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Exploration of ethno-botanical uses of major plants species by the local tribal communities of Bundelkhand region of Uttar Pradesh, India

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Abstract

An investigation of ethnomedicinal plants in three districts of Bundelkhand region of Uttar Pradesh, India have been conducted during 2007 to 2012. The indigenous knowledge of local tribes mainly dominated by Kol, Gond and Sahariyas and information regarding native plants used by them have been collected through questionnaire and personal interviews during the field survey. The study revealed that a total number of 78 plants species belonging to 49 families were recorded in the present investigation which are using by ethnic groups of three districts namely Mahoba, Chitrakut and Lalitpur of Uttar Pradesh.Fabaceae has the highest number of species (12 species) followed by Combretaceae (5), Rhamnaceae (4), Apocynaceae, Asclepiadaceae, Moraceae, Solanaceae, Verbanaceae, Annonaceae, Ceaselpianaceae, Convulvulaceae, Ephorbiaceae, Meniapermaceae, Mrytaceae and Sterculaceae (3 species each) and rest of the families contain one species each. Use of the plant parts ranged from stem leaves (39), barks (30), roots (26), fruits (24), Seeds (21), stem (8), Gum (7), whole plant (7), flower (6) and tuber (2). With regard to the frequency of plant parts used in preparations, leaves and bark was most often used followed by roots, fruits, seeds, stem, gum, whole plant, flower and tuber etc. Rural people and tribal living in forest areas of Bundelkhand region still depend to a great extent on the indigenous systems of medicine cultivation. There is an urgent need to more study, document and preserve the precious knowledge of ethnomedicinal practices.

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Introduction

India is a repository of medicinal plants. The herbal treasure of nation is rich in its floristic wealth. From old ages, exploitation of plants continues till day for the benefit of mankind. Propagation of this ethnic knowledge regarding plant uses is only through oral means.

Ethnobotany accounts for the study of relationship between people and plants for their use as medicines, food, shelter, clothing, fuel, fodder and other household purposes (Balick, 1996). It deals with the interaction of indigenous plants and the local inhabitants of the area. The aim of ethnobotanists is to explore how these plants are used as food, clothing, shelter, fodder, fuel, furniture and how medicinal use of such plants is associated to other characteristics of the plant species. It is a multidisciplinary science that studies "the relationship between a given society and its environment and in particular the plant world". They understand and collect the knowledge of valuable plants by the use of anthropological methods (Ram *et al*., 2004).

For nearly a century, ethnobiologists have collaborated with local community members in their efforts to document and safeguard our planet's rich and varied biocultural heritage. Work in ethnobiology and ethnomedicine, including ethnobotany, ethnozoology, and ethnoecology, necessarily entails meticulous and rigorous systematic observation of the myriad ways indigenous and local community utilize, and classify the floral and faunal resources on which they depend for survival (Nolan and Pieroni, 2013).
Human beings are mainly dependent on plants for medicine and therapeutics and still 70 percent of the world population depends on medicinal plants for their primary healthcare needs (Ghimire *et al*., 2006). Preservation and enhancement of indigenous plant knowledge is actually rescuing a global heritage (Lambert, 1997). Ethnobotanical studies has been done in various part around the world viz. Africa (Houessou *et al*, 2012), Brazil (Zank and Hanazaki, 2012), Canada (Uprety *et al*, 2012), Malaysia (Ong *et al*, 2012), Nepal (Joshi and Edington, 1988; Singh *et al*, 2012), Pakistan (Qureshi *et al*, 2007; Ahmed *et al*, 2013), Papua New Guinea (Prescott *et al*, 2012).

Although considerable research work is being done in India (Jain 1963, 1965, 1987, 1991, 1996; Chaudhuri and Trivedi, 1976; Jain and Sikarwar 1997; Kumar and Pandey, 1998; Kumar *et al*., 2004; Jain *et al*., 2006; Manjunatha *et al*., 2009; Kaur and Joshi, 2010; Meena and Yadav, 2010; Namsa *et al*., 2011; Murthy, 2012; Alagesaboopathi, 2013) a lot of important information and indigenous knowledge base have already been lost as knowledge hold with older generation could not be transmitted to younger generations and remains unrecorded. Although the literature is replete with general references to ethnobotany for the country as a whole, efforts to document specific details of this knowledge have been still limited and several workers are being made their efforts on this direction.

Central India is one of those region in India where the tribal population and forest dwellers from a considerable part of the population (Jain and Tarafder, 1963; Prasad and Pandey, 1987; Jain *et al*., 2010; Mishra *et al*., 2010). Their studies brought to light numerous less known uses of plants and interesting data on about ethnomedicinal plants.

Jain (2010) explained that ethnobotanical research in India in last five decades has mainly been on inventorization of plants used by the folk in various ways. This documentation has mostly been based on field work among the folk. This paper suggests that for making ethanobotanical work really meaningful and of practical uses for human welfare, some new approaches are necessary, such as, critical analysis for new data, prioritization of species for various medicinal uses, prospect of socio-economic benefits such as through cooperative societies value addition of marketable products and cottage industry. It is also useful to understand the basis of the various actions and attitudes of tile folk in their daily chores and

behavior as also their concepts of various natural phenomena and natural resources.

Dixit and Pandey(1984) collected information from the inhabitants of Jhansi and Lalitpur districts of Bundelkhand region and during the course of a survey they compiled and added the existing knowledge of Saherias. An ethnobotanical study was carried out in 7 villages of Chitrakoot of Madhya Pradesh by Sikarwar *et al* (2008). Their study reveals that the Chitrakoot is rich in ethnomedico-botanical diversity.

Rural people and tribal living in forest areas still depend to a great extent on the indigenous systems of medicine cultivation. But studies in this regard have been reported from a very limited number of the tribes of Bundelkhand region. The ethno-botanical aspects in the region may provide meaningful ways for the promotion of traditional herbal medicinal plants land races of crop plants for the benefit of mankind at large in this region which is known as socio-economically backward. On this background present study has under taken and aims to explore the ethno-botanical uses of the major plants (tree/shrubs/herbs/climbers) species which are uses by the local tribal communities of respective three districts of this region.

Materials and methods

The Study Area

Bundelkhand comprises 13 districts: Jhansi, Lalitpur, Jalaun, Hamirpur, Mahoba, Banda and Chitrakoot(all in Uttar Pradesh), and Datia, Tikamgarh, Chhatarpur, Panna, Sagar and Damoh all are in Madhya Pradesh (Figure – 1). The present study includes forest areas of 03 districts namely Lalitpur, Mahoba and Chitrakoot of Bundelkhand region.

Bundelkhand is an old landmass composed of horizontal rock beds resting on a stable foundation, located south of the Yamuna River. The landscape is rugged, featuring undulating terrain with low rocky outcrops, narrow valleys, and plains. Surface rocks are predominantly granite of the Lower Pre Cambrian/Archaean period. Some Dharwarian and Vindhayan rocks present in the region contain minerals of economic value. Sandstone, shale and limestone of high quality along with Dykes, Sills and the famous pink Achaean gneiss rocks are also found in places.

Prevailing soils types are a mixture of black and red, the latter being relatively recently formed, gravely and shallow in depth, and thus are unable to retain moisture well. The region, in general, suffers from acute ecological degradation due to deforestation and consequent top soil erosion leading to low productivity of the land. Soil erosion is a persistent problem that is aggravated because of the hilly terrain. The widespread growth of gullies is a common phenomenon.

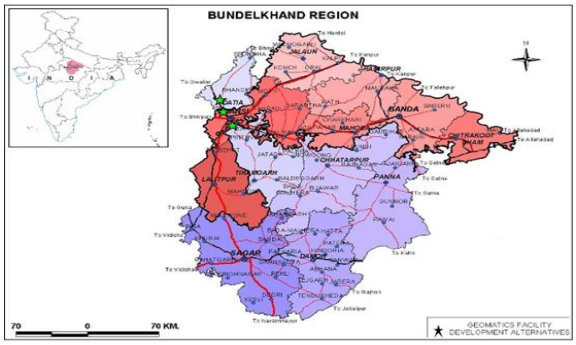

Fig. 1. Bundelkhand Region of Uttar Pradesh and Madhya Pradesh.

The Region is marked by extremes of temperature reaching 48°C during the summer months and dropping sometimes as low as 1°C in the winter. The temperature begins to rise in February and reaches its peak in May-June. The rainfall distribution pattern is irregular, with approximately 90% of total rainfall in the region caused by the monsoon falling from June to October. Average rainfall per year is 800-900 mm but most of it is lost as run-off. Over the past ten years, the rainfall pattern has become very erratic and total rainfall has also fallen drastically, which has caused adverse effect on growth and regeneration of the vegetation. July and August are the months of maximum rainfall, while November and April are the driest months of the year.

Ethnobotanical Investigation

Periodic field trips of ethnobotanical exploration were undertaken in rural forest areas of Lalitpur, Mahoba and Chitrakoot districts dominated by Kol, Gond and Sahariyas and rural peoples during 2007 to 2012. The information were collected from the medicine men, village dwellers, women, village herbalists, village headmen and the aged and experienced people the herbal medicine practitioners, vaidyas and their traditional healers following the methodology of Jain and Rao(1976). Information was collected through questionnaires, bilateral discussion and open ended interviews on plants used by rustic people. There were many informants have been interviewed on random basis. Information about the *Family*, botanical name of species, *Local name*, plant *Parts used*, plant crude drug preparation, mode of applications, dosage and duration, *Medicinal uses* and plant parts were documented and later on identified and cross checked with the help of available literature.

Table 1. Trees used traditionally by Tribes of three districts of Bundelkhand region.

S.No.	Botanical name	Family	Local name	Parts used	Medicinal uses
1	*Acacia catechu* (L.f.) Willd.	Fabaceae	Khair	Bark	The decoction of bark used to cure skin diseased especially eczema.
2.	*Acacia leucophloea*Willd.	Fabaceae	Reunja	Bark	Bark decoction is given to patient to cure the diarrhea
3.	*Acacia nilotica* (Linn.) Willd. ex Delile	Fabaceae	Babool, DesiBabool	Gum of bark and fruits (pods)	The decoction of bark yields spongy gum which is using in sore throat, for washing ulcers, to stop bleeding from wounds, skin diseases, as an astringent for diarrhoea and leucorrhoea.
4.	*Adina cardifolia* Hook. f.	Rubiaceae	Haldu	Roots and Leaves	Applied over swollen portion to remove pain and swelling
5.	*Aeglemarmelos* (Linn.) Correa ex Roxb.	Rutaceae	Bel	Roots, leaves and fruits	The roots are astringent and febrifuge, useful in diarrhoea, dysentery, dyspepsia, seminal weakness, uropathy, vomiting, intermittent fever and gastric irritability in infants. The unripe fruit is astringent, stomachic, antiscorbutic and digestive. The ripe fruit is good for the heart, brain, digestive system and for back pain.
6.	*Albizzialebbek* (Linn.) Benth.	Fabaceae	Kala Siris	Bark of stem and shoots, leaves, flowers and seeds	The plant is considered an alternative, aphrodisiac, astringent, expectorant, restorative and tonic. It is effective in asthma, reduces enlargement of cervical gland; in cough and colds; strengthens gums, thickens and retains seminal fluid. The powdered bark is useful in ulcers and in snake-bite wounds. Oil obtained from seeds is useful in

					leucoderma.
7.	*Anogeissuspendula*Edgew.	Combretaceae	Kardhai, dhawai	Stem and Leaves	Twigs decoction is applied on burn part of the body to clear the spot.
8.	*Anogeissuslatifolia* (Roxb. ex DC) Wall. exGuill. &Perr.	Combretaceae	Sharifa	Root, Leaves and Fruits	Leaf juice is antiseptic and used in wound healing. Leaves and fruits are also useful in treatment of tumour and cancer. Roots are used in rheumatism, syphilis, carbuncle and fever. Fruits are used in burning sensation.
9.	*Annonasquamosa* Linn.	Annonaceae	Dhau	Bark	The bark powder is applied externally in wound healing.
10.	*Azadirachtaindica* Ad. deJuss.	Meliaceae	Neem	The bark, leaves, flowers and seeds	All the plant parts are used as medicine. The bark is astringent, refrigerant, demulcent, insecticidal, liver tonic and urinary astringent. Leaves are useful in burning sensation, leprosy, skin diseases, leucoderma, dyspepsia, ulcers, tuberculosis, eczema, malarial and intermittent fever. The flowers are useful in dyspepsia and intestinal burns. The seeds are useful in leprosy, ulcer, diabetes and to kill insects.
11.	*Bauhinia racemosa* Lam.	Fabaceae	Maholi	Stem bark	Stem bark used in dysentery, decoction of leaves used in malaria, leaves crushed with onion for diarrhea.
12.	*Bombaxceiba*Linn.	Bombaceae	Semal	Leaves, roots, fruits, seeds and gum	The gum is well known astringent and used for surgical dressing in the case of wounds. Fruits are expectorant and diuretic, used in calculus affection, ulceration of bladder and kidneys. The roots are aphrodisiac, used in influenza, inflammations, blood impurities. The leaves are used for skin eruptions. The seeds are useful in gonorrhoea.
13.	*Boswelliaserrata*Roxb.	Burseraceae	Salai	Bark and Flowers	The powdered stem bark is thoroughly mixed with "ghee" (clarified butter) by means of mortar and pestle. This preparation is applied as a poultice on bleeding as well as suppurating wounds. The flowers are dried, made into a powder, and used in fever and cold.

14.	*Buchananialanzan*Spreng.	Terebinthaceae	Chironji	Bark and Seeds	Bark is used in cut and wounds, skin diseases and snake bite. Also used in diarrhoea. Seeds are used as tonic.
15.	*Buteamonosperma* (Lam.) Taub.	Fabaceae	Dhak	Leaves, bark, flowers, seeds and gum	The leaves and the wood is considered sacred and used in religious ceremonies. The flowers are kept indoor to keep away the house flies. The flowers are also the source of a dye.
16.	*Cassia fistula* Linn.	Caesalpinaceae	Amaltas	Leaves, roots and fruits	The leaves are emollient; paste prepared from its juice proves a useful dressing for ringworm and chilblain, for relieving irritation, rheumatism and facial paralysis. The leaves are rubbed into affected parts. The alcoholic extract of the root bark is used for black water fever. The fruit cures leprosy, diseases of heart and is applied externally in rheumatism and snake bite.
17.	*Carissa spinarum* A.DC.	Apocynaceae	Karaunda	Fruits and Roots	Fruits are used in rheumatic pain and fever. Roots are used in wound healing.
18.	*Cordiadichotoma*Forst. f.	Boraginaceae	Lasura	Leaves, Fruits and seeds	Leaves are applied to ulcers and in headache. Bark is mild astringent and tonic. Fruits mucilage is highly esteemed in coughs, diseases of chest, uterus, urethra etc. Powered kernels mixed with oil are a remedy in ring worm.
19.	*Dalbergiapeniculata*Roxb.	Fabaceae	Dhobin	Stem bark	Stem bark paste with neem oil used as an external application in the case of baldness
20.	*Dalbergiasissoo*Roxb.	Fabaceae	Sheesham	Seeds, leaves, bark and roots	The leaves are used to cure eye diseases and gonorrhoea. The wood oil relieves the burning sensation of the body. The oil is also used in the treatment of scabies and leprosy. Bark is alterative, antiemetic, astringent and aphrodisiac, whereas roots are constipating. Roots are astringent and also useful in diarrhoea and dysentery.
21.	*Diospyrousmelanoxylon*Roxb	Ebenaceae	Tendu	Leaves	Chewing of leaves is given relief from cough.
22.	*Emblicaofficinalis*Gaertn. Fruct.	Euphorbiaceae	Aonla	Fruits and	The fruit is used in combination with that of

				seeds	*Terminaliachebula*and *T. bellerica*in the form of powder and decoction known as Triphala (three fruits) as a cooling and refrigerant. The fresh fruit is antiscorbutic, diuretic and laxative, also used in fevers, vomiting, indigestion, habitual constipation and other disorders of digestive system. The infusion of dried fruit is efficacious eye wash in ophthalmia. An infusion of seeds is given in fevers, diabetes, bilious–affections and nausea.
23.	*Eugenia heymeanum*Wall.	Myrtaceae	Kathjamun	Bark	Bark paste mixed with whey is given in diarrhea and dysentery. Bark juice mixed with rice water is given for the treatment of leucorrhoea.
24.	*Ficusbengelensis*Linn.	Moraceae	Bargad	Bark, latex, aerial roots, leaves and buds	The bark is an astringent. Its infusion is a specific cure for diabetes, diarrhoea, leucorrhoea and dysentery. The latex is commonly used locally for rheumatism, lumbago, sores, ulcers, pains, cracked and inflammed soles and toothache. The tender ends of the aerial roots are given in obstinate vomiting. The buds are useful in diarrhoea and dysentery. The bark and roots are used against snake bites.
25.	*Ficusglomerata*Roxb.	Moraceae	Gular	Bark, fruit, latex and roots.	It is used for external burning, skin inflammation, diarrhoea, dysentery and leucoderma. It is astringent, carminative, vermifuge and an anti-dysentery drug. It is a good remedy for excessive appetite. It is used locally to relieve inflammation of skin wounds, lymphadenitis in sprains and fibrousitis. A decoction of fresh bark is used in diarrohea and is an antifertility agent. The ethanolic extract of seeds has hypoglycaemic activit
26.	*Ficusreligiosa*Linn.	Moraceae	Pipal	Bark, fruits and seeds.	The bark is astringent and its decoction is given in gonorrhoea, scabies and snake bite. Its juice relieves toothache and strengthens the gums. It is a useful dressing for cracked,

					inflammed soles of feet and also a powerful CNS stimulant and hypoglycemic. Powder of seeds taken for three days during menses sterilizes women for long time.
27.	*Holarrhenaantidysentrica*Wall.	Apocynaceae	Dudhi	Leaves, bark and seeds	Decoction of bark gives the relief from dysentery. Chewing of the leaves give relief from toothache. Powder of seeds is used for the treatment of the accumulation of worms in the intestine. The leaf and root powder is taken by women after delivery to control menstrual cycle.
28.	*Holopteliaintegrifolia* Planch.	Urticaceae	Chilbil, Kanju	Leaves and bark	Young leaf paste is used for treatment of rickets in child. Decoction of bark gives relief from rheumatism.
29.	*Lagerstromiaparviflora*Roxb.	Lythraceae	Siddha/Seja	Stem bark	Steam bark-powder is administered in the form of tablets to cure Leucorrhoea
30.	*Madhucaindica*Gmel.	Sapotaceae	Mahua	Seed and Fruits	Seed oil applied externally on affected part to cure from rheumatism. Fresh fruits are taken in morning for relief from stomach pain.
31.	*Mallotusphilipensis*(Lam.) Muell. Arg.	Euphorbiaceae	Kimela, Rohini	Leaves	Leaf powder is given in cough. Leaf paste is applied on wounds.
32.	*Mangiferaindica*Linn.	Anacardiaceae	Aam	Leaves, bark, fruit, seeds, and gum exudates	A powder of the tender leaves is given in diarrhoea and diabetes. The smoke from burning leaves is inhaled for the relief of throat diseases; their ash is a popular remedy for burns. An ointment made of resinous gums from the tree is a dressing for scabies and other skin diseases. Unripe fruit in the form of slices and sun dried 'amchur' is valuable as an antiscorbutic. The juice extracted from seeds is used for stopping bleeding from the nose.
33.	*Miliusatomentosa*(Roxb.) J.Sinclair	Annonaceae	Kari	Leaves	Leaf paste rubbed over the head twice or thrice in a week to remove dandruff.
34.	*Moringaoleifera*Lam.	Moringaceae	Sehjan	Leaves, bark of stem, roots, flowers, fruits, seeds	The tender leaves are useful in scurvy and catarrhal diseases. The leaf juice acts as an emetic. The bark of the stem acts as stimulant, diuretic and used as a cardiac stimulant

				and gum	in asthma and cough. The fresh root of young tree is given in intermitent fevers, epilepsy, hysteria, chronic rheumatism, and enlargement of the liver. The gum is used as dressings as efficacious treatment for glandular swelling and boils. The flowers are considered as anthelmintic and their juice is used as a diuretic, digestive and antiasthmitic.
35.	*Pterocarpusmarsupium*Roxb.	Fabaceae	Beejasal	Stem, Leaves and Root	Decoction of stem is given in diabetes. Paste of leaves is applied in skin diseases. Decoction of root is given in leprosy.
36.	*Sterculiaurens*Roxb.	Sterculiaceae	Kurlu, Kulla	Stem and Bark	Stem bark is soaked in water for ten days, remaining water is administered with empty stomach to treat Oligospermia (to increase sperm count).
37.	*Syzygiumcuminii*(Linn.) Skeels	Myrtaceae	Jamun	Bark, leaves, fruits and seeds	The bark is useful in diabetes, haemoreges, dysentery, leucorrhoea, fever, dermatopathy, burning sensation, dyspepsia, cough and asthma. The tender leaves are used for vomiting. Powdered seeds are used in diabetes.
38.	*Tamarindusindica*Linn.	Caesalpiniaceae	Imli	Leaves, bark and fruits	The fresh juice of tender leaves is useful in bilious fever and scalding urine. The decoction of leaves is used as an anthelmintic for destroying worms in children and also for jaundice. Dried powdered leaves are used as an astringent over foul ulcers. A lotion made from the leaves is used for wounds and for sore eyes and it is also an effective gargle. The pulp of the fruits is used in dysentery and for preventing and curing scurvy. A drink made from fruit pulp is useful in sunstrokes. They are useful in gastropathy, bilious vomiting.
39.	*Tectonagrandis*Linn. f.	Fabaceae	Sagun	Bark, flowers, seeds and seed-oil	Wood boiled in water is used as a local application to relieve headache, toothache, and to subdue inflammation and irritation of skin. Flowers

					are acrid, bitter and diuretic, useful in bronchitis, biliousness, and urinary discharges. Oil of nuts is used in scabies and to promote growth of hair.
40.	*Terminaliaarjuna*(Roxb.) Wight &Arn.	Combretaceae	Arjuna	Bark and leaves	Leaves are given in a compound decoction for flatulent distension of abdomen. It is applied as a paste on pimples and other minor skin eruptions. The pulverized bark gives relief in symptomatic hypertension, cardio tonic and as a diuertic in cirrhosis of liver. Fruits and seeds are used as children's anathelmatic for ascaris. Roasted seeds used in diarrhoea and fever. They are also used for rickets in children. Seeds are used as an external application to parasitic skin diseases.
41.	*Terminaliabellerica*Roxb.	Combretaceae	Baherha	bark, seeds and fruits	The bark is used as an astringent for dressing wounds and sore throat. The seeds are household remedy for inflammatory and functional de-arrangement of the mucous membranes of the gastro-intestinal and genito-urinary systems. They are popularly used in diarrhea and dysentery, also for gonorrhoea, piles and in chronic constipation. The kernel of the fruit is said to have a narcotic and aphrodisiac effect. The fruit is an ingredient of 'Trifala'.
42.	*Terminaliachebula*Retz.	Combretaceae	Harra	Fruits	Fruit is astringent, anodyne, thermo-genic, anti-inflammatory, laxative, carminative, digestive, cardio tonic, aphrodisiac and febrifuge. Chebulic acid is also used in ulcers, wounds, helminthiasis, jaundice, cough, epilepsy, opthalmopathy, skin diseases, leprosy, cardiac disorders and neuropathy. The fruit is an important constituent of Ayurvedic medicine "Trifala".
43.	*Zizyphusxylopyra*Willd.	Rhamnaceae	Ghont	Leaves,	Leaf paste with turmeric used as an external application for skin eruptions.

Results and discussion

Rural people and tribal living in forest areas still depend to a great extent on the indigenous systems of medicine cultivation. So studies in this regard have been reported from a very limited number of the tribes of Bundelkhand region. The ethno-botanical, phytosociological aspects in the region may provide meaningful ways for the promotion of traditional herbal medicinal plants land races of crop plants for the benefit of mankind at large in this region which is known as socio-economically backward.

Table 2. Shrubs/Herbs/Climbers used traditionally by Tribes of three districts of Bundelkhand region.

S. No.	Shrubs/Hurbs/Climbers	Family	Local name	Parts used	Medicinal uses
1.	*Abrusprecatorius* Linn.	Fabaceae	Ratti, Gumchi	Roots, leaves and seeds	The roots and leaves are uses in cough; leaves are also useful in itching and other skin diseases. Paste of seeds applied in sciatica and stiffness of shoulders joints.
2.	*Aloe barbadensis* Mill.	Liliaceae	Ghee ganwar, Aloe vera,	Leaves	Fresh juice is cathartic, cooling and useful in fever. Pulp is used in menstrual suppression. Leaves are used as hot poultice to relieve swellings.
3.	*Andrographispaniculata* (Burm.f.) Wall.ex. Nees	Acanthaceae	Kalmegh	Roots and Leaves	Roots and Leaves are used as a blood purifier, in skin diseases and malaria.
4.	*Asparagus racemosus* (Willd.) Oberm.	Asparagaceae	Shatavri	Roots	Fresh root juice is mixed with honey and given for dyspepsia. The dried roots are burnt and fumes are inhaled for curing fever.
5.	*Balanitesaegyptica* (Linn.) Delile	Zygophyllaceae	Hingota	Fruits	Pulp of ripe fruit mixed with mother's milk is given to children suffering from pneumonia. Fruit pulp is given to patient to cure tuberculosis.
6.	*Boerhaviadiffusa* Linn.	Nyctaginaceae	Punarnava	The whole plant and roots	The extract of plant is considered a good diuretic, given in controlling urinary trouble, jaundice and other liver complaints. Root is useful in diseases of the heart, kidneys, gonorrhoea and dropsy. The ash obtained from the plant is called

					"PunarnavaKshar" and is considered a good diuretic.
7.	*Buteasuperba*Roxb.	Fabaceae	Badrasin	Seeds	Decoction of shoots used in piles, seeds sedative and anthelmintic.
8.	*Caesalpiniadicapetala* (Roth) Alston.	Caesalpiniaceae	Shikakai	Leaves	Leaf powder with *mishri*is given in fever. Leaf paste is applied on boils.
9.	*Calotropisprocera* (Ait.) Ait. f.	Asclepiadaceae	Mader, Oak	Bark of the root, leaves, flowers and latex	The dried leaves are either smoked or smoke from the burning leaves is inhaled for cure of asthma and cough. A powder of leaves is dusted over wounds, ulcers and old sores. The dried flowers are soaked overnight in water and few spoons of this water taken for few days is said to heal boils and acne.
10.	*Capparisdeciduas*(Forsk.) Pax.	Capparidaceae	Kareel	Stem, bark, leaves and fruits	A decoction of stem and leaves is used for pyorrhoea. The stem bark is given in remittent fevers and rheumatism. The tender leaves are applied as a poultice on boils and swellings. They are chewed to relieve toothache.
11.	*Centellaasiatica* (Linn.) Diels	Menispermaceae	Brahmi, Mandokparni	Leaves	Leaf juice is given to children for one month in rickets. It is also known as "Brain Tonic".
12.	*Cocculushirsutus* (Linn.) Diels	Menispermaceae	Charenta, Jaljamni	Root and leaves	The leaf extract taken internally along with milk for treatment of spermatorrhoea. The extract of roots taken twice a day internally and as well as massaged over paralysed part of the body for the treatment of paralysis.
13.	*Convolvulus microphullus*Sieb. ex Spreng.	Convolvulaceae	Shankhpuhpi	Whole plant and leaves	It is used to reduce mental tension, as a psycho-stimulant and tranquilizer. It is also useful in the

					treatment of diabetes. The leaves are useful in urinary diseases, fever, cough and anorexia.
14.	*Curcuma amada*Roxb.	Zingiberaceae	AamaHaldi	Rhizome	Rhizome paste is used as an external application.
15.	*Cyperusrotundus* Linn	Cyperaceae	Nagarmotha, Motha	Tubers and roots	The roots are given in fever, dyspepsia, diarrhoea, and cholera. As a galactagogue, the crushed fresh tubers are applied to the breasts. Root paste is applied for healing wounds and sores.
16.	*Datura alba* (Nees. Ab. Esenb.)	Solanaceae	Dhatura	Leaves, roots, flowers and seeds	The roots are useful in reducing inflammation. The leaves are universally used in the treatment of asthma. The leaves after roasting are applied locally to relieve eye pain, headache, nose trouble, enlargement of testicles and boils. The flowers are dried and roughly powdered with or without the leaves and rolled into a cigarette for the relief of asthma.
17.	*Echinopsechinatus*Roxb.	Asteraceae	Gokharoo	Leaves,	Used in malarial fever, skin diseases and wound healing. Root paste is thought to facilitate childbirth.
18.	*Flacourtiaindica*(Burm.f.) Merr.	Flacourtiaceae	Kataiya	Leaves,	Leaf sap is dropped into eyes to cure conjunctivitis.
19.	*Grewiahirsuta*Vahl.	Malvaceae	Gurshakari	Roots and Fruits	Root paste is applied externally for wound healing. Fruits are used in dysentery.
20.	*Gymnmasylvestre* (Retz.) Schult. R.Br.	Asclepiadaceae	Gudmar	Whole plant	One teaspoonful of powder of leaves along with milk is taken (morning) for the treatment of diabetes. Decoction of bark of stem is useful in stomachache.
21.	*Helicteresisora* Linn.	Sterculiaceae	Aenthi, Marorphali	Fruits and seeds	The aqueous extract of the seeds is used in

					dysentery. Powder of dry fruits along with water give relief from stomachache.
22.	*Hemidesmusindicus*(Linn.) R.Br.	Asclepiadaceae	Anantmool	Roots	Roots are boiled in water or milt and administered as a general tonic.
23.	*Lantana camara* Linn.	Verbenaceae	Lantana	Whole plant and flowers	An aqueous extract of flowers is used as vulnerary,diaphoretic, carminative and antispasmodic. The leaves are used to relieve itching. The roots are used for gonorrhea.
24.	*Nyctanthesarbortristis*Linn.	Oleaceae	Harshingar	Leaves, bark and seeds	Leaves are expectorant, laxative used in rheumatism and fever; their decoction is given in sciatica; the leaf juice is used as chalagogue, diaphoretic and diuretic. The bark is used as an expectorant. The powdered seeds are used for scurvy and affections of the scalp.
25.	*Ocimumbasilicum* Linn.	Lamiaceae	Van tulsi	Whole plant, leaves and seeds	The juice of leaves is useful in neuralgia, earache, seminal weakness and fevers. Roots are used in bowel complaints of children. A cold infusion of the seeds is useful for relieving pains of childbirth.
26.	*Operculinaturpenthus*(Linn.) Silva Manso	Convolvulaceae	Nishodha	Leaves	In case of severe ear ache, the fresh juice of tender leaves is dropped into the ear. It is said to completely cure the ailment.
27.	*Opuntiadilloni* Benson	Cactaceae	Nagphani	Stem and fruits	Baked fruits are used in whooping cough, their syrup increases the flow of bile. The mashed stem is used as a poultice to allay inflammations and hot ones are applied to boils. Pulp also applied in ophthalmia and ripe fruit is given in gonorrhoea.

28.	*Rauwolfiaserpentina* Benth. ex Kunz.	(Linn.)	Apocynaceae	Sarpagandha	Leaves	Leaf paste is given in snakebite and spider bite.
29.	*Solanumindicum* Linn.		Solanaceae	Bhatakataiya	whole plant	In swelling of any part of the body, the garland prepared from the fruit is tied to the organ to reduce the swelling. Leaves applied locally to relieve pain and leaf juice along with black pepper taken orally to cure rheumatism.
30.	*Tinosporacardifolia*Hook.f .&Thoms.		Menispermaceae	Giloe, Gurch	Stem, roots and whole plant juice	The stem is used in constipation, vomiting, enriches blood, to cure jaundice and also useful in skin diseases. The juice is useful in diabetes and in enlarged spleen. The roots and stem are prescribed in combination with other drugs as an antidote to snake bites and scorpion stings.
31.	*Vitexnigundo*Linn.		Verbenaceae	Nigundi, Indrani	Roots, leaves and flowers	The roots are given in dyspepsia, dysentery, wound, ulcer, cough, malarial fever and leprosy. The flowers are useful in diarrhea, cholera, cardiac disorders. Smoke from burning dried leaves is used in catarch and headache and mosquito repellant.
32.	*Withaniasomnifera* Dunal	(Linn.)	Solanaceae	Ashwagandha	Leaves, roots and fruits	Roots have been in use for cough, dropsy, rheumatism, female disorders. The leaves are applied to lesions, painful swellings and sore eyes. Fruit is also used externally in inflammatory conditions, ulcers and scabies.
33.	*Zizyphusnummularia* Wight &Arn.	(Burm.f.)	Rhamnaceae	Jharberi, Jangliber	Roots, bark and fruits	Decoction of roots is used in fever and as powder applied to old wounds and ulcers.

					Bark is antipyretic, reduce obesity. Fruit is mucilaginous, considered to purify blood and help in digestion. Kernels are sedative and are recommended to stop nausea, vomiting and for relief from abdominal pain in pregnancy.
34.	*Zizyphusmauritiana*Lamk.	Rhamnaceae	Ber, Beri	Roots, bark, leaves and fruits	The leaves are given with milk in gonorrhoea. They are useful as a lotion in conjunctivitis; the paste of leaves is used as dressing for wounds. The bark is astringent, used for diarrhea, dysentery. The fruits are blood purifier; seeds mixed with oil make a useful liniment in rheumatism. Roots are given in fever and to promote menstruation.
35.	*Zizyphusoenoplia* (Linn.) Mill.	Rhamnaceae	Beri, Makai	Fruits	Ripe fruits are eaten to check dysentery and get relief of burning sensation during urination.

The forest communities of three districts vizMahoba, Chitrakoot and Lalitpur have been analyzed for ethno-botanical importance. The forests are abundant with trees, shrubs, herbs and other species of medicinal value. A total of 43 tree species and 35 shrus/herbs/climber species of medicinal and other importance have been recorded from the various localities falling within the territorial limits of the respective forests and are presented in Table – 1 and 2.

The forests of Bundelkhand region are belonging to Tropical Dry Deciduous Forest (Champion and Seth, 1968). In present investigation there are 43 tree species and 35 shrus/herbs/climber species of medicinal and other importance have been recorded from these study areas. The reported data have been compared and found that the ethno-medicinal uses are not conveyed earlier properly in some literatures. Srivastava*et al* (1992) was worked on new traditional herbal remedies from the rural folk-lore of Hamirpur district, which is belongs to Bundelkhand region of Uttar Pradesh. They reported medicinal uses of 44 species (belonging to 25 families) recorded from the rural folk-lore of Hamirpur district; Bhalla *et al* (1992a, b) have reported the Ethno-medicinal herbal legumes of Bundelkhand region, Madhya Pradesh. They discussed the 34 herbal leguminous plants common in Bundelkhand region of Madhya Pradesh out of which eight *Indigofera* species have been recorded which were being used by the local people for curing various ailments.

The study of Sikarwar *et al*, (2008) found that the

tribal people of Chitrakoot district of Madhya Pradesh use locally available plant species for the treatment of human as well as livestock ailments and diseases. 5 species, viz. *Cissusquadrangularis, Holarrhenapubescens, Madhucalongifolia*var*latifolia*, *Steriospermumchelonoides* and *Terminaliaarjuna* are used in veterinary medicine and 23 species used in the treatment of human ailments. 19 species are used in single disease, 3 are used in 2 diseases, 4 in 3 diseases and 2 species i.e. *Actiniopterisradiata* and *Alectrachitrakutensis* are used in more than 3 diseases.

The present study revealed that the investigated forest of three districts which are comparatively rich in floristic as well as ethno-medicinal diversity and the tribal people use locally available plant species for the treatment of human as well as livestock ailments and various diseases. A total number of 78 plants species belonging to 49 families were recorded in the present investigation which are using by ethnic groups of Bundelkhand region. Fabaceae has the highest number of species (12 species) followed by Combretaceae (5), Rhamnaceae (4), Apocynaceae, Asclepiadaceae, Moraceae, Solanaceae, Verbanaceae, Annonaceae, Ceaselpianaceae, Convulvulaceae, Ephorbiaceae, Meniapermaceae, Mrytaceae and Sterculaceae (3 species each) and rest of the families contain one species each.

Use of the plant parts ranged from stem leaves (39), barks (30), roots (26), fruits (24), Seeds (21), stem (8), Gum (7), whole plant (7), flower (6) and tuber (2). With regard to the frequency of plant parts used in preparations, leaves and bark was most often used followed by roots, fruits, seeds, stem, gum, whole plant, flower and tuber etc.

Conclusions

The forest areas of present investigation are inhabited by mainly Kol, Sahariya and Gond tribes. Chitrakoot district is dominated by Kol and Gond, whereas Lalitpur district is dominated by Sahariya tribes. Generally, the economy of most tribes was sustenance agriculture or hunting and gathering. A large number of tribal populations in rural areas are still dependent on forests for their livelihood. In the forest based tribal economy, provisions for basic necessities like utilize a wide variety of plants for food, fuel, housing material, fodder, medicine, dye, gum, tannin, thatching, household and farming implements etc. are made from the forest produce.

Tribal people had been living in natural habitats for centuries. Bundelkhand has a large tribal population, where mostly 'Sahariya' tribals are exist. They are hardly aware of their historical background in the absence of any written document or scholarly work. As per the folklore, Sahariya stands for natives of forests or "accompanists of tigers". This is a primitive tribe, where mostly all adults are uneducated. They are now working for the people who forcefully took away the land they possessed in the nearby villages and the forests. As part of their job, they pick tendu leaves (an ingredient of beedi), seasonal fruits and other forest products.

A common characteristic popular about this tribe is their sustenance economy. Tribal people earn enough to dine for the day and do not preserve products for long-term survival. Even if they earn big money someday, they spend it all on the day itself and again begin their hunt for food the next day.Earlier these tribal were very innocent and hardly knew the ways of ordinary people's lifestyles. They had been long exploited for physical labour due to their backwardness and lack of knowledge. However things have taken quite a different turn in the present. Though most of them are illiterate even now, they are clever enough to resist exploitation, as they now understand monetary, markets and people in towns quite well.

At the present time, much of the wealth of knowledge is being lost as the traditional culture is disappearing. Hence, documentation of traditional practices of herbal medicine will be coherence in future. There is

an urgent need to study and document the precious knowledge of ethnomedicinal practices. The information on the ethnomedicinal plants will certainly help in developing strategies for the conservation, cultivation of traditional medicine and economic welfare of rural and tribal population of this region. This study may provide prime for further scientific research for the development of modern medicine as well as for rural people of this region.

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