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RESEARCH ARTICLE

ETHNOMEDICINAL UTILIZATION OF SOME TREE AND SHRUB BY RURAL INHABITANTS OF JHANSI DISTRICT OF BUNDELKHAND REGION, INDIA

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ABSTRACT

This paper presents the results of a study on ethnomedicinal plants used by rural inhabitants in the Jhansi district of Bundelkhand region, India. Since the information of ethnomedicinal plant is restricted to mostly few knowledgeable rural inhabitants and they are decreasing in number and there is a severe danger of traditional knowledge vanishing because the younger generations are not attracted to carry on this tradition. This analysis publicized that, the rural inhabitants used 39 plant species distributed in 34 genera belonging to 18 families to treat more than 41 ailments and diseases. Among all the plant species, found to be most dominant trees followed by shrubs. In this study most dominant families were Fabaceae and leaves were the most frequently used plant part for treatment of ailments and diseases. This study showed that various people in the remote villages of Jhansi district still continue to depend on ethno-medicinal plants for treatment of various ailments and diseases.

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INTRODUCTION

Indian subcontinent is being inhabited by over 54 million tribal people dwelling in about 5000 forest dominated villages spreading across the country comprising 15% of the total geographical area, their knowledge of plants developed often of the cost of their life in their natural dwellings through centuries old experience could not be perfectly documented due to the lack of literacy and it had rather descended from one generation to another as a domestic practice (Nath and Khatri, 2010). For centuries, plants have been an important source of drugs. Many plant extracts are well established in clinical practice and are likely to remain so for some time until better, cheaper, less toxic or more efficacious alternatives become available. Of the pharmacologically active principles found in plant kingdom, higher plants are arguably the most important group. Many plants are used with medicinal properties and they cover a broad spectrum of pharmacological effects. It is especially meaningful in tropical countries due to the great variety of plants belonging to their eco-system. In India medicinal plants have long been used to treat different kinds of diseases. Today there is an increasing desire to unravel the role of ethnobotanical studies in trapping the centuries old traditional folk knowledge as well as in searching new plant resources of food, drug etc. (Jain, 1987, 1991). People living in the developing countries rely quite effectively on traditional

medicine for primary health care (Sullivan and Shealy 1997; Singh, 2002). Indian traditional medicine is based on different systems such as *Ayurveda*, *Siddha* and *Unani* used by various communities (Gadgil, 1996). Indian subcontinent is being inhabited by over 54 million tribal people dwelling in about 5000 forest dominated villages spreading across the country comprising 15% of the total geographical area, their knowledge of plants developed often of the cost of their life in their natural dwellings through centuries old experience could not be perfectly documented due to the lack of literacy and it had rather descended from one generation to another as a domestic practice (Nath and Khatri, 2010). The contribution of medicinal plants to the health of rural especially tribal people in the Bundelkhand region is extremely important because most of the population still believe in traditional healthcare systems. Traditional knowledge of herbal medicines is gradually being lost, although some traditional herbal healers (*Vaidyas*, *Ojhas*) are still practicing an indigenous system of healthcare systematically and effectively. Primitive people have acquired knowledge about medicinal properties of plants by trial and error, and have made an outstanding contribution to the origin and evaluation of many traditional herbal therapies in the Bundelkhand region. Documentation of indigenous knowledge and evaluation of the use of plants for a variety of purposes assume greater significance, not just to retain it, but also to keep it alive and make it available for future use because of rapid socio-economic and cultural changes that are taking place across the traditional community of the region (Kumar *et al.*, 2013). The present study was carried out to provide a comprehensive account of these tree

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having medicinal value in order to protect and propagate their utilization and cultivation with due consideration and proper planning. Besides the, objective of the study is to gather and prepare database on various aspects of medicinal tree of the area (Tiwari *et al*, 2012).

METHODOLOGY

Bundelkhand region lies between 23°8'–26°30' N latitude and 78°11'– 81 ° 30' E longitudes. The Bundelkhand is bounded by the Yamuna in the north, escarpd ranges of the Vindhyan plateau in south, the Sindh in the north-west and Bhandar ranges in the south-east. The region is spread over 71618 km2 and supports 12.45 million human populations as per 1991 census.

Bundelkhand region is occupied in central part of India. The geographical location of Bundelkhand is such that it acted as a gateway between the north and south India. (Tyagi 1997). The Bundelkhand region comprises of seven districts of Uttar Pradesh *viz.*, Jhansi, Lalitpur, Jalaun, Hamirpur, Mahoba, Banda and Chitrakoot, six districts of Madhya Pradesh *viz.*, Datia, Tikamgarh, Chhatarpur, Panna, Damoh and Sagar (Fig. 1.). The forest vegetation of Jhansi and its adjoining area is transitional between the southern tropical dry deciduous type and the northern tropical dry deciduous type. As per the official census, 2011, Jhansi has population of 2.0 million of which male and female were 1.06 and 0.93 million respectively. Total area under district is about 5028 sq. km. with population density of 398 persons per km2.

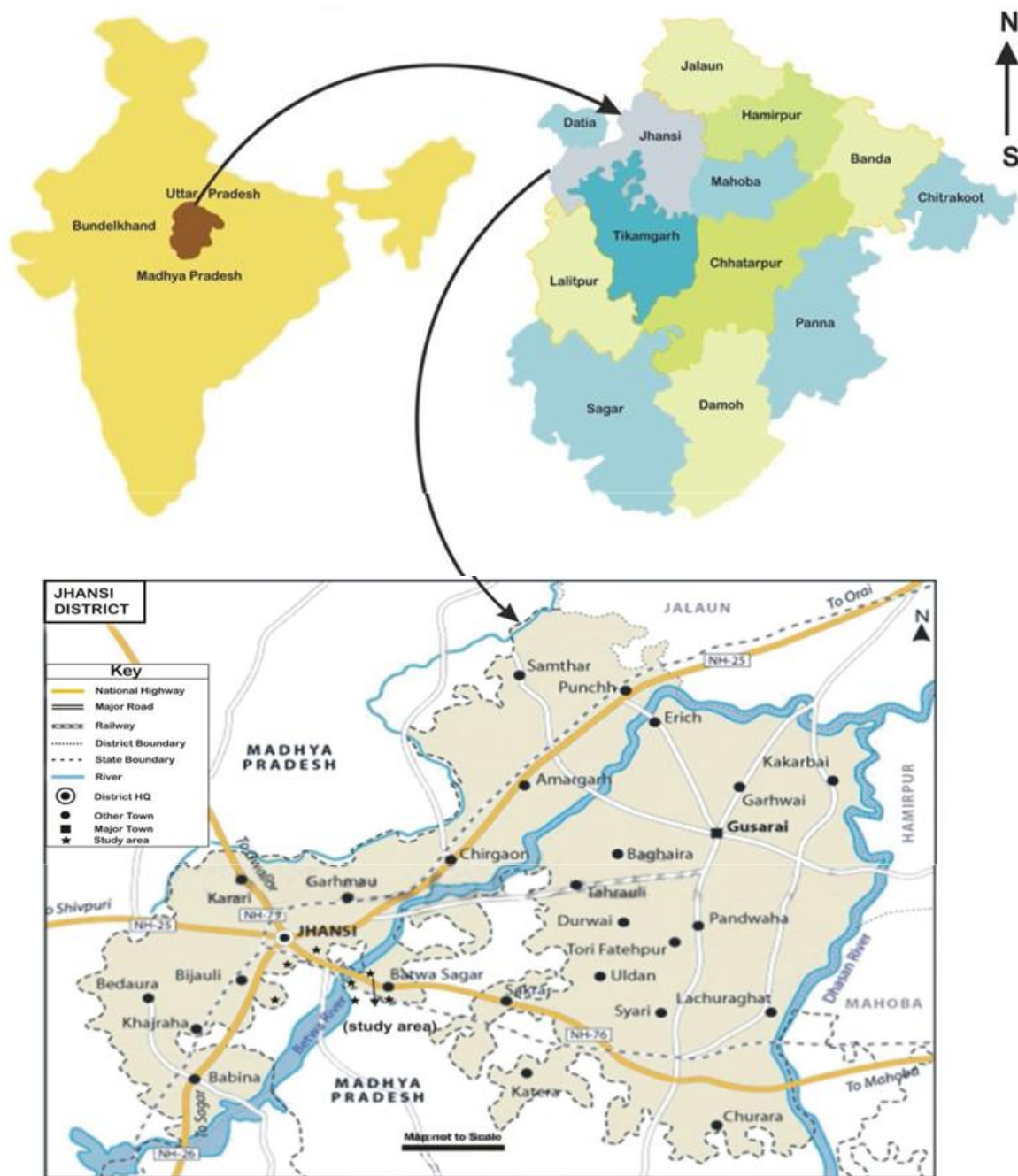


Figure 1. Map showing study area of Bundelkhand region

The villages of Jhansi district were extensively and regularly visited for the collection of ethno-medicinal explorations. These villages were selected after consulting the local administration and elderly people keeping in view that the selected villages would represent all characteristics of the district and most of the people still believe in traditional plants based therapeutic systems. Following the methodology as suggested by Jain and Goel (1995), the information regarding the medicinal usages of the plants available in the local areas for treating ailments and diseases was collected by various direct meetings/discussions and interviewing elderly learned and experienced persons of villages who have knowledge about these medicinal plants in the villages of the surveyed district. During the present study, number of informants were consulted, who were between the ages of 45 to 75 years. Oral consent was sought out from each informant before the start of the discussion and interview. Interview and discussion were conducted in both Hindi and local Bundelkhandy language. Each informant was interviewed separately and advised not to discuss with each other so that they could provide independent information. The questions were asked in stepwise manner by first asking about their age, address, level of education and occupation. Following that, informants were asked to share their traditional knowledge on the medicinal utilization of plants. This included local name of medicinal plants used, habitat, ailments treated, mode of administration and dosage. Almost all the plants were collected in flowering and fruiting period with the help of experienced rural people. While collecting the individual plant species thorough observations were made regarding their natural habitat. Every such plant was kept in vacuum and studied for its identification. The plants specimens after identification were subjected to drying between old news papers or filter papers and kept in wooden plant press. The old news papers or filter papers were changed daily for first week to prevent folding of soaked plants. The pressed specimens were some time kept to close to artificial heat to prevent dampness. The herbarium sheets of the identified plant were by fixing the plants with the help of a transparent cello tap. Each herbarium sheet contained information pertaining of Botanical Name, Local Name, Family, Date and Place of Collection. The sample of the plant species were identified with the help of local taxonomists and available flora (Duthie, 1994; Kanjilal, 1982; Kirtikar and Basu, 1999).

RESULT

In the current study, a total of 39 plant species distributed in 34 genera belonging to 18 families that were traditionally used by rural communities of Jhansi district in their day to day life to cure various ailments have been predictable along with their uses. (Table 1) In the plant families, Fabaceae represented maximum number of species (09species) followed by Moraceae (05 species), Apocynaceae, Rutaceae, Myrtaceae (03 species each), Meliaceae, Combretaceae, Euphorbiaceae (02 species each) and Anacardiaceae, Boraginaceae, Bignoniaceae, Rubiaceae, Moringaceae, Caricaceae, Verbenaceae, Sapotaceae, Sterculiaceae, Ulmaceae (01species each). (Fig.02) The present study revealed that ethno-medicinal plants are being used to treat the diseases like Bleeding in piles, Blood pressure, Blood purification, Blood sugar, Constipation,

Cough, Diabetes, Digestion Problem, Dog bite, Dysentery, Fever, Heart diseases, Heel cracks, High blood pressure, Increase platelets, Joint pain, Kidney stone, Lactation, Leucorrhoea, Liver ailments, Liver inflammation, Menstrual disorder, Mouth ulcer, Muscles sprains, Night discharge of semen enhancing sexual debility, Paralysis, Polio like symptoms, Premature ejaculation of semen, Pyorrhoea, Ring worm, Sensitivity of teeth, Skin Infection, Stomach ache, Swelling on the other part of body, Swelling or pain in eyes (eye flu), Throat infection, tightening of belly, Toothache, Unhealthy hairs, Weakness of teeth, Wounds etc. by the people of Jhansi district.

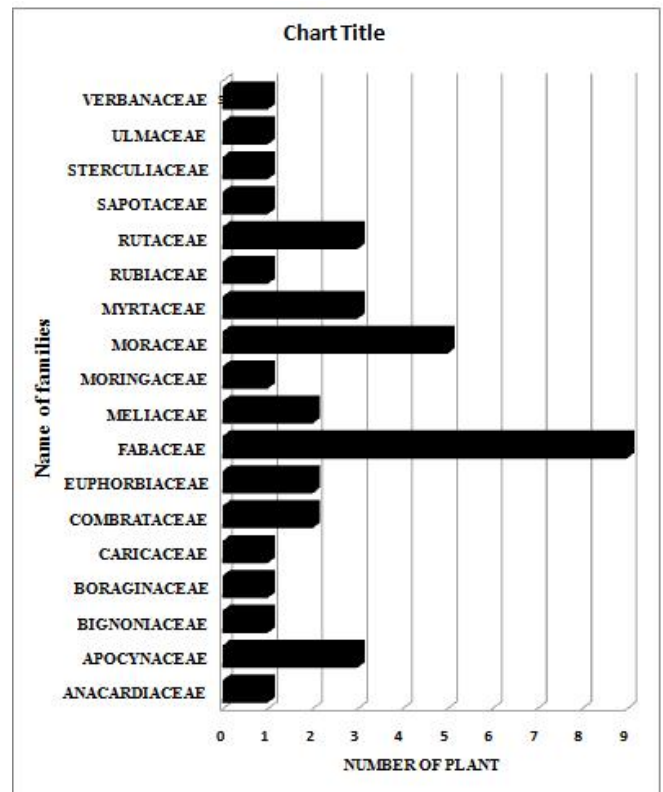


Fig. 2. Representation of used plant in their families

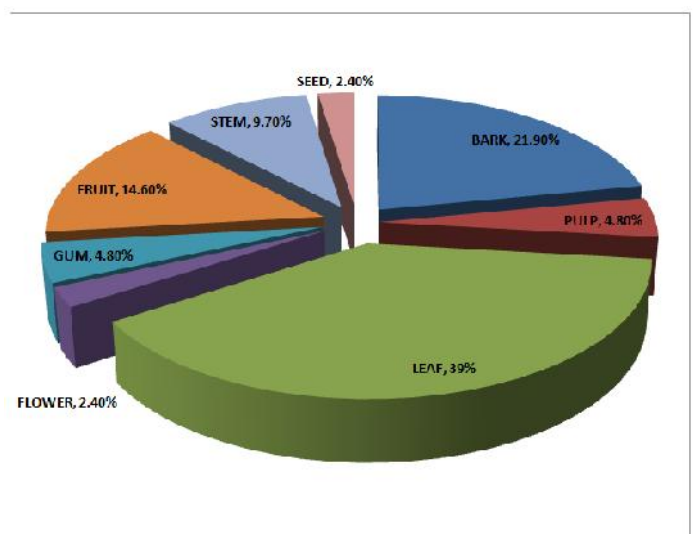


Fig. 3. Representation of plant parts used along with maximum number of plant species

Table 1. Ethnomedicinal plant used by rural inhabitants from remote villages of Jhansi district of Bundelkhand region

S. No.	Botanical name/ family	Vernacular name	Ailments	Mode of administration
1.	<i>Acacia leucophloea</i> (Roxb.) Willd./ Fabaceae	Raonja	Wounds	➤ The fresh bark of tree is ground and applied externally on cuttings until cure.
2.	<i>Acacia nilotica</i> (L.) Willedelex Delile/ Fabaceae	Desi Babool	Cough	➤ About 10 g. bark is boiled in 100 ml. water to obtained decoction. Two or three teaspoonful this decoction is given three times in a day for 05 days for treatment of cough.
3.	<i>Aegle marmalos</i> (L.) Corr. Serr/ Rutaceae	Bel-patra	Liver inflammation	➤ The pulp of a mature fruit (squash) into one-litre water and add some ice pieces & sugar. The substance so obtained administered once a day for 3-4 days in a week to treat various liver inflammations.
4.	<i>Alstonia scholaris</i> L.R.Br./ Apocynaceae	Sapt-parmi	Lactation	➤ The fresh pieces of 20 g. bark is boiled in 500-ml. water until the total amount is reduced to about ¼ of the 500 ml water; it cools and putted into a bottle. The decoction so obtained is given orally (½ cup) twice a day for three week to increase lactation.
5.	<i>Azadirachta indica</i> A.Juss./ Meliaceae	Neem	Polio like symptoms	➤ The paste of 100 g. leaves is mixed with 10 g. honey or sugar. About half teaspoonful of the paste is given orally thrice a day for 15 days to child for the treatment of polio like symptoms.
6.	<i>Bauhinia variegata</i> Kwerall/ Fabaceae	Kachnar	Blood Purification and dysentery.	➤ Young leaves and flower buds are taken raw directly for the blood purification and dysentery.
7.	<i>Bergeria koenigii</i> (L.) Sprengel ¹¹ / Rutaceae	Curry Patta	Unhealthy hairs	➤ About 8-10 leaves of plant are fried in 2-3 teaspoonful mustard oil and cooled it. The oil so obtained is applied on hair as massage at once for 2-3 days in a week. It gives shining and healthy hairs.
8.	<i>Butea monosperma</i> (Lamk.) Taub./ Fabaceae	Cheola	Tightening of belly	➤ About 5-10 g. gum is fried in two teaspoonful cow ghee and mixed into jiggery and small sized pills are made from this paste. One or two such pills are given twice a day for 2-3 months to tightening of belly of women after pregnancy.
9.	<i>Carica papaya</i> (Linn.)/ Caricaceae	Papita	Increase platelets	➤ The tender leaves are ground to make paste. About two teaspoonful of this paste is mixed with 100-ml. water and gave to the patient twice a day to increase platelets of patient.
10.	<i>Cassia fistula</i> (Linn.)/ Fabaceae	Amaltas	High blood pressure and heart diseases.	➤ Two or three teaspoonful pulp of pods and some amount of flowers are mashed along with one teaspoonful tamarind pulp. This mashed and mixed pulp is soaked in water overnight, in next morning this mixture is filter with the help of cloth and given to control high blood pressure and for treating heart diseases.
11.	<i>Citrus aurantifolia</i> (Chrirtn) Swingle/ Rutaceae	Nimboo	Swelling or pain in eyes (eye flu)	➤ About 10 g. Lemon juice, 5 g. Alum powder, 1 g. Turmeric powder and 1 g. Opium are mixed to a make a paste of them. After slightly heating, this paste is applied on eyelids for once in a day for 2 days in case of eye flu.
12.	<i>Cordia dichotoma</i> G.Forst./ Boraginaceae	Tuenti	Bleeding in piles	➤ The powder of freshly dried stem is mixed with sugar candy and butter to make a paste. The paste so obtained is given orally once in the morning for 7 days for quick relief in bleeding piles.
13.	<i>Dalbergia sissoo</i> Roxb./ Fabaceae	Sheemsham	Ring worm	➤ The bark and stem are burnt for producing smoky liquid. The liquid so obtained is applied on effected area twice a day for one week to remove ringworm.
14.	<i>Eucalyptus globulus</i> Labill/ Myrtaceae	Eucalyptus	Fever and Joint pains	➤ About 250 g. fresh leaves are boiled in 500 ml. water till the total amount is reduced to about half or one-fourth. About ½ cup of this decoction is taken orally twice a day for 2-3 days in a week to quick relief in joint pain and fever.
15.	<i>Ficus benghalensis</i> L./ Moraceae	Bar	Heel cracks and toothache	➤ Stem latex is applied topically on heel cracks for quick relief. Young stem is used as tooth brush in toothache.
16.	<i>Ficus carica</i> L./ Moraceae	Anjeer	Digestion problem, liver ailments, blood sugar and blood pressure	➤ The ripe fruit are cut into pieces and 4-5 such pieces are given row with 300-ml. milk in the morning for one month to cure digestion problem. It is also considered helpful to treat various liver ailments. It also controls blood sugar and blood pressure.
17.	<i>Ficus hispida</i> L.f./ Moraceae	Kathumar	Kidney stone	➤ About 250 g. fresh leaves are boiled in one-litre water until the total amount is reduced to about one-fourth. About ½ cup of this decoction is given once a day for 5 days in a week to get rid of kidney stone.
18.	<i>Ficus religiosa</i> (L.)/ Moraceae	Peepal	Wounds	➤ Ground 5-7 cm bark to make paste of them. The paste so obtained applied on wounds twice a day for 4 days.
19.	<i>Holoptelea integrifolia</i> (Roxb.) Planch/ Ulmaceae	Cherol	Skin Infection	➤ The leaf paste is applied on infected area twice a day for 3-4 days in a week for the treatment of various skins Infection.
20.	<i>Kigelia africana</i> (Lam.) Benth./ Bignoniaceae	Balam Kheera	Kidney stone	➤ About 02 g. powder of dried fruits is given orally twice a day for 30 days to take away kidney stone.
21.	<i>Madhuca indica</i> (Koenig) Macbride/ Sapotaceae	Mehuwa	Diabetes	➤ About 10 g. fresh bark is boiled in 1/2 litre water for obtaining decoction. About 2 teaspoonful decoctions, so obtained, are given to the patient once a day for 2-3 months to control blood sugar.
22.	<i>Mangifera indica</i> (Linn.)/ Anacardiaceae	Aam	Pyorrhoea	➤ About 200 g. leaves are boiled in one litre water for obtaining decoction. The decoction so obtained is used in gargles twice a day for 7 days to treat pyorrhoea.

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23.	<i>Melia azedarach</i> (Linn.)/ Meliaceae	Bakain	Paralysis	<p>» About 20 ml. leaf juice of Bakain (<i>Melia azedarach</i>), 10 ml. leaf juice of Neem (<i>Azadirachta indica</i>), 10 ml. leaf juice of Sehjan (<i>Moringa oleifera</i>), 10 ml. leaf juice of Arand (<i>Ricinus communis</i>) and 10 g. cow dung ash mixed all together. This ash juice is further mixed with 50 ml. refined oil and boil it well till the all water evaporated. After cooling, the oil is applied twice a day for 30 days on paralyzed part of the body.</p>
24.	<i>Moringa oleifera</i> Lamk./ Moringaceae	Sajhna	Joint pain	<p>» About 100 g. leaves are fried in one teaspoonful mustard oil. The recipe so prepared is given twice a day for 15 days to treat patient of joint pain.</p>
25.	<i>Morus alba</i> (Linn.)/ Moraceae	Shehtoot	Mouth ulcer and Throat infection,	<p>» About 100 g. leaves are boiled in one-litre water. The decoction so prepared is given once a day for 05 days to take care of mouth ulcer & throat infection</p>
26.	<i>Myrtangyna parvifolia</i> (Roxb.) Korth/ Rubiaceae	Kadamb	Muscles sprains and Joint pain	<p>» About 100 g. leaves and little amount of bark are boiled in one-litre water. The decoction so prepared is given after meal once a day for 15 days to treat muscles pain and joint pain.</p>
27.	<i>Phyllanthus emblica</i> (L.)/ Euphorbiaceae	Amla	Constipation	<p>» About 100 g. dried fruits are ground with 100 g Hard and 100 g. Baherda to make powder. One teaspoonful of this powder is given with water orally twice a day for one week to get relief from stomach pain and constipation.</p>
28.	<i>Pongamia pinnata</i> (Linn.) Pierre/ Fabaceae	Kanji	Weakness of teeth	<p>» About 8-10 cm. fresh tender branch used as tooth brush (locally called datum) once a in morning to keep healthy teeth and gum.</p>
29.	<i>Psidium guajava</i> (L.)/ Myrtaceae	Amrood	Sensitivity of teeth	<p>» About 50 g. <i>Psidium guajava</i> leaves, 30g. <i>Thevetia peruvian</i> leaves and 20 g. <i>Syzygium cumini</i> leaves are boiled in 2-liter water until the total amount is reduced to about ¼ of the two litre. This decoction is used twice daily in gargles to get relief from toothache and sensitivity.</p>
30.	<i>Ricinus communis</i> (Linn.)/ Euphorbiaceae	Arandi	Stomachache, swelling on the other part of body	<p>» The surface of leaf is layered by mustard oil, then slightly warmed it, and then put it on stomach to treat stomachache. These leaves are also tight on the swelling area about twice a day for 4-5 days to treat from swelling on the other part of body.</p>
31.	<i>Saraca asoca</i> (Roxb.) De Wilde/ Fabaceae	Ashok	Leucorrhoea and Menstrual disorder	<p>» One teaspoonful dried bark powder is taken with milk once daily for one month to treat leucorrhoea & menstrual disorder.</p>
32.	<i>Sterculia urens</i> Roxb./ Sterculiaceae	Gum-Karaya	Dysentery	<p>» About 10 g. gum is mixed into 1 glass milk and shakes it gently. The shake so prepared is given to the patient orally once a day for 3 days in case of dysentery.</p>
33.	<i>Syzygium cumini</i> (L.)/ Myrtaceae	Jamun	Diabetes	<p>» About 200 g. Jamun (<i>Syzygium cumini</i>) leaves and 100 g. Belpatra (<i>Aegle marmelos</i>) leaves are boiled with one-litre water until the total amount is reduced to about ¼ of the one litre. Two teaspoonful of this decoction gave orally once a day for 3-4 days in a week to control blood sugar.</p>
34.	<i>Tamarindus indica</i> (Linn.)/ Fabaceae	Imli	Premature ejaculation of semen	<p>» About 150 g. seeds of <i>Tamarindus indica</i> and soaked into 500 g. milk for 2 days after that remove the rind of seeds and ground it well to prepare paste. About 5 g. of this paste took orally with water twice a day for 21 days to cure premature ejaculation of semen.</p>
35.	<i>Tectona grandis</i> L.f./ Verbenaceae	Teak	Digestion Problem	<p>» Little amount of fresh bark of tree is boiled in water until the total amount is reduced to about ¼ of the one litre. About ½ cup of this decoction gave to the patient once a day for 3 days in a week in case of digestion problems.</p>
36.	<i>Terminalia arjuna</i> (Roxb.ex Dc) Wight & Arn./ Combretaceae	Arjun	Blood Pressure and Diabetes	<p>» Little amount of fresh bark of tree is boiled in water until the total amount is reduced to about ¼ of the one litre. About ½ cup of this decoction gave to the patient once a day for 3 months in case of blood pressure and diabetes.</p>
37.	<i>Terminalia chebula</i> Retz./ Combretaceae	Hard	Stomach ache	<p>» Dried fruit are ground to made powder. This powder is taken with cow milk or water or goat milk for the treatment of stomach ache.</p>
38.	<i>Thevetia peruviana</i> (Pers) Merrill/ Apocynaceae	Peela Kaner	Dog bite	<p>» About 6 leaves are ground with 01 teaspoonful jaggery and made small sized pills .Two pills are taken after every meal thrice a day for four days antidote in dog bite</p>
39.	<i>Wrightia tinctoria</i> (Roxb.) R.Br./ Apocynaceae	Doodhi	Night discharge of semen and enhancing sexual debility.	<p>» The latex (10-15 g.) of fruit are mixed in one-liter goat milk and shakes it well. This milk gave to the patient orally in the morning once a day up to 15 days in a month to stop night discharge of semen and enhancing sexual debility.</p>

The study found that many different parts of the medicinal plant species were used as medicine (namely leaves, seeds, flowers, bark, stem, fruits, gum and pulp) but the most commonly used plant part was leaf (39%) followed by bark (21.9 %), fruit (14.6%), stem (9.7 %), pulp and gum (4.8 %), flower and seed (2.4%) and stem (02 %). (Fig. 03) Medicines were administered in different forms including powder, paste, pills, decoction, (liquid obtained by boiling of the medicinal plants in the solvent, infusion (plant powder/paste mixed with the solvent) and miscellaneous (squash, leaf oil, row and

shake). The most commonly used of preparation was decoction followed by past, powder and pills and miscellaneous. The flora of Bundelkhand region has immense pharmaceutical and commercial potential. There are several species in this district with very rich commercial importance, but are valuable only in the wild. The increasing demand for medicinal plants threatens the forest/ natural resource management for sustainable utilization. Evidently, extraction of medicinal plants from the wild habitats causes ecosystem imbalance and extinction of sensitive plant species. Similarly, the traditional knowledge is

also eroding very fast due to lack of sustainable development policy towards promoting traditional knowledge based programme. The reasons for such erosion are perhaps rapid socio-economic and cultural changes, lack of incentives for economic upliftment of local people according to their ecological surroundings and political will. Other factors responsible for such changes are the pressure of modernization, cultural harmonization and migration of youth from remote villages to semi-urban or urban areas to take up job and employment. The traditional rules and regulations of old people are also now being questioned by the young generation. Consequently, the younger generation of these remote villages is not willing to apprentice to learn the knowledge with the elderly people. If, such changes, in the community continue then knowledge related to ethno-medicine will vanish from the region Verma *et al.* (2008).

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