

Traditional uses of Herbal Folk medicines by the Ethnic people of Bokaro District, Jharkhand, India.

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ABSTRACT: An Ethnomedicinal study based on investigation, documentation and exploration have been done on the status of medicinal plants and associated knowledge of ethnic people of Bermo-subdivision of Bokaro district of Jharkhand. The study based on questionnaire, semi- structured interviews, field observations and study of flora. Lastly the data was collected and evaluated. A total of 45 medicinal plant species used to treat 64 different common and critical illnesses were recorded. A total of 104 knowledgeable members of tribal community were interviewed for obtaining the knowledge of use of 45 medicinal plants. Most experienced and aged person of the community got plenty of knowledge of traditional use of plants. Leaves are most commonly used plant parts for tribal medication. Biological resource that is plants and associated organisms are reducing day by day due to pollution, deforestation, population explosion, agriculture, wood extraction, construction and overgrazing as informed by the villagers and experts. The floristic investigation aims to scientifically record the data for human welfare and ensuring conservation by creating awareness towards sustainable utilization and management of these medicinal plant diversity.

Keywords: Bokaro district, Ethnobotanical, Medicinal plants, Phytotherapy, Ethnic people.

I. Introduction

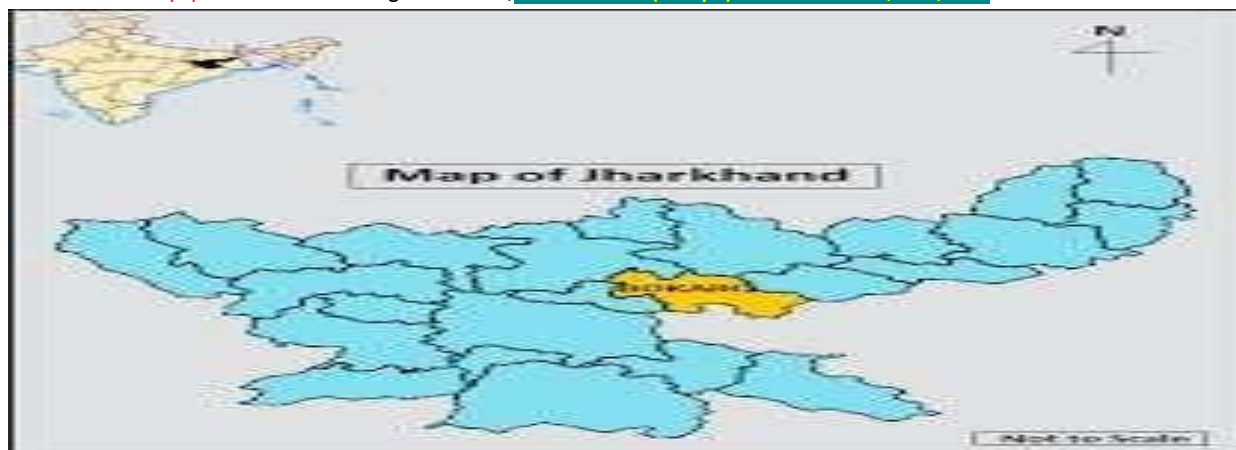
Ethnobotany deals with the total natural relationship of man with nature (Jain 1989). Ethnobotanical word can also provide a wealth of information regarding both past and present relationship of traditional societies (Choudhary et.al 2008). Ethnobotany is a multidisciplinary science which speaks about relationship between plants for food, clothing and shelter but also includes their use for religious ceremonies, ornamentation and health care (Schultes, R.E 1992). From the dawn of the human civilization it has been observed that the primary needs of man to acquire satisfaction of his hunger and heal his wounds. The India has revealed a unique, most scientific culture over World history and it is proved by the published literatures across the different parts of the India (17). Traditional ethnic knowledge of people is developed in course of

time based on experience by testing the phenomena over centuries (6). It has been observed that the indigenous knowledge of ethnic people is transmitted generation after generation verbally or folk saying or folklore (9,10). The knowledge of ethnic people of resource utilization is not confined to ethnobotany but for food, fodder and house hold products and these are accumulated over thousands of years of cultural practice. (7,8). In course of advancement of civilization and medication system, the ancient natural healing practice by plant products have been ignored or discarded by allopathic medicines. But from last few decades human civilization across the World shows interest in the use of ancient medication system and peoples across the starts extensive study on medicinal plants (11,13). Not only that people also experienced that herbal medicines are safe with less or no side effects and less expensive with easy availability against the synthetic allopathic products (14,15). In India the tribal and indigenous communities are found to be using more than 10,000 species of wild plants for various purposes which include about 8,000 species for medicinal uses (16). In this regard Jharkhand is one of the vital state of India where we can find plenty of natural forest, hillocks, dams and tribal communities. They use a lot of plants for natural healing due to affection with their culture or they have no other option. The number of major exploration on this traditional knowledge in Jharkhand is very less specially Bokaro district of Jharkhand. In this present research article, we report the plenty of use of plant parts for curing variety ailments by ethnic people and traditional practitioner like vaidyas of Bokaro district of Jharkhand. The objective of the present research work is to collect data or information regarding the plant resources used by the tribal communities of Bokaro district for medicinal practices and to correlate the data with previous references and the information collected during the research will be added to the ethno botanical data base. The other objective is documentation of indigenous knowledge, culture of communities which is disappearing very fast and it will be best for the society if phytochemical analysis have been done of those popular and effectively used plants in critical illnesses.

II. Materials and Methods

2.1 Study area

The Bokaro district of Jharkhand has dense forest cover with plenty of diversity of wild plant.



Bokaro is known for its tribal communities and dense forest cover and industries. The major industries are BSL (Bokaro Steel Limited), I.E.P.L (Indian Explosive Private Limited) and coal mines. Bokaro lies between N 23° 06' and N 23° 57' and between E 85° 34' and E 86° 26'. The total area of the district is 2883 sq km and most of the area is covered with dense forest. The district has a population of 17, 75,961 (2001 census). Bokaro District is one of the most industrialized zone in India. Bokaro District comes under the North Chhotanagpur. Bokaro has a forest cover of 53243.93 hectare. Its vegetation comes under tropical moist deciduous forest having a great proportion of economically and medicinally important plants. Annual rainfall is: Min. 157cm/max 195cm, and Temp: Min-2°C winter/max 45°C summer. The Bermo Subdivision of Bokaro district is inhabited by a large number of tribal communities. The major ethnic groups of the district are Santhali, Bhumij, Mundas, Oraon, Lodha, Majhi, etc.

2.2 Data collection

The ethnobotanical study was carried in Bermo sub-division of Bokaro district from April-2020 to April-2022 for collection of data through semi structured questionnaires and interviews. Each and every experienced members of the ethnic community are interviewed which belong to 25 to 64 year age group and have extraordinary knowledge of various use of plant for collection of information. One hundred and twenty (100 men and 20 women) persons were interviewed. Among the interviewees, 11% were of age 25-40 years, 50% were 41-60 years and 39% were 61 year and above. After several visits to the study area and interviews following information have been recorded such as common name of the particular taxa, parts used, preparation and methods of administration of the particular preparation to treat diseases. The above data were collected by interviewing the persons individually or through group discussion in a systematic way. The systematic position of the specimen and identification of genus, species and family is done with help of B.S.I (Howrah), Haines flora and available literatures. The identified species were photographed with altitude, date and location tag. The herbarium is prepared of selected species. The identified medicinal plants were depicted

in a tabular form along with their botanical names followed by habits, parts used and name of the diseases and mode of administration.

III. Results and Discussion

The Bermo subdivision of bokaro district is inhabited by a large number of ethnic people and most the community are lived in a remote area. The area are not well facilitated with modern medical facility and also not well connected with cities. So best and only option is traditional healing. The traditional healers use all the senses to diagnose the diseases. For the understanding of indigenous knowledge system on the basis of ethnobotanical studies a total of 45 plant species belonging to 28 families were reported to be used as medicine (Table 1; Fig 1 and 2). The most cited medicinal plant families were Mimosaceae, Acantheceae, Caesalpiniaceae, Euphorbiaceae and Anacardiaceae (Fig-3). The reported plant species were used to treat 50 different disorders or abnormal conditions. The most often cited diseases were skin ailments, stomach disorder, epilepsy, asthma and malaria. Out of 45 medicinal plant species, 9 species were used for gastro intestinal problems like stomach ache, dysentery, diarrhoea, 6 for skin diseases, 3 for cough and cold, 3 for asthma, 3 for piles, 2 for wound healing and 2 specially for snake bites (Table-1). Among the studied medicinal plant species herbs are extensively used about 46%, after that trees which are about 40%, shrubs are about 8.8% and climbers are 4.4% (Fig-4). The present finding is in agreement with Halim *et al.* (2007). (11) and Yahia (2014). 13. Most of the respondents mentioned that they preferred wild trees. This finding matched with Yineger and Yewhalaw (2007) in Ethiopia and Lee *et al.* (2008) 13 in China who reported that their informants used wild medicinal plants for herbal medication. The study also revealed that leaves were predominantly utilized in herbal medication followed by root, bark, seed, fruit and flower (Figure-5). Leaves are not extensively used here but all over the World (11, 18, 19) where ethnobotany still exists Halim *et al.* (2007). The extensive use of leaves in ethnobotany by aboriginal people ensures sustainable harvesting of medicinal plants and Schippmann *et al.* (2002). Also suggest this also generates incentive for protection and maintenance of wild population, habitat and genetic diversity of medicinal plants. Regarding administration of herbal products, rural people showed a high level of indigenous knowledge. In most of the part of the study area orally consumable products are taken after processing, such as soaking in water or milk, boiling in water or squeezing into extracts or grinding into powder. Some are taken raw or after cooking as vegetables. In the preparation of herbal medicines non plant materials are also added to change the taste or increase effectiveness like sugar candy, ghee, oil, black salt or normal salt (sodium chloride) 20.

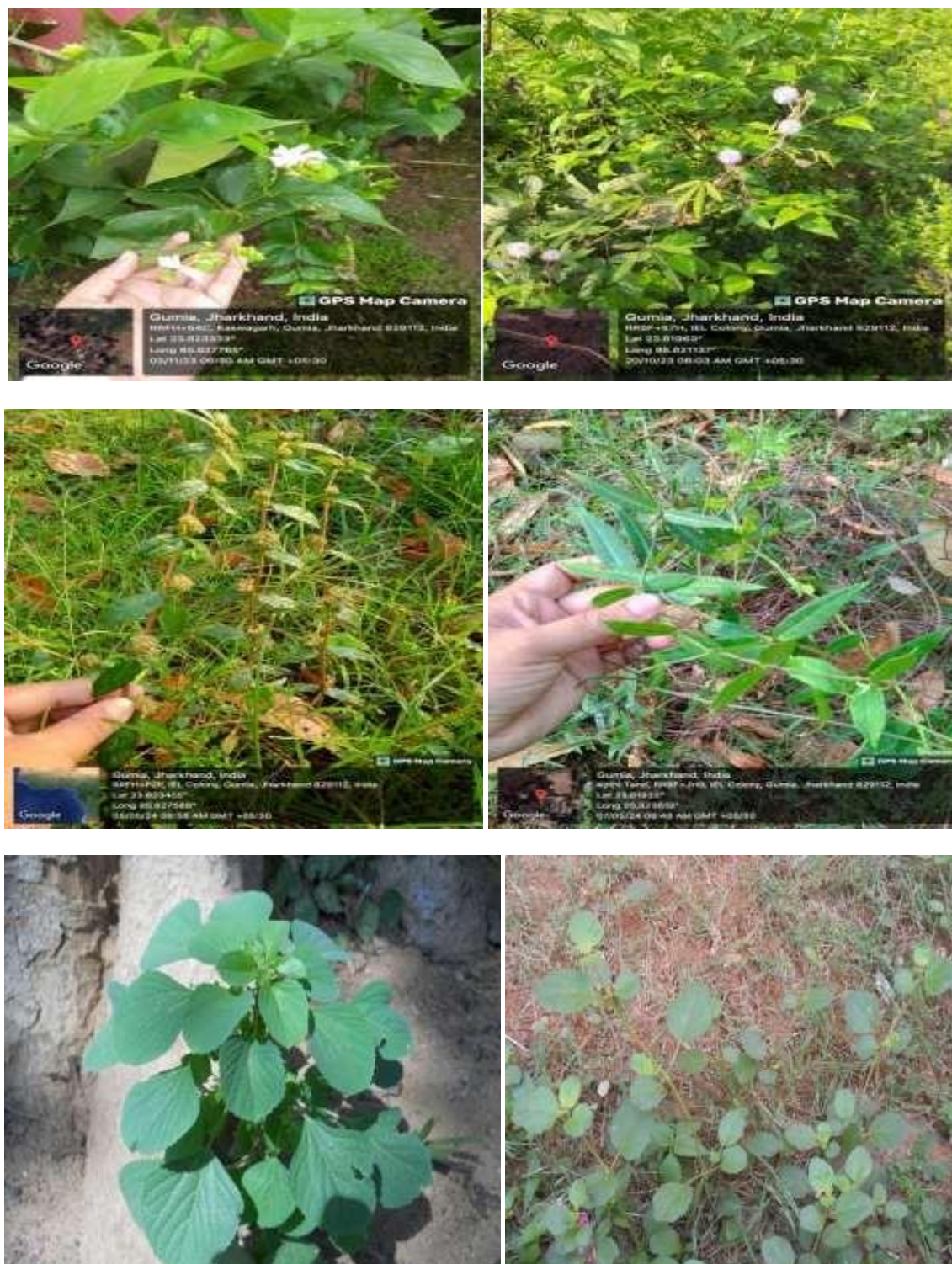


Fig-1(a) *Nyctanthes arbortristis* L. (b) *Mimosa pudica* L. (c) *Euphorbia hirta* L. (d) *Hemidesmus indicus* L. (e) *Acalypha indica* L. (f) *Boerhavia diffusa* L.

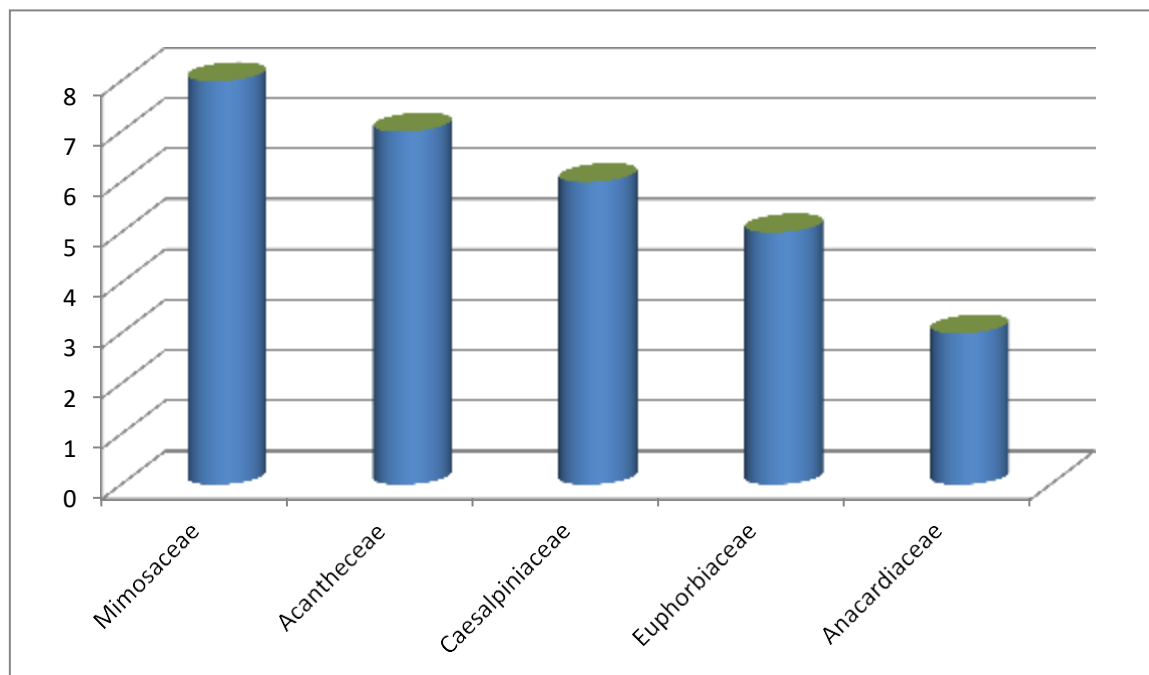


FIGURE 3: DOMINANT PLANT FAMILIES USED IN PREPARATION OF MEDICINES FOR VARIOUS DISEASES

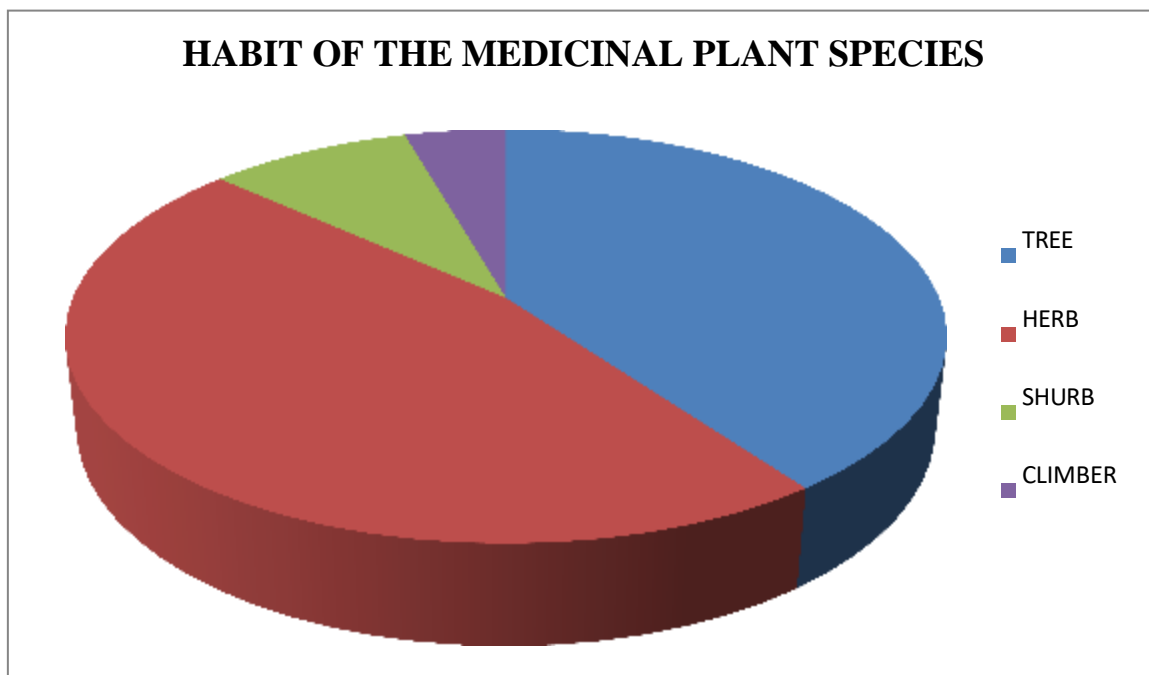


FIGURE 4: HABIT OR GROWTH FORM OF ANALYSIS OF ETHNOMEDICINAL PLANTS

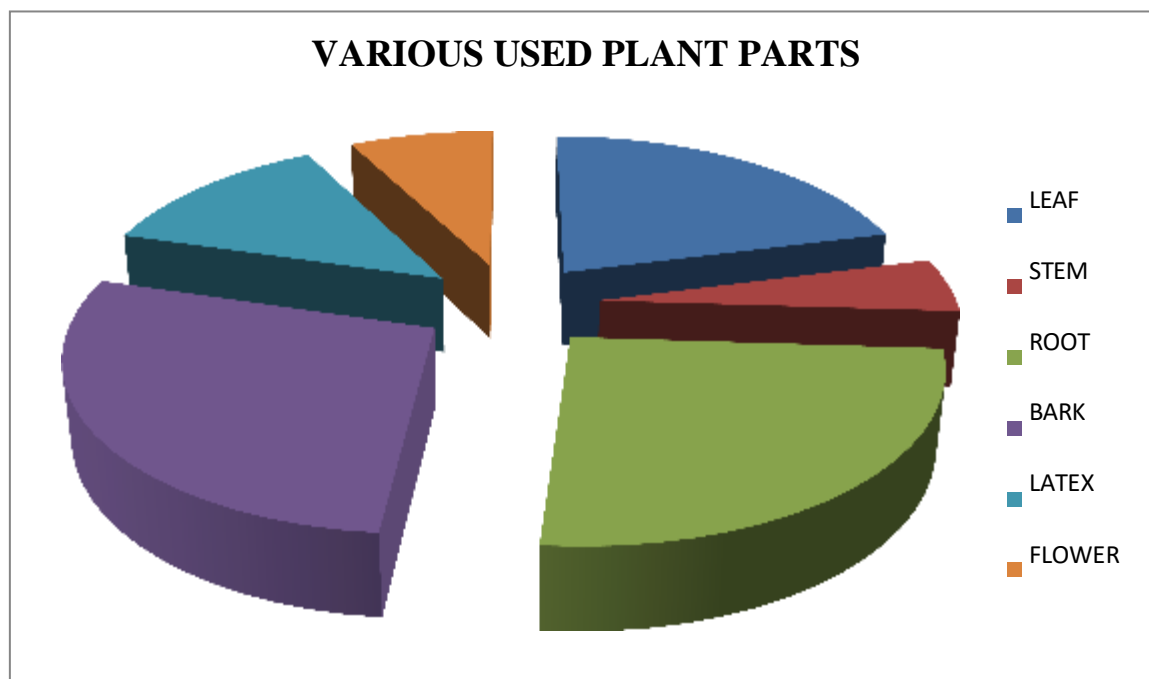


FIGURE 5: PIE CHARTS SHOWING PERCENTAGE OF PLANT PARTS USED IN HERBAL PREPARATION FOR VARIOUS AILMENTS

Sl No	Botanical Name And family	Life form	Parts Used	Disease/Abnormility	Mode of Application
1	<i>Aegle marmelos</i> L. Rutaceae	Tree	Fruit,seed	Gastro-intestinal problems,stomach disorderss	Fruit pulp is Taken as a Fresh after Lunch Dried Pulp is Taken with hot water twice a day in empty stomach.
2	<i>Andrographis peniculata</i> Nees. Acantheceae	Herb	Leaves	Fever,colic pain,itching,jaundice	20gms of <i>Aegle marmelos</i> and 10gms of this plant mixed with small quantity of white rice(atop)and

					Water to make a paste .The Paste is used to treat fever.
3	<i>Acacia arabica</i> Wild. Mimosaceae	Tree	Bark,leaf	Asthma,bronchitis	Dried powdery bark and Leaves are taken with water to treat bronchitis and asthma.
4	<i>Acacia catechu</i> Wild. Mimosaceae	Tree	Wood,bark	Cough,anti-inflammatory	Preparation of wood and bark is used to cure and inflammation Of throat.
5	<i>Acalypha indica</i> L.Euphorbiaceae	Herb	Leaf	Headache	The leaf extract is used as nasal drops in headache.
6	<i>Achyranthus aspera</i> L. Amarantheceae	Herb	Leaf,seed	Skin disease,wound healing and dogbites	Fresh leaf juice is applied in fresh cut. Decoction of seed is used as an antitode against animal bites. Leaf juice with salt is also used in skin infection.
7	<i>Adhatoda vasica</i> Nees.Acantheceae	Shurb	Leaf	Cough,piles	The fresh leaf boiled with water to make coughsyrup and taken many times to treat cough. 5leaves of this plant grinded with2-3groot of Abrus precatorius and

					3-4gm roots of Achyranthes aspera. The paste is taken twice a day after meal for 20 days to cure piles.
8	<i>Albizia lebeck</i> Benth Mimosaceae	Tree	Bark	Epilepsy, mental retardation	2g powder of bark is given with 5ml of bark decoction of Terminalia arjuna and 5 drops of honey once a day for one month to cure mental Retardation and epilepsy.
9	<i>Alternanthera sessilis</i> R.Br Amarantheaceae	Herb	Whole plant, stem, leaf	Eye disease, lactation	Juice of stems and leaves are used to cure eye problem. 100ml decoction of whole plant with one cup of milk given to feeding mother to increase lactation.
10	<i>Andrographis paniculata</i> Nees Acanthaceae	Herb	Leat	Malaria, stomach problem, deworming	Infusion of leaf twigs is given in empty stomach in morning for prevention of malaria and worm. Cakes are prepared by taking leaves of this plant with

					grains of Eleusine coracana in 1:2 ratio and cakes are taken to treat microbial infection of intestine.
11	<i>Argemone mexicana</i> L Papaveraceae	Herb	Latex	Leprosy	Latex is applied externally to cure wounds of leprosy.
12	<i>Asparagus racemosus</i> Wild Liliaceae	Herb	Root	Stamina booster	10g Powder of root tuber is mixed with 10 drops of honey is taken to improve health And potency.
13	<i>Boerhavia diffusa</i> L Nyctaginaceae	Herb	Leaf, bark	Cracking heel, ear - ache	2-3 drops of leaf juice is mixed with camphor and applied in ear to control ear-ache. The paste of dried bark is applied on Cracking heels.
14	<i>Bombax ceiba</i> L Bombacaceae	Tree	Bark	Anemic disorder	The juice of bark is mixed with honey and taken to Cure anemia.

15	<i>Borassus flabellifer</i> L. Palmae	Tree	Bark, flower	Skin infection, syphilis	The powder of Bark is used in skin infection. Approx 50ml Of inflorescence juice is given
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					for atleast 7 days to treat syphilis.
16	<i>Butea monosperma</i> (Lam) Taub Fabaceae	Tree	Bark, root, seed, latex	Tuberculosis, skin disease, piles, stomach Problem and diarrhoea	Paste of root is used to treat tuberculosis, seed Paste is used to treat skin disease. Decoction of bark is taken to cure diarrhoea. Latex With honey have been taken to Cure piles and stomach problem.
17	<i>Bryophyllum pinnatum</i> (Lam) Oken Crassulaceae	Herb	Leaf	Liver and gallbladder stone, epilepsy and inflammation	Infusion of leaf Is given nearly Morning to cure liver stone. Tender leaves are crushed and mixed with Wheat husk and taken to cure gall bladder stone. Tender fleshy leaves are crushed and applied to the Affected area for 3-4 days to reduce inflammation.
18	<i>Calotropis gigantea</i> R.Br Asclepiadaceae	Herb	Leaf, latex	Hydrocele, Wound healing	2-3 leaves are Dipped in castor oil (<i>Ricinus communis</i>) and warmed and applied to the testicles to reduce

					hydrocele. The milky latex is used to cure the wounds.
19	<i>Cassia fistula</i> L. Caesalpiniaceae	Tree	Root	Purgative	25g powdered Root of this plant is mixed with 10g bark of Arjuna (<i>Terminalia arjuna</i>) and boiled with 150ml of water. The Solution is taken in empty Stomach at early Morning for free bowel movement.
20	<i>Cassia occidentalis</i> L. Caesalpiniaceae	Herb	Fruit, leaf	Snake bite, bone fracture	The powder of fruit is mixed With wheat husk Is given to treat Poisonous snake bite. Leaf paste Mixed with egg albumin and applied to Fractured area to treat for recovery.
21	<i>Cassia tora</i> L. Caesalpiniaceae	Herb	Leaf	Skin disease	Paste of leaf is Applied on the Skin to treat skin disease.
22	<i>Curculigo orchoides</i> Gaertn. Hypoxidaceae	Herb	Root	Rheumatism	10-15g roots of this plant grinded with 5g of Ginger and long pepper (5-8 nos) and paste Is prescribed for rheumatism

					Once a day for 15 days.
23	<i>Cynodon dactylon</i> Pers. Poaceae	Herb	Leaf,whole plant	Wound, Blood vomiting	The paste of wholeplant applied on wounds. The leaf juice is taken for blood vomiting.
24	<i>Cyperus rotundus</i> L. Cyperaceae	Herb	Tuber	Indigestion	The powder of tuber is taken to Cure indigestion.
25	<i>Eclipta alba</i> Hask Asteraceae	Herb	Leaf	Jaundice,Dandruff	The leaves are Boiled with hot Water and taken Twice a day for one week to cure jaundice.The leaf extract is Used to remove dandruff and Darken the hair.
26	<i>Euphorbia hirta</i> L. Euphorbiaceae	Herb	Leaf,Flower,Fruit, Latex	Asthma,respiratory disease,wounds	The decoction of flower and Fruits are used to treat respiratory disease.The Latex is used to Treat wounds.
27	<i>Ficus benghalensis</i> L. Moraceae	Tree	Bark,latex	Bleeding piles, rheumatism	A few drops of Latex is mixed With milk to and taken for few days to cure bleeding piles.The latex Is also used in rheumatism.
28	<i>Ficus religiosa</i> L.Moraceae	Tree	Bark	Tetanus,rheumatic pain	Bark is used to Treat tetanus and rheumatic pains.
29	<i>Gloriosa</i>	Climb	Root,leaf	Piles,skindisease	Root paste is

	<i>superba</i> L. Liliaceae	er			made with cow urine and applied on piles twice a day for 7 days. Leaf powder is used in skin disease.
30	<i>Hemidesmus indicus</i> L. Periplocaceae	Herb	Root	Blood purification	Root extract (2-3 tbs) is mixed with honey and administered thrice a day for 2-3 weeks for blood purification.
31	<i>Jatropha gossypifolia</i> L. Euphorbiaceae	Shurb	Latex, leaf, bark, seed	Dental problem, stomach ache, indigestion, arthritis, skin diseases	Latex of leaf is applied on dental problems. Latex is administered to cure stomach ache. Seed oil is used in arthritis and skin diseases.
32	<i>Justicia gendarussa</i> L. Acantheceae	Herb	Leaf, root, shoot, flower	Asthma, rheumatism	Root extract is taken with honey to cure asthma. Decoction of leaf, shoot and flower is used in rheumatism.
33	<i>Lantanacamará</i> L. Verbenaceae	Shurb	Leaf, bark	Wounds, leprosy ulcers	Leaf juice is applied externally to treat cuts and wound. Bark is used in leprosy ulcers.
34	<i>Madhuca indica</i> Gmel. Sapotaceae	Tree	Flower	Cold, cough and headache	Decoction of flower boiled in water is given Twice a day

					against cold,cough and headache.
35	<i>Mangifera indica</i> L. Anacardiaceae	Tree	Cotyledon and bark	Hairfallingandblood dysentery.	Paste of fleashy cotyledon is applied on hair to stop falling. Stem bark decoction is administered to cure blood dysentery.
36	<i>Mimosa pudica</i> L. Mimosaceae	Herb	Leaf,root	Piles,snake bite,gum bleeding	The leaf extract is used to treat piles and fistula.Root is used in cobra bite. The root and leaves in2;1 ratio by weightare made into a paste and used as tooth paste to cure gum bleeding.
37	<i>Moringa oleifera</i> Lam. Moringaceae	Tree	Leaf	Hypertension	Leaves are boiled in water and decoction is taken in early morning in empty stomach to control hypertension.
38	<i>Mucuna pruriens</i> L. Fabaceae	Climber	Seed,root	Diarrhoea	Seed powder (half tbs) is taken with cold water to stop diarrhoea.
39	<i>Nyctanthes arbortristis</i> L. Nyctaginaceae	Tree	Leaf	Malaria	Fresh leaf juice mixed with honey is given to cure malarial fever.
40	<i>Psidium guajava</i>	Tree	Fruit	Loosemotion	The paste of

	L. Myrtaceae				young fruit is used to cure loose motion.
41	<i>Saraca indica</i> (Auct., non L.) Sapotaceae	Tree	Leaf	Diabetes	The one tbs of leaf powder is taken in morning in empty stomach to control diabetes.
42	<i>Rauvolfia serpentina</i> L. Apocynaceae	Shrub	Root, leaf	Snake bite, malaria	One tbs root powder mixed with black pepper is taken with a cup of water twice a day for two days to cure snake bite. Leaf juice is mixed with the juice of <i>Andrographis paniculata</i> and honey and taken for 7 days to cure malaria.
43	<i>Semecarpus anacardium</i> L.f Anacardiaceae	Tree	Seed	Relieve body pain	Seed is soaked with mustard oil for few days and the oil is massaged in the body to reduce body pain. Extracted seed oil is also used for massage.
44	<i>Shorea robusta</i> Gaertn. Dipterocarpaceae	Tree	Seed, stem	Stomach pain	Powdered seeds are given for stomach pain.
45	<i>Sida cordifolia</i> L. Malvaceae	Herb	Leaf, root	Nervous disorder (facial paralysis)	Decoction of root is used for nervous Disorder and

					Facial paralysis.
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IV. Conclusion

The extensive study of the Bokaro district of Jharkhand specially Bermo subdivision explored a large community of aboriginal ethnic people and their vast knowledge about medicinal plant in respect of herbal folk remedies to treat various ailments. The study area also include “Lugu Buru Ghanta Bari” commonly known as Lugu Pahar the “Religious Resident of Lugu Baba”. This is one of the famous religious place of tribal communities of all over the India and covered with dense forest. Recently the area is getting disturbed by construction of dams by clearing forests on natural stream. As the population is increasing day by day and modern medication system is insufficient to fulfil the medical requirement due to many valid reasons like it is too costly for most of the common people and it has various unknown side effects. In this situation it is urgently required to collect record and pharmacologically evaluate the useful alkaloids and other beneficial plant product available from aboriginal medication system for better health care services in Jharkhand as well as India.

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