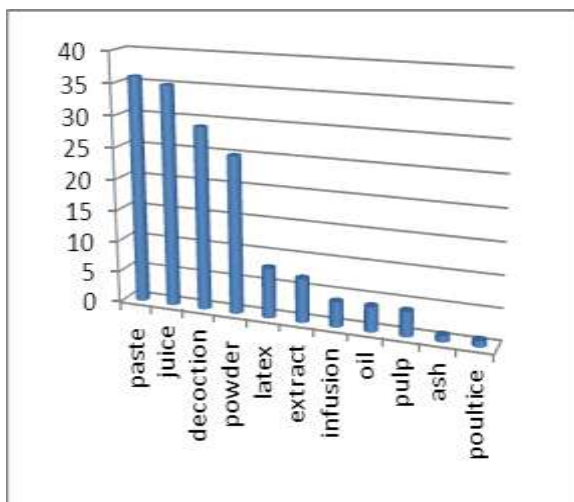
The majority of ailment types are grouped into predefined ethnobotanical categories (Heinrich, 2000; Ragupathy et al., 2008; Arwa et al., 2010; Njoroge and Bussmann, 2006; Tolossa et al., 2013), with the additions of a few other ailment categories, which were commonly mentioned during the interviews as they were prevalent among the communities of the selected site. The use of "General metabolism categories" is adopted here as recommended by other ethnobotanical researchers (Heinrich, 2000; Ragupathy et al., 2008). In each ailment category parameter such as number of species, genera and families used and plant parts used has been presented. Overall 52 illnesses reported were grouped into 10 major categories.

RESULTS AND DISCUSSION

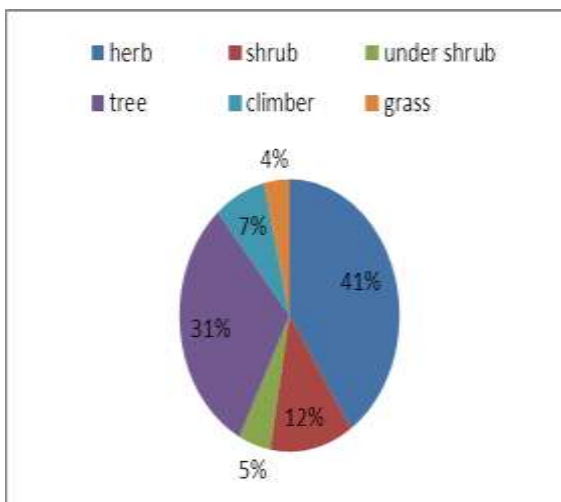
The study reveals the use of various plant species for curing different ailments among tribal region of Tikamgarh District, Madhya Pradesh . The plants used for preparation of traditional medicine are mostly collected from the wilderness. However, some expert practitioners have their own herbal gardens that supply the useful raw materials. Majority of the plants were used more or less for the same purpose with only slight variations in recipes informed by

most of the informants. All together 106 plant species belonging to 51 families and 41 genera have been documented in this study.

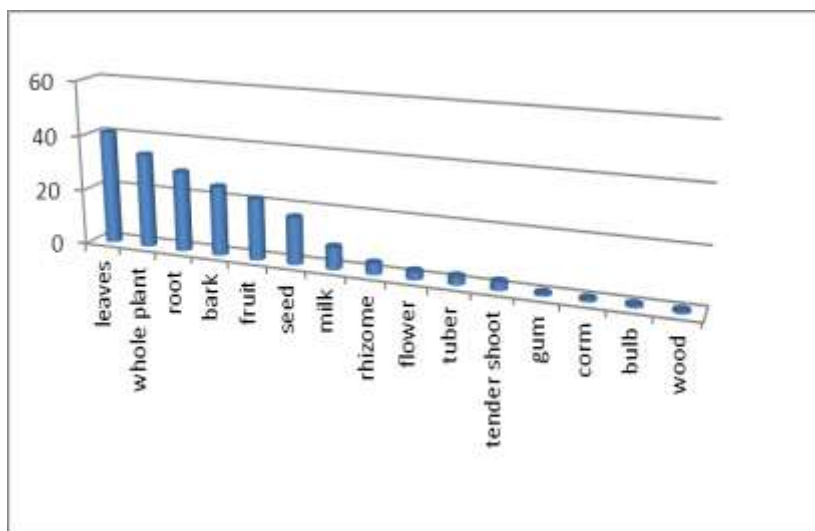
The highest numbers of plants were from family Fabaceae followed by Malvaceae, Euphorbiaceae, Caesalpiniaceae families. Among all the plant parts used Ethnomedicinally, leaves are used mostly used (41%), followed by whole plants (33%), Root (29%), Bark (25%) and Fruit (22%). As per habits, Herbs (41%) were the most used Ethnomedicinal species followed by the Trees (31%), Shrubs (12%) Climbers (7%), Under shrub (5%) and Grass (4%), the use of herbal formulation in paste was much higher (36%) followed by Juice (34%), Decoction (28%). The informant consensus analysis was carried out to test the reliability of Ethnobotanical data as revealed by the practitioners. In the study, the informant consensus of plant usage as Ethnomedicine among the Tikamgarh resulted in F_{IC} factors ranging from 0.5 to 0.64 per illness category. In the present study highest F_{IC} was found in the Dermatological disorder (0.64) followed by Respiratory disorder (0.62), Ear,nose,throat problem(0.61) and Ureno-genital problem (0.59), 112 numbers of citations were recorded for Dermatological disorder with use of 40 species. For Respiratory disorder 13 species are reported with 33 citations. Other category included diseases such as, gastro-Intestinal,skelto-muscular pain, oral and Dental problem, Endocrinal problem, Fever, other for which the F_{IC} value was low ranging from 0.5 to 0.55. The high F_{IC} factor indicates the homogeneity of informants. The more homogeneity for the Dermatological disorder, Respiratory disorder, Ear,nose,throat problem, Ureno-genital problem and pain may be due to availability and easily accessible of plants used in these diseases or the quick effect of these plants on diseases is the another case of more homogeneity. A low consensus factor indicates the higher number of plant species used in this category but lesser homogeneity among informants. The low consensus factor (F_{IC} 0.5) for oral and dental problem category may be due to availability of easily accessible pharmaceuticals which provide many alternatives to traditional medicine, and reduce the consensus of traditional knowledge for some common ailments.



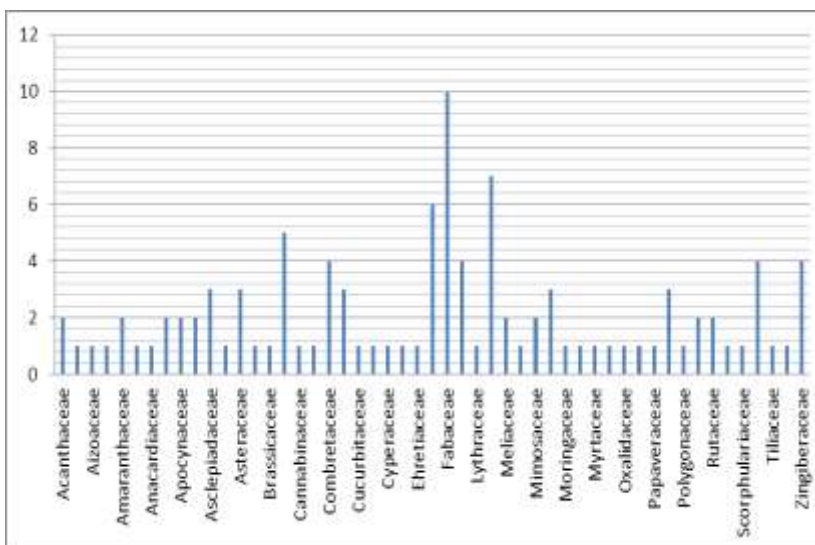
Mode of preparation of medicine



Habit pattern of plants



Showing parts of medicinal plants used for various ailments



Showing number of plants in different families

Ethno botanical survey of medicinal plants of Tikamgarh district.

S. No.	Illness category	Diseases	Scientific name	Family	Local name	Part used	Herbal formulation	Habit
1	Dermatological disorders	Cut	<i>Ageratum conyzoides</i> L.	Asteraceae	Khajju	Leaf	Juice	H
			<i>Calotropis gigantean</i> L.	Asclepiadaceae	Madar	Milky Latex	Latex	S
			<i>Colocasia esculenta</i> L.	Araceae	Jangli Arbi	Corm	Paste	H
			<i>Eclipta prostrata</i> L.	Asteraceae	Bhringraj	Plant	Paste	H
			<i>Euphorbia hirta</i> L.	Euphorbiaceae	Dudhi	Whole Plant	Juice	H
			<i>Syzygium cumini</i> L.	Myrtaceae	Jamun	Bark	Juice	T
			<i>Terminalia bellirica</i> Roxb.	Combretaceae	Bahera	Bark	Juice	T
		Burn	<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppi	Leaf	Paste	H
			<i>Aloe barbadensis</i> Mill.	Aloaceae	Gwar Patha	Leaf	Pulp	H
			<i>Musa paradisiaca</i> L.	Musaceae	Kella	Leaf Flower Fruit	Extract	S
			<i>Ricinus communis</i> Linn.	Euphorbiaceae	Arand	Seed	Oil	S
		Wound	<i>Adhatoda vasica</i> Nees.	Acanthaceae	Adusa	Root	Paste	S
			<i>Aegle marmelos</i> L.	Rutaceae	Bel	Leaves	Extract	T
			<i>Azadirachta indica</i> A. Juss.	Meliaceae	Neem	Leaves	Extract	T
			<i>Shorea robusta</i> Gaertn.f	Dipterocarpaceae	Sal	Bark	Paste	T
			<i>Terminalia chebula</i> Retz.& Willd.	Combretaceae	Harr	Fruit	Powder	T

		Pimple	<i>Bombex ceiba</i> L.	Bombaceae	Semal	Root	Paste	T
			<i>Ficus recemosa</i> L.	Moraceae	Gular	Bark	Powder	T
			<i>Menthe piperita</i>	Lamiaceae	Pipermint	Fruit	Juice	H
		Scabies	<i>Ficus bengalensis</i> L.	Moraceae	Bargad	Bark	Powder	T
			<i>Ficus recemosa</i> L.	Moraceae	Gular	Bark	Powder	T
			<i>Ficus religiosa</i>	Moraceae	Pepal	Leaves	Juice	T
			<i>Tamarindus indica</i> L.	Caesalpiniaceae	Imli	Seed	Paste	T
		Leprosy	<i>Abutilon indicum</i> L.	Malvaceae	Kanghi/Kakai	Leaves	Paste	U s
			<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Latjeera	Whole Plant	Paste	H
			<i>Bambusa spinosa</i> Roxb.	Poaceae	Bans	Leaves	Paste	G
			<i>Cassia fistula</i> Linn.	Caesalpiniaceae	Amaltas	Fruit	Fruit	T
			<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Amarbel	Whole Plant	Paste	C
			<i>Lowsonia ineria</i> Linn.	Lythraceae	Mehdi	Leaves	Paste	S
			<i>Pterocarpus marspium</i> Roxb.	Fabaceae	Bijasal	Gum	Gum	T
		Skin disease	<i>Argemone maxicana</i> Linn.	Papaveraceae	Pelicateli	Latex	Latex	H
			<i>Azadirachta indica</i> A juss.	Meliaceae	Neem	Leaves Bark	Extract	T
			<i>Curcuma aromaticum</i> Veleton.	Zingiberaceae	Janglihahdi	Tuber	Paste	H
			<i>Ficus bengalensis</i> L.	Moraceae	Bargad	Bark	Powder	T

			<i>Lowsonia ineria</i> Linn	Lythraceae	Mehdi	Leaves	Paste	S
			<i>Nicotiana tobacum</i> Linn.	Solanaceae	Tambaku	Leaves	Paste	H
			<i>Ocimum sanctum</i> Linn.	Lamiaceae	Tulsi	Whole Plant	Paste	H
			<i>Pithecolobium dulce</i> Roxb.	Mimosaceae	Jangaljalebi	Bark	Powder	T
		Boils	<i>Argemone Mexicana</i> Linn.	Papaveraceae	Pelicateli	Latex	Latex	H
			<i>Azadirecta indica</i> A juss.	Meliaceae	Neem	Leaves	L E	T
			<i>Cynodon dactylon</i> L.	Poaceae	Doob	Root	R P	G
		Hair problem	<i>Bacopa monnieri</i> L.	Scrophulariaceae	Brahami	Entire Plant	Juice	H
			<i>Corchorus olitorius</i> L.	Tiliaceae	Chench	Whole Plant	Decoction	H
		Ringworm	<i>Cassia tora</i>	Caesalpiniceae	Punwar	Leaves	Paste	H
			<i>Calotropis procera</i> Ait.	Asclepiadaceae	Madar	Latex	Latex	S
			<i>Euphorbia thymifolia</i> Linn	Euphorbiaceae	Chotidudhi	Whole Plant	Juice	H
2	Gastro-intestinal disorder	Constipation	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Amla	Bark	Juice	T
			<i>Ricinus communis</i> L.	Euphorbiaceae	Arand	Seed	Oil	S
			<i>Syzygium cumini</i> L.	Myrtaceae	Jamun	Fruit	Fruit	T
		Diarrhoea	<i>Acacia nilotica</i> Linn.	Fabaceae	Babul/Bamura	Bark	Decoction	T
			<i>Aegle marmelos</i> L.	Rutaceae	Bel	Fruit	Pulp	T
			<i>Carica papaya</i> Linn	Caricaceae	Papita	Fruit Seed	Pulp	T

			<i>Musa paradisiaca</i> L.	Musaceae	Kella	Fruit	Unripe	H
			<i>Oxalis corniculata</i> Linn.	Oxalidaceae	Amrul	Whole Plant	Past	H
			<i>Tinospora cordifolia</i> Willd.	Menispermaceae	Giloy	Root Stem	Decoction	C
			<i>Zizphus jujube</i> L.	Rhamnaceae	Ber	Fruit	Fruit	Us
		Dysentery	<i>Adhatoda vasica</i> Nees.	Acanthaceae	Adusa	Leaf	Juice	S
			<i>Cyperus rotundus</i> L.	Cyperaceae	Nagar Moth	Tuber	Infusion	G
			<i>Citrus medica</i> Salib.	Rutaceae	Bara Nimbu	Fruit	Juice	T
			<i>Cynadon dactylon</i> L.	Poaceae	Doob	Leaves	Paste	G
			<i>Euphorbia hirta</i> Linn.	Euphorbiaceae	Dudhi	Whole Plant	Juice	H
			<i>Jatropha curcus</i> L.	Euphorbiaceae	Safedarand	Seeds	Seed	S
			<i>Mangifera indica</i> Linn.	Anacardiaceae	Aam	Fruit	Fruit	T
			<i>Ricinus communis</i> L.	Euphorbiaceae	Arand	Root	Juice	T
			<i>Tamarindus indica</i> L.	Caesalpiniaceae	Imli	Fruit	Pulp	T
			<i>Terminalia arjuna</i> Roxb.	Combretaceae	Arjun	Bark	Paste	T
		Indigestion	<i>Bauhinia variegata</i> L.	Fabaceae	Kachnar	Bark Flower	Juice	T
			<i>Cynodon dactylon</i> L.	Poaceae	Doob	Root	Infusion	G
			<i>Syzgium cumini</i> L.	Myraceae	Jamun	Fruit	Orally	T

			<i>Terminalia bellirica</i> Roxb.	Combretacea	Baheda	Fruit	Powder	T
			<i>Terminalia chebula</i> Retz & willd.	Combretacea	Harr	Fruit	Powder	T
			<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Ber	Fruit	Orally	T
		Vomiting	<i>Aegle marmelos</i> L.	Rutaceae	Bel	Root	Juice	T
		Intestinal pain	<i>Acacia catechu</i> (L.f.) Willd.	Fabaceae	Khair	Wood	Decoction	T
			<i>Rauwolfia serpentine</i> L.	Apocynaceae	Sarpagandha	Root	Infusion	S
		Stomach-ache	<i>Coriandum sativum</i> L.	Apiaceae	Dhaniya	Leaves	Green Leaves	H
			<i>Cuscutareflexa</i> Roxb	Convolvulaceae	Amarbel	Entire Plant	Paste	C
		Colic pain	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Kateli Chauhi	Tender Shoot	Shoot	H
		Gastric problem	<i>Allium sativum</i> Linn.	Amaryllidaceae	Lahshun	Bulb	Bulb	H
3	Respiratory disorder	Cold	<i>Curcuma longa</i> L.	Zingiberaceae	Haldi	Rhizome	Rhizome	H
			<i>Madhuca indica</i> Koenig.	Sapotaceae	Mahua	Fruit	Fruit	T
		Cough	<i>Abutilon indicum</i> L.	Malvaceae	Kanghi/Kakai	Seed Root Leaves	Paste	Us
			<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Latjeera	Whole Plant	Paste	H
			<i>Adhatoda vasica</i> Medikus.	Acanthaceae	Adusa	Leaves	Paste	S
			<i>Albizia procera</i> L.	Mimosaceae	Safed Siris	Bark	Decoction	T
			<i>Curcuma longa</i> L.	Zingiberaceae	Haldi	Rhizome Seed	Rhizome	H
			<i>Datura alba</i> Linn.	Solanaceae	Datura	Whole Plant	Seed	Us
			<i>Euphorbia hirta</i> Linn.	Euphorbiaceae	Dudhi	Whole Plant	Decoction	H
			<i>Solanum xanthocarpum</i> L.	Solanaceae	Kantakari	Rhizome	Decoction	H

			<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Adrak		Rhizome	H
			<i>Calotropis procera</i> Ait.	Asclepiadaceae	Madar	Root	Powder	S
			<i>Datura alba</i> Linn.	Solanaceae	Datura	Seed	Powder	U s
			<i>Euphorbia hirta</i> Linn.	Euphorbiaceae	Dudhi	Whole Plant	Powder	H
		Asthma	<i>Nicotiana tobacum</i> Linn.	Solanaceae	Tambaku	Leaves	Powder	H
			<i>Solanum nigrum</i> Linn.	Solanaceae	Makoi	Leaves Seed	Powder	H
			<i>Solanum xanthocarpum</i> L.	Solanaceae	Kantakari	Root	Powder	H
			<i>Terminalia arjuna</i> Roxb.	Combretaceae	Arjun	Bark	Powder	T
		Bronchitis	<i>Nicotiana tobacum</i> Linn.	Solanaceae	Tambaku	Leaves	-	H
			<i>Calotropis procera</i> Ait.	Asclepidaceae	Madar	Leaves	Ash	Us
4	Skelto-muscular pain	Body pain	<i>Cordia dichotoma</i> Forst.	Ehertiaceae	Lasora	Bark	Powder	T
			<i>Dalbergia sissoo</i> Roxb	Fabaceae	Sheesham	Bark	Powder	T
		Muscular pain	<i>Calotropis gigantean</i> L.	Asclepidaceae	Madar	Latex	Latex	S
			<i>Ficus benghalensis</i> L.	Moraceae	Bargad	Latex	Latex	T
		Rheumatism	<i>Curcuma amada</i> Roxb.	Zingiberaceae	Aamahaldi	Rhizome	Paste	H

			<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Amarbel	Entire Plant	Paste	C
			<i>Ricinus communis</i> L.	Euphorbiaceae	Arand	Seed	Oil	S
			<i>Vitex negundo</i> L.	Vitaceae	Nirgundi	Leaf	Juice	S
		Arthritis	<i>Hemidesmus indicus</i> (L.)R.Br.	Asclepiadaceae	Annantmul	Root	Powder	S
			<i>Sida cordifolia</i> L.	Malvaceae	Madanmast	Root	Decoction	H
			<i>Melia azedarach</i> L.	Meliaceae	Mahaneem	Seed	Seed	T
		Joint pain	<i>Cuscuta reflexa</i> Roxb.	Cuscutaceae	Amerbel	Entire Plant	Paste	C
		Swelling	<i>Polygonum barbatum</i> L.	Polygonaceae	-	Entire Plant	Poultice	H
			<i>Vitex negundo</i> L.	Vitaceae	Nirgundi	Leaf	Juice	S
		Head ache	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Amar Bel	Entire Plant	Paste	C
			<i>Cymbopogon citratis</i> (DC.)Stapf.	Poaceae	-	Leaves	Paste	G
			<i>Mucuna pruriens</i> L.	Fabaceae	Karench	Leaves	Decoction	C
			<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Krishna Tulsi	Entire Plant	Decoction	H
			<i>Solanum nigrum</i> L.	Solanaceae	Makoi	Entire Plant	Paste	H
5	Ureno-genital problems	Leucorrhoea	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Kateli Chauhi	Tender Shoot	Shoot	H
			<i>Mimosa pudica</i> L.	Fabaceae	Lajwanti	Entire Plant	Decoction	H
		Gonorrhoea	<i>Abutilon indicum</i> L.	Malvaceae	Kanghi	Whole Plant	Decoction	H
			<i>Argemon maxicana</i> Linn.	Papaveraceae	Pilikatari	Leaves	Juice	H

		<i>Acacia leucophloea</i> Willd.	Mimosaceae	Safedkikar	Leaves Bark	Juice	T
		<i>Acacia nilotica</i> L.	Mimosaceae	Babul	Leave Bark Seed Root	Decoction	T
		<i>Asparagus officinalis</i> Willd.	Asparagaceae	Seetmuli	Root Leaves	Powder	C
		<i>Bambusa spinosa</i> Roxb.	Poaceae	Bans	Fruit Flower Leave	Juice	G
		<i>Cannabis sativa</i> Linn.	Cannabinaceae	Bhang	Root Bark	Juice	H
		<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Shisham	Seed	Decoction	T
		<i>Ficus bengalensis</i> L.	Moraceae	Bargad	Seed	Decoction	T
		<i>Gossypium herbsceum</i> Linn.	Malvaceae	Kapas	Fruit	Powder	U s
		<i>Phoenix sylvestris</i> L.	Palmaceae	Khajur	Whole Plant	Fruit	T
		<i>Solanum xanthocarpum</i> L.	Solanaceae	Kantakari	Root Stem	Juice	H
		<i>Tinospora cordifolia</i> Willd.	Menispermaceae	Giloy		Juice	C

		Menstrual disorders	<i>Malva parviflora</i> L.	Malvaceae	-	Tender Shoot Seed	Decoction	H
		Diuretic aphrodisiac	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Kateli Chauli	Root	Decoction	H
			<i>Centella asiatica</i> L.	Apiaceae	Bramhi	Entire Plant	Decoction	H
		Urinary problem	<i>Mucuna pruriens</i> L.	Fabaceae	Karench	Root	Decoction	C
			<i>Hibiscus rosasinensis</i> L.	Malvaceae	Gurhal	Flower	Extract	S
6	Ear, nose, throat problems	Earache	<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppi	Entire Plant	Decoction	H
			<i>Cynodon dactylon</i> L.	Poaceae	Doob	Entire Plant	Juice	H
			<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Krishna Tulsi	Leaf	Juice	H
			<i>Shorea robusta</i> Gaertn.F.	Dipterocarpaceae	Sal	Bark	Juice	T
		Throat problem	<i>Acorus calamus</i> L.	Acoraceae	Bach	Root	Chew	H
			<i>Menthe spicata</i>	Lamiaceae	Pudina	Leaves	Decoction	H
			<i>Ficus religiosa</i> L.	Moraceae	Pipal	Bark	Powder	H
		Eye infection	<i>Azadirachta indica</i> A.juss.	Meliaceae	Neem	Seed	Oil	T
			<i>Boerhaviadiffusa</i> L.	Nyctaginaceae	Patharsaka	Root	Decoction	H
7	Oral and dental problems	Toothache	<i>Acalypha indica</i> L.	Euphorbiaceae	Kuppi	Entire Plant	Decoction	H
			<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Latjeera	Root	Juice	H
			<i>Carica papaya</i> Linn.	Caricaceae	Papita	Milk	Latex	S
		Mouth shore	<i>Caesulia axillaris</i> Roxb.	Asteraceae	Phulave	Root	Chew	H
8	Endocrinal	Diabetes	<i>Cassia sophera</i> L.	Caesalpiniaceae	Kasundi	Bark	Infusion	Us

	problems		<i>Coccinia grandis</i> L.	Cucurbitaceae	Kundru	Leaf	Juice	Tw
			<i>Convolvulus microphyllus</i> L.	Convolvulaceae	Sankhpushpi	Whole Plant	Powder	H
			<i>Ficus racemosa</i> L.	Moraceae	Umar	Fruit	Dried Fruit	T
9	Fever	Fever	<i>Acacia leucophloea</i> Willd.	Fabaceae	Reunja/Safedkikar	Bark	Decoction	T
			<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Latjeera/Addhajhara	Root	Decoction	H
			<i>Aegle marmelos</i> L.	Rutaceae	Bel	Root	Juice	T
			<i>Andrographis paniculata</i> Wall.Nees	Acanthaceae	Kalmegh	Whole Plant	Decoction	H
			<i>Anogeissus latifolia</i> Roxb.	Combretaceae	Ghawa	Root	Decoction	T
10	Others	Snake bite	<i>Bacopa monnieri</i> L.	Scrophulariaceae	Brahmi	Whole Plant	Decoction	H
			<i>Clitoria ternatea</i> L.	Fabaceae	Aparajita	Root	Powder	C
			<i>Sida acuta</i> L.	Malvaceae	Kharenta	Leaf	Paste	H
		Piles	<i>Sauromatum guttatum</i> Ait.(Kunth.)	Araceae	Bhasamkand	Tuber	Paste	H
			<i>Pongamia pinnata</i> L.	Fabaceae	Karanj	Seed	Powder	T
			<i>Melia azedarach</i> L.	Meliaceae	Mahaneem	Bark	Paste	T
		Appetite	<i>Carissa carandas</i> L.	Apocynaceae	Karonda	Fruit	Fruit	S
		Ulcers	<i>Ipomoea eriocarpa</i> R.br.	Convolvulaceae	Nakhari	Whole Plant	Paste	Tw
		Vitality	<i>Madhuca indica</i> Gmel.	Sapotaceae	Mahua	Fruit	Fruit	T

		Pyorrhoea	<i>Bauhinia variegata</i> L.	Caesalpiniaceae	Kachnar	Twig	Twig	T
			<i>Mangifera indica</i> L.	Anacardiaceae	Aam	Latex	Latex	T
		Jaundice	<i>Raphanus sativus</i> L.	Brassicaceae	Mooli	Root	Juice	H
			<i>Trianthema portulacastrum</i> L.	Aizoaceae	Patharchatta	Leaf	Juice	H
		Spermatorrhoea	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Katelichauli	Root	Root Chew	H
			<i>Euphorbia thymifolia</i> L.	Euphorbiaceae	Laldudhi	Whole Plant	Extract	H
			<i>Sida cordifolia</i> L.	Malvaceae	Madanmast	Whole Plant	Juice	H
			<i>Sida rhombifolia</i> L.	Malvaceae	Sahadevi	Leaf	Juice	H
		Purgative	<i>Cassia fistula</i> L.	Caesalpiniaceae	Amaltas	Fruit	Fruit	T
			<i>Cassia occidentalis</i> L.	Caesalpiniaceae	Chakwad	Leaf	Juice	U s
			<i>Convolvulus arvensis</i> L.	Convolvulaceae	Sankhpushpi	Root	Decoction	C
			<i>Terminalia chebula</i> Retz & willd	Combretaceae	Harr	Fruit	Powder	T
		Blood pressure	<i>Moringa oleifera</i> Lam.	Moringaceae	Munga	Leaf	Juice	T
			<i>Coriandrum sativum</i> L.	Apiaceae	Dhania	Leaf	Paste	H

Abbreviation: H-herb, S- shrub,T- tree ,Us- under shrub,C- climber ,G- grass , Tw-twigner

Table: Informant consensus of medicinal plants of different ailment categories.

s.n	Illness category (disease and disorder)	Number of Texa (N _t)	Number of use report (N _{ur})	Informant ^s consensus index factor (FIc)
1	Dermatological disorder (cut,burn,wound,pimple, scabies, leprosy, skin disease,boil,hair problem ringworm)	40	112	0.64
2	Gastro-intestinal (constipation,diarrhoea,dysentery, indigestion,vomiting,intestinal pain,stomach-ache, colic pain,gastric problem)	30	52	0.43
3	Respiratory disorder (cold,cough,asthma,bronchitis)	13	33	0.62
4	Skelto-muscular pain (body pain,muscular pain, rheumatism,arthritis,jointpain,swelling,head-ache)	16	28	0.44
5	Ureno-genital problem (leucorrhoea,gonorrhoea, menstrual disorder,diureticaphrodisiac,urinary problem)	19	45	0.59
6	Ear,nose,throat problem (ear-ache,throat problem, eye infection)	9	22	0.61
7	Oral and dental problem (tooth-ache,mouth shore)	4	7	0.5
8	Endocrinal problem (diabetes)	4	11	0.7
9	Fever (fever)	5	10	0.55
10	Other (snake bite,piles,appetite,ulcers,vitality,pyorrhoea,jaundice, spermatorrhoea,purgative,blood pressure)	23	48	0.53

REFERENCES

1. Arwa, S.P., Nyunja, R.O., Onyango, J.C. Plant Species in the Folk medicine of Kit Mikayi Region, Western Kenya. *Ethnobot. Leaflets*, 2010; 14: 836-40.
2. Baca, J.E., Some health beliefs of the Spanish speaking. In: Marti'nez, R.A. (Ed.), *Hispanic Culture and Health Care: Fact, Fiction, Folklore*. Mosby, St. Louis, MO, 1978; 92-98.
3. Bajpai H R, Mitra M., Indigenous medical practices of hill Korwas of Madhya Pradesh, *J. Hum. Ecol*, 1997; 9(3): 295.
4. Balick, M.J., Transforming ethnobotany for the new millennium. *Annals of the Missouri Botanical Garden*, 1996; 83: 58-66.
5. Balick, M.J. and Cox, P.A. Ethnobotanical Research and Traditional Health Care in Developing Countries. *In: Bodeker, G., Bhat, K.K.S., Burley, J. and Vantomme, P. (Eds), Medicinal Plants for Forest Conservation and Health Care*. FAO, Rome, 1997; 12-23.

6. Balick, M.J., Kronenberg, F., Ososki, A.L., Reiff, M., Fugh-Berman, A., O'Connor, B., Roble, M., Lohr, P., Atha, D., Medicinal plants used by Latino healers for women's health conditions in New York City. *Economic Botany*, 2000; 54(3): 344–357.
7. Bhalla S, Patel J R, Bhalla NP. Ethno-botanical herbal legumes of Bundelkhand region, Madhya Pradesh. *J. Econ. Taxonomic Bot., Additional Series*, 1992; 10: 105-109.
8. Bhalla S, Patel J R, Bhalla NP. Ethno-medicinal observations on some Asteraceae of Bundelkhand region, Madhya Pradesh. *J. Econ. Taxonomic Bot., Additional Series*, 1996; 12: 175-178.
9. Bhatnagar L S, Singh V K, Pandey G. Medico-botanical studies on the flora of Ghatigaon Forests, Gwalior, Madhya Pradesh. *JRIM*, 1973; 8(2): 67-100.
10. Bonnelly de Calventi, I., Va'squez Tineo, M., Terrero, D., Aspectos Químicos y Usos Nativos de Plantas en la Medicina Folklorica Dominicana. CENAPEC, Santo Domingo, Dominican Republic, 1985; 64.
11. Cunningham, R., The biological impacts of 1492. In: Wilson, S.M. (Ed.), *The Indigenous People of the Caribbean*. University Press of Florida, Gainesville, FL, 1997; 31–35.
12. Deive, C.E., *Vodu y Magi'a en Santo Domingo*. Museo del Hombre Dominicano, Santo Domingo, Dominican Republic, 1979; 427.
13. Dubey G, Shahu P, Sahu R, Role of plants religious ceremonies common to Bundelkhand region of Madhya Pradesh. *J. Med. Arom. Plants Sci.*, 2001; 23(1A): 542-545.
14. Flaster, T. Ethnobotanical approach to drug discovery of bioactive compounds. Process in new crops. *Proceedings of the Third Traditional Symposium*, ASHS press, Alexandria, 2001; 561-565.
15. Frei, B., Baltisberger, M., Sticher, O. and Heinrich, M. Medical ethnobotany of the Zapotecs of the Isthmus-Sierra (Oaxaca, Mexico): documentation and assessment of indigenous uses. *J. Ethnopharmacol*, 1998; 62: 149-165.
16. Gordon, S.M., Hispanic cultural health beliefs and folk remedies. *Journal of Holistic Nursing*, 1994; 12(3): 307–322.
17. Hassan, M.A. and Khan, M.S. Ethnobotanical record of Bangladesh - 1: Plants used for healing fractured bones. *J. Asiatic Soc. Bangladesh (Sci.)*, 1986; 12(1&2): 33-39.
18. Hassan, M.A. and Khan, M.S. Ethnobotanical record of Bangladesh - 2. Plants used for healing cuts and wounds. *Bangladesh J. Plant Taxon*, 1996; 3(2): 49-52.
19. Heinrich, M. Ethnobotany and its role in drug development. *Phytotherapy Research*, 2000; 14: 479-488.

20. Heinrich, M., Ankli, A., Frei, B. and Weimann, C. Medicinal plants in Mexico: healers consensus and cultural importance. *Social Science and Medicine*, 1998; **47**: 1859-1871.
21. Jain S K, Observation on ethno-botany of tribals of Madhya Pradesh, *Vanyajati*, 1963; 11(4): 177-183.
22. Jain S K, Studies in Indian ethno-botany - Less known uses of fifty common plants from the tribal areas of Madhya Pradesh, *Bull.Bot. Survey India*, 1963a; 5(3/4): 223-226.
23. Jain S K, Studies in Indian ethno-botany, II: plants used in medicine by the tribals of Madhya Pradesh. *Bull. Reg. Res.Laboratory, Jammu*, 1963b; 1(2): 126-128.
24. Jain S K, Observations on the ethnobotany of the tribals of Madhya Pradesh. *Vanyajati*, 1963c; 11: 177-183.
25. Jain S K, Tarafdar CR. Medicinal plant lore of Santals. P.O.Buddings' work. *Econ. Bot.*, 1970; 19: 236-250.
26. Khan MA, Khan T, Ahmad Z, Barks used as source of medicine in Madhya Pradesh, India. *Fitoterapia*, 1994; 65(5): 444-446.
27. Khan M A, Singh V K, A folklore survey of some plants of Bhopal district forests, Madhya Pradesh, India, described as anti-diabetics. *Fitoterapia*. 1996; 67(5): 416-421.
28. Kumar V, Jain S K, A contribution to ethnobotany of Surguja district in Madhya Pradesh, India. *Ethnobot*, 1998; 10: 89-96
29. LaGuerre, M., *Afro-Caribbean Folk Medicine*. Bergin and Garvey Publishers, Inc., South Hadley, MA, 1987; vii: 120.
30. Lal Brij, Traditional remedies for bone fracture among the tribals of Madhya Pradesh, India. *Aryavaidyan*, 1988; 1(3): 190-195.
31. Lal Brij. Ethno-botany of Baigas of Madhya Pradesh: preliminary report. *Arunachal For. News*, 1993; 11(10): 17-20.
32. Maheshwari J K, Ethno-botanical documentation of primitive tribes of Madhya Pradesh, India. *J. Econ. Taxon. Bot.*, Additional Series, 1996; 12: 206-213.
33. Mishra D P, Sahu T R, Euphorbiaceous plants used in medicine by the tribals of Madhya Pradesh, India. *J. Econ. Taxon. Bot.*, 1984; 5: 791-793.
34. Njoroge, G.N., Bussmann, R. W. Herbal usage and informant consensus in ethnoveterinary management cattle diseases among the Kikuyus (Central Kenya), *J. Ethnopharm*, 2006; 108(3): 332-9.
35. O'Connor, B.B., Healing practices. In: Loue, S. (Ed.), *Handbook of Immigrant Health*. Plenum, New York, NY, 1998; 145-162.

36. Oommachan M, Bajaj A, Masih S K, Ethno-botanical observations at Pachmarhi (Madhya Pradesh). *J. Trop. For.*, 1990; 6(2): 157-161.
37. Oommachan M, Masih S K, A contribution to the flora of Pachmarhi – Assessment. *J. Eco. Tax*, 1992; 6(2): 437-445.
38. Pandey R K, Bajpai A K, Bhattacharya P, Some unique folk medicines of Baiga tribes of Mandla district M.P. *Indian J. For.*, 1991; 7(1): 203-204.
39. Rai M K, Ethno-medicinal Studies of Patakot and Tamiya (Chhindwara) Plants used as tonic. *Ancient Sci. Life.*, 1987; 3(2): 119-121.
40. Rai M K, Ethno-medicinal studies of Patakot and Tamiya (Distt. Chhindwara) M.P. Plants used as tonic. *Ancient Sci. Life.*, 1987a; 7(2): 119- 121.
41. Rai M K, Ethno-medicinal Studies of Chhindwara District (M.P.). I. Plants used in stomach disorders. *Indian Med.*, 1989; 1(2): 1-5.
42. Rai M K, Acharya D, Nordenstam B, The family Asteraceae in the Chhindwara District of Madhya Pradesh, India. *Compositae Newslett.*, 1999; 33: 46-58.
43. Rai M K, Nonhare B P, Ethno-medicinal studies of Bicchua (Distt.- Chhindwara) M.P. - II, *Indian Med. (Vijayawada)*, 1992; 4(3): 7-10.
44. Rai M K, Ojha G C, Ethno-medicinal studies of Chhindwara District (M.P.) - I. Plants used in stomach disorders. *Ind. Med. (Vijayawada)*, 1989; 1(2): 1-5.
45. Rai R, Nath V, Some lesser known oral herbal contraceptives in folk claims as anti-fertility and fertility induced plants in Baster region of Chhatisgarh. *J. Nat. Remedies*, 2005; 5(2): 153-159.
46. Rai R, Nath V, Use of medicinal plants by traditional herbal healer in central India. *Indian For.*, 2005; 131(3): 463-468.
47. Rai R, Nath V, Shukla P K, Ethno-medicinal studies on Bharya tribes in Satpura Plateau of Madhya Pradesh. *New Agriculturist*, 2002; 13(1,2): 109-114
48. Robineau, L., Encuesta sobre medicina tradicional popular en una zona rural y en una zona urbana marginal de la República Dominicana. *Moscoso*, 1986; 4: 226–265
49. Sahu T R, An ethno-medicinal study of M.P. I. Plants used against various disorders among tribal women. *Ancient Sci. Life*, 1982; 1(3): 178-181.
50. Sahu T R, Further contribution towards the ethno-botany of Madhya Pradesh, II: plants used against diarrhea and dysentery. *Ancient Sci. Life*, 1983; 2(3): 169-170.
51. Saxena H O, Observations on the ethno-botany of Madhya Pradesh, *Bull. Bot. Surv., India*, 1986; 28: 149-156.

52. Shah N C, Singh S C, Hitherto unreported phytotherapeutical. Pharmacol.uses from tribal pockets of Madhya Pradesh (India). *Ethnobotany*, 1990; 2(1/2): 91-95.
53. Teklehaymanot, T. and Giday, M. Ethnobotanical study of medicinal plants used by people in Zegie Peninsula, Northwestern Ethiopia. *J. Ethnobiol. Ethnomed*, 2007; **3**: 1-11.
54. Tolossa, K., Debela, E., Athanasiadou, S., Tolera, A., Ganga, G., Houdijk, J.G. M. Ethnomedicinal study of plants used for treatment of human and livestock ailments by traditional healers in South Omo, Southern Ethiopia. *J. Ethnobiol. Ethnomed*, 2013; 9: 32.
55. Weniger, B., Interest and limitations of a global ethnopharmacological survey. *Journal of Ethnopharmacology*, 1991; 32: 37-41.
56. Weniger, B., Haag-Berrurier, M., Anton, R., Plants of Haiti used as antifertility agents. *Journal of Ethnopharmacology*, 1992; 6: 67-84.
57. WHO. World Health Organization traditional medicine strategy, 2002-2005. Geneva, 2001; 1-52.
58. Wilson, S.M., Introduction to the study of the indigenous people of the Caribbean. In: Wilson, S.M. (Ed.), *The Indigenous People of the Caribbean*. University Press of Florida, Gainesville, FL, 1997; 1-8.