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EXPLORATION, ASSESSMENT AND ETHNOBOTANICAL STUDIES OF TRIBE KORKU INHABITED IN MELGHAT FOREST AREA OF AMRAVATI, MAHARASHTRA, INDIA

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ABSTRACT: Melghat forest is rich in biodiversity of medicinal plants and this area is inhabited by scheduled tribe Korku. The purpose of the present study was to record the ethnobotanical knowledge of korku tribe using these wildly growing medicinal plants and the survey was conducted during the years 2014-2017. Forty eight plant species belonging to thirty four families which are extensively being used as medicinal plants as well as for food were collected and their traditional usage by korku tribe were studied. The botanical name, family, vernacular name, Flowering periods, Voucher specimen, date of collection, Precise GPS Location, Height above Sea level, Life form, Abundance, Frequency Citation, Relative Frequency Citation index, parts used, Drug formulation & dosage to cure various ailments are discussed in this study. The indigenous extraction and drug formation practices recorded in the present study can be tested and standardized on scientific scale. This study will be helpful in providing awareness about harvesting these medicinally important plants in a conservative manner.

KEYWORDS: Melghat Forest, Korku, Indigenous knowledge, Statistical methods.

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1.INTRODUCTION

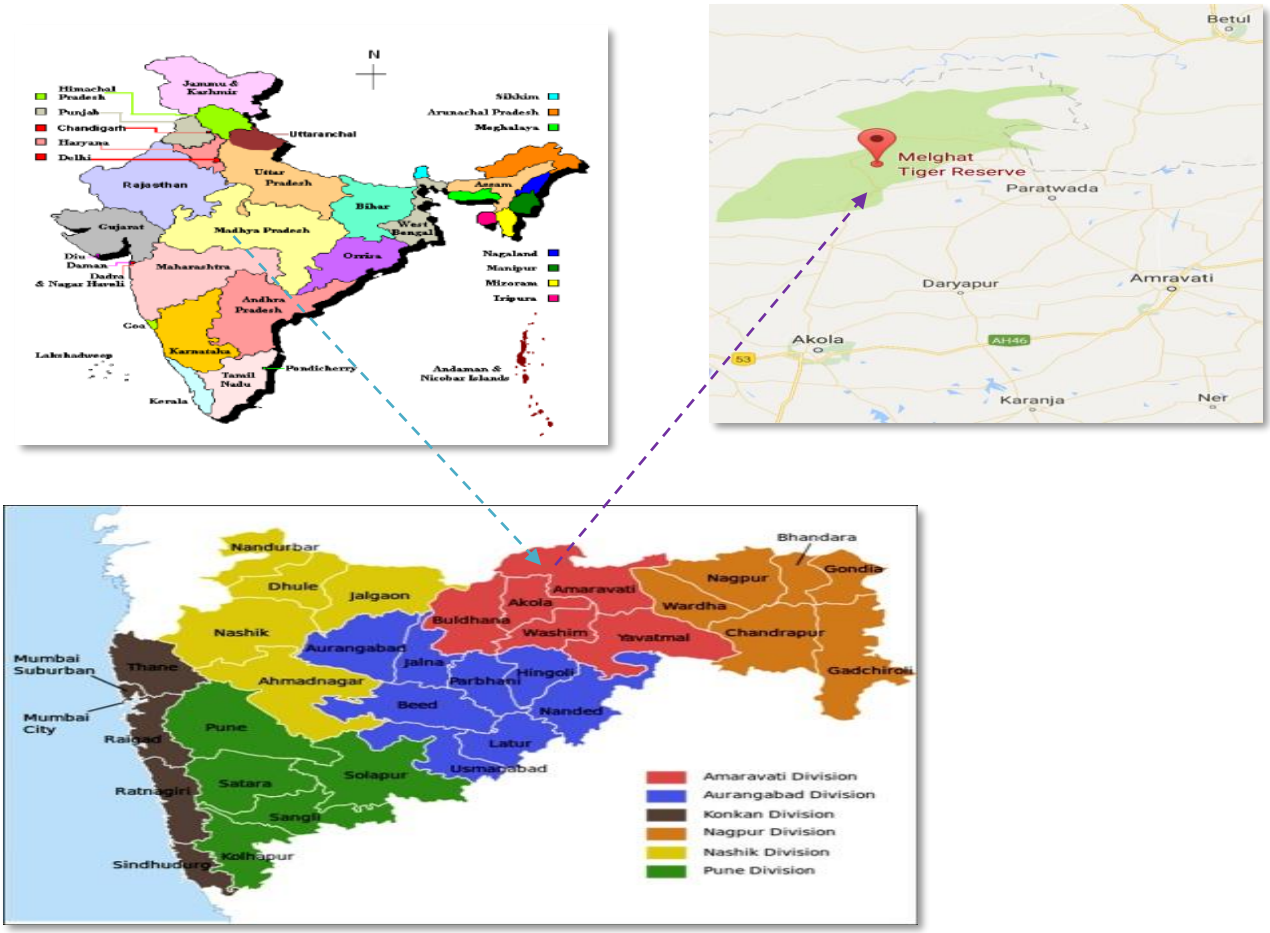
Forest structure and floristics knowledge are necessary for the study of forest dynamics, animal – plant interactions and cycling of nutrients. As life support system forests are the most important component on the earth. These days Biodiversity has always remained the topic of hot debate and discussion. Biodiversity conservation strategy needs strong basis of Biodiversity Assessment. Until and unless we know what is our biodiversity, we can't decide what is to be conserved and how. As far as plants are concerned most of the region of the country are floristically explored – are continuously being explored - and to good extent we have idea about our species wealth [1]. Besides the detailed assessment of floristic diversity of area of conservation, whether they are endemic, endangered or medicinally important plant species, the causes of forest destruction are also equally important in assigning conservation values. Plants have now been used as traditional medicines from about more than five thousand years for curing, suppressing, and prevention of diseases of humans [2]. Ancient methods of using plants for various diseases is known as herbal medicine which refers to the use of different parts of the plant for medicinal purposes [3]. The herbal medicines are considered to be of great importance among different indigenous and rural communities in many developing countries [4]. Herbal drugs constitute only those traditional medicines which primarily use medicinal plant preparations for therapy [5]. According to WHO, traditional medicines is therapeutic practices which have an existence from more than hundreds of years [6]. Analyses of published information on medicinal plants used by the six major systems of medicine in India are as; 1250-1400 plants in Ayurveda [7]; 342 plants in Unani; and 328 plants in Siddha; 4671 in Folk; 482 in Homoepathy; 1106-3600 plants in Tibetan Medicine [8]. Even most world population belonging to developing countries are still dependent on these traditionally used medicinal plants for their health care [9]. The information about the usage and importance of these medicinal plants was discovered by local tribal communities. Due to the rich biodiversity of Melghat forest certain scheduled tribes are inhabited in this area which includes ‘Korku’, ‘Gond’, ‘Nihal’, ‘Balai’ and ‘Gaoli’ etc but majority of population and area is covered by Korku tribe while as percentage of other tribes is limited [10]. According to official website of Melghat Tiger Reserve, Korku’s had been drawing their sustenance from a period of almost one century from the forests of this area and are mainly engaging themselves in forest produce harvesting. This tribe has very important role in providing laborers for development works and forest conservation. They have acquired skills which are required for harvesting these forest products which are later processed and send to markets as forest products. The main purpose of this survey is that it can be very important for research students dealing with medicinal plants. Some already studied plants of this area have shown that nutritional value of those plant foods is quite high, as they contain greater amounts of vitamins, minerals, carbohydrates, protein, and fat than cultivated plant foods. Taking these perspectives in consideration, the exploratory study for the study of plants with medicinal use was carried out within

korku tribe inhabiting in the Melghat forest. This area being hilly in character, tribal people are mostly relying on the plants or plant derived products for the basic health care and foods. Most of the human ailments and veterinary diseases are cured by prescriptions of local bhagat (vaidoo) and elderly people with the help of herbal products.

2. MATERIALS AND METHODS

Demography

The Melghat area is in the Northern part of Amravati District of Maharashtra State and was declared a tiger reserve in 1974. The total area of the biosphere reserve is around 1677 km^2. The forest vegetation is tropical dry deciduous in nature. The study was done in the Korku tribe which reside in Melghat area at coordinates 21° 26′45″N and 77°11′50″E which is also shown by map in "Figures 1, 2, &3".



Figures 1, 2, & 3: Map of India showing Maharashtra State in which study area Melghat Forest Area has been shown

Methodology

The study was planned in the beginning of the May 2014 - January 2017 to investigate and enumerate the flowering plant which are used by people of korku tribe in their routine health care system to cure various ailments. Nature of ailments was identified with the help of elderly tribal healers of the particular area. Seven trips were done to the understudy area during investigating time

period (May & September, 2014; March & November, 2015; November & December, 2016; January, 2017) by all the authors from time to time in order to record the diversity and ethnic knowledge of the plant diversity found in the understudy area. For collection of data questionnaire, semi-structured interviews and direct observations were done [11]. Before each interview, researchers and the informants signed a Prior informed consent (PIC) according to Kyoto protocol concerning the intellectual property rights (IPR) of local inhabitants and plant resources of the area. The sole purpose of this study was designed for unveiling the precious wealth of indigenous knowledge. The information about local name, part used and methodology of usage from the korku tribe was noted during the survey [12]. During observation field notes were recorded in field notebooks and voucher specimens of these species were collected. The collected specimens were processed using usual taxonomic methods of drying and mounting [13] and herbarium were prepared by standard methods [14]. The specimens were identified with the help of existing literature [15],[16],[17],[18],[19] and authorized taxonomist of the area. These collected specimens have been preserved in the herbarium of Department of Botany, Vidyabharati Mahavidyalaya College, Amravati (M.S.). The plants were classified according to the classification of Bentham and Hooker (1862-1883) [20] and their botanical name, local name, family, flowering phonology, altitudinal range, life form representation, part used and methodology of using these parts (wherever necessary) and most frequently treated diseases. The plants in this survey were classified into herbs, shrubs, trees and climbers using the Raunkiar's (1934) [21] life form classification system. Data documented during the ethnobotanical survey was entered on a Microsoft excel database and analyzed to determine the proportions of different variables. Relative Frequency of Citation (RFC) of reported species was also determined by using formula;

$$RFC=FC / N \ (0<RFC<1)$$

This index shows the local importance of each species and it is given by the frequency of citation (FC, the number of informants mentioning the use of the species) divided by the total number of informants participating in the survey (N), without considering the use-categories [22], [23],[24].

3. RESULTS AND DISCUSSION

The local inhabitants have learnt to utilize plants for treating various diseases. Thus there is a vast list of plants used by this tribe but some important wildly growing forty eight plant species belonging to thirty four families which are extensively being used to cure various ailments are given in "Table 1". In the present study, a total of 51 persons were interviewed among which 20 were males and 31 were females. The informants were divided into four age groups; (1) 12-20 years; (2) 20-35 years; (3) 35-65 years and (4) above 65 years old. Age group of 35-65 years old comprised the most informants. 6 drug formulations practices or recipes formulations were harvested from 1st age group, 29 from 2nd age group, 23 from 3rd age group and 43 from 4th age group. Present study was unique in comparison to the previous ethnobotanical studies all around the world as we interviewed first

time the female community of the korku tribe residing in Melghat tiger reserve of Amravati, Maharashtra. In this area, the females of the said community are traditional and very conservative in talking to males (strangers or outsiders) except their close relatives within the community. Authors were assisted by an elderly woman of the same community for interviewing these females within their houses. This strategy was adopted for the purpose of the data collection from female informants and also to compare their indigenous knowledge with male members of the same community. Other purpose was to know their interest regarding the use of medicinal plants to treat different ailments. The aim of the data collection was explained to the local inhabitants and then semi-structured questionnaire based interviews were carried out. The inhabitants of the korku community were requested to share the knowledge of utilizing these medicinal plants in their local language in order to collect the detailed information which was converted to common tongue by a member (*Mama*) of the same community. It can be assumed from this study, that most members of the community generally rely on traditional herbal medicines due to easy availability and rich diversity of medicinal plants in the area. It is noted during the survey, that the female informants in comparison to male members have a significant knowledge about the preparation and administration of herbal drugs which reflect their role in house hold management and disease treatment in order to keep the family healthy. However, the technique for diagnosis of the various ailments is very primitive in the tribe. Different diseases are being diagnosed on the external characters of the patient by these elder men and women of the tribe. Color of the tongue, eyes, cold and hot conditions of the body are common indicators which are being used to understand the patient's problem. The specimens studied, their assessment and ethnobotanical usage are given in the Table 1. The study was undertaken for the first time in the understudy tribe and the results revealed that Korku tribe is good in plant based ethno-medicine. The gender, related age group from which the knowledge was harvested and number of recipes has been presented in "Figure 4". During the field work of the present study, 48 plant species belonging to 44 genera and thirty four families were collected. The complete inventory of ethnoflora consisting of taxon name, with their family, Local name / vernacular name, flowering period, voucher specimen number, date of collection, life form, abundance, Frequency citation, Relative frequency of Citation, part used, mode of administration and dosage has been recorded in the present study shown in "Table 1". The best represented families are Ceasalpinaceae (four species), Euphorbiaceae (3 species) while as Liliaceae, Anacardiaceae, Papilionaceae, Zingiberaceae, Lamiaceae, Moraceae, Lythraceae, Myrtaceae, Rhamnaceae each represented by two species and other 23 families with one species each. Some of the species were commonly found in the study area while as some the species showed different abundance patterns. However, we can also state that, more commonly a plant taxon found in an area, the greater will be the probability of its popular use. In accordance with the life form, tree species (26) were the highest followed by herbs (17), shrubs (4) and climbers (1) as shown in "Figure 6". This is not surprising as the area is deciduous

forest type in which dominant vegetation is Trees followed by the growth of herbs in rainy monsoons. The findings of this study indicate that aerial parts (67.54%) were mostly used, followed by the usage of underground parts (29.87%) and whole plants (2.59%) for the formulations of recipes shown in "Figure 8". The present study also shows that the area has vast medicinal flora with major potential to cure many diseases. Both fresh and dried parts are used for making drugs in crude form. Mostly, the drugs are prepared in the form of paste, tablets, powder, latex, decoction, and even as extracts shown in "Figure 7". The dosage and mode of administration against different ailments is subject to approximation during treatment procedure. The ailments which were cured by these under study plants are anti-emetic, skin diseases, cough, menstruation disorders, stomach pains, cholera, indigestion, muscle pains, rheumatic pains, Diabetes, anti-fertility, breast ulcers, gastric disorders, ophthalmic disorders, Blisters, jaundice, headache, paralysis, etc. The study also gives the approximate GPS location where these medicinal plants can be collected and harvested as well as can be protected from unsustainable harvesting or over harvesting in that area. The photographs taken during the data collection (interviewing the informants and collection of plant specimens) are presented in Photoplate 1 and Photoplate 2 & 3 show the digitalized pictures of some important species of the area.

Some plant species of this study area are widely distributed in other parts of country as they have wide adaptability for different ecological zones. Among all medicinal plants reported in present study *Syzygium cumini, Ficus religiosa, Euphorbia hirta, Butea monosperma, Sterculia urens, Hemidesmus indicus, Emblica officinalis, Cassia fistula* and *Aegle marmelos* have high RFC values which indicates that these are well-known plants of the korku tribe. Findings of the present study are in contrast to most of the previous ethnobotanical studies where different plant species are being reported with respect to their preference use [13, 25, 26, 27]. The other most cited medicinal plants based on RFC data includes *Acalypha indica L., Cayratia auriculata, Chlorophytum tuberosum, Costus speciosus, Dendrocalamus strictus, Colebrookea oppositifolia, Lagerstroemia parviflora, Madhuca indica, Miliusa tomentosa, Wrightia tinctoria, Zizipus xylopyra, Anisochilus carnosus.*

Table 1: Exploration, Assessment and Ethnobotanical Usage

Botanical name / Family/ Vernacular name / Fls & frts./ Voucher specimen No./ Date of Collection	Location / Height above Sea level	Life Form	Abundance	FC	RFC	Part/s Used	Methodology of Usage/ Formulation of Recipes and Disease Treated
Acalypha indica L. / Euphorbiaceae/ Khajoti/ Throughout the year. (NAW-1361)/ 07-05-14	N-21^0.28.234_ E-077^{0}23.326 897m	S	1	17	0.33	Roots Leaves	Roots ground with black peper (*Piper nigrum*) and the extract orally administered as an anti-emetic. Leaves with turmeric (*Curcuma longa*) ground in to fine paste applied for skin diseases.
Achyranthes aspera L. / Amaranthaceae/ Agahada / Throughout the year. (NAW-1362) 03-09-14	N-21^0.28.273_ E-077^{0}24.267 667m	H	1	14	0.27	Roots	Root ash with honey used medicinally to relieve cough. Root extract used for normal delivery.
Aegle marmelos (L.) Correa / Rutaceae Bela / Fls.: May June; Frts: Oct.–Nov. (NAW-1363) 22-03-15	N-21^0.28.296_ E-077^{0}24.291 667m	T	3	20	0.39	Stem Leaves Fruits	Stem bark ground with black pepper (*Piper nigrum*) and the filtered extract administered for cholera (2 spoonful s thrice a day for 3 days) Extract from stem bark ground with *Saccharum officinarum* administered for chest pain (5 spoonfuls thrice a day for 2 days). Leaf juice poured in to paste and applied on head and also taken internally for cooling the body. Fruits edible use medicinally in gastric disorder.
Asparagus racemosus Willd. / Liliaceae/ Shatavari. / Fls, & frts. : Oct .- Dec./ (VBMV-1739) 03-09-14	N-21^0.28.815_ E-077^{0}23.931 634m	H	3	15	0.29	Tuber	Tuber crush with turmeric (*Curcuma longa*) and the filtrate administered for chest pain and stomach pain (2 spoonfuls twice for three days). Also tuber chewed to stop dehydration.

Bauhinia racemosa Lam. / Caesalpinaceae /Bhusa / Fls .: Apr – June ; Frts, : Nov - Jan. (NAW-1364) 22-03-15	N-21^0.28.827_ E-077^{0}23.034 628m	T	3	12	0.23	Roots Stem Leaf	Root bark crushed and the filtrate administered for diarrhea by 5 spoonfuls twice a day for 5 days. Stem bark crushed and filter mixed with goats milk administered orally for epilepsy by kurku. Tender leaf juice poured in to eyes (2drops) for ophthalmic infections and tender leaves and fruits used as vegetable.
Bauhinia vahlii Wight & Arn. / Caesalpinaceae Mahul / Fls: June - Aug ; Frts: Dec - Jan./ (NAW-1365) 11-12-16	N-21^0.28.300_ E-077^{0}24.195 699m	T	2	16	0.31	Stem Fruits	Decoction of bark is used to treat jaundice. Fruits are used as vegetable or eaten raw and used to cure infertility.
Bombax ceiba L. / Bombacaceae Katasavar / Fls: Feb; Frts: Mar. (NAW-1366) 11-12-16	N-21^0.28.447_ E-077^{0}23.954 685m	T	4	13	0.25	Root Stem bark	Root bark crushed with garlic (*Allium sativum*) and the extract administered (Spoonfuls once a day for 5 days after menstruation) for menstrual disorders. Stem bark ground with urine of infant and paste mildly heated and applied on blisters and ulcers.
Buchanania lanzan Spreng./ Anacardiaceae Charodi / Fls: Jan - Feb; Frts.: Apr- May (NAW-1367) 24-03-15	N-21^0.28.423_ E-077^{0}23.848 677m	T	4	8	0.15	Stem bark	Stem bark ground with soaked rice (*Oryza sativa*) and the filtrate administered for chest pain by kurku 2 spoonful twice a days for 5 days. Stem bark paste mixed with castor oil (*Ricinus communis*) and applied on boils and ulcers.
*Butea monosperma (*Lam.) Taub. / Papilionaceae Palas / Fls & Frts.: Feb - Mar./ (NAW-1368) 24-12-16	N-21^0.28.818_ E-077^{0}23.996 629m	T	1	24	0.47	Stem bark	Stem bark crushed with oil (*Sesamum indicum*) and the filtrate administered for antifertility (One spoonful twice a day for 7 days after menstruation).

Cayratia auriculata (Roxb.) Gamble / Vitaceae Kumbli / Fls.& Frts.: Sep-Nov./ (VBMV-1740) 24-11-16	N-21^0.28.837_ E-077^{0}23.082 624m	H	2	16	0.31	Leaves	Leaves ground with turmeric (*Curcuma longa*) and the paste applied externally for chicken pox and is also used to feed domestic cattle.
Chlorophytum tuberosum (Roxb.) Baker Liliaceae/ Musli / Fls.: June & frts.: Sep (VBMV-1523) 03-09-14	N-21^0.28.900_ E-077^{0}23.187 622m	H	4	16	0.31	Tubers Leaves	Tubers collected by tribal people and are good demand from traders as they are sweet in taste and also used against indigestion. Leaves used as vegetable.
Cissampelos pareira L./ Menispermaceae Pahadmul / Fls.: Aug-Oct; Frts.: Oct. Nov. (VBMV-1488) 20-11-16	N-21^0.28.455_ E-077^{0}23.848 685m	C	3	12	0.23	Tubers Leaves	Tuber extract mixed with a pinch of salt administered for chest pain and stomach pain. 2 spoonfuls thrice a day till cure. Leaves crushed with that of *Andrographis paniculata* and *Pongamia pinnata* and the extract given orally to kill intestinal worms (3 spoonfuls thrice a day for 3days).
Costus speciosus (J. Koenig) Sm. / Zingiberaceae/Jangli adrak / Fls: Aug; Frts: Nov./ (VBMV-1742) 04-09-14	N-21^0.28.489_ E-077^{0}23.824 685m	H	3	15	0.29	Rhizome	Rhizome ground with *Pennisetum americanum* (bajra) and formulated as tablets (eaten continuously for almost 21 days) for muscular rheumatism (waat).
Curcuma pseudomontana J. Graham / Zingiberaceae Kuksuma root / Fls & Frts. July-Aug. (VBMV-1028) 22-05-14	N-21^0.28.507_ E-077^{0}23.811 685m	H	3	10	0.19	Roots Tubers	Root powder one spoonful twice a day with milk use in tuberculosis (T.B). Tuber extract administered for jaundice (2 spoonfuls twice a day till cure). Warm tuber paste applied on body swelling and on head for cooling effect. Boiled tubers ground with a pinch of salt and given orally for increased lactation.
Dendrocalamus strictus (Roxb.) Nees / Poaceae/ Katbans / Flower not seen. (VBMV-1034) 04-05-14	N-21^0.28.893_ E-077^{0}23.152 627m	T	1	18	0.35	Leaves Grains	Tender leaves boiled, cooled and tied over the eyes for sores. Tender sprouts used as vegetable. Grains boiled and eaten.

Desmodium gangeticum (L.) DC. / Papilionaceae Chikum ghass / Fls & Frts: Oct- Nov./ (VBMV-1746) 24-11-16	N-21^0.28.886_ E-077^{0}23.286 632m	H	3	12	0.23	Roots	Roots ground with garlic (*Allium sativum*) and made in to pills and administered for epilepsy by korku 2-3 pills twice a day till cure.
Dioscorea hispida Dennst. / Dioscoreaceae/ Baichan / Fls & Frts.: Sep. Nov. (NAW-1296) 20-11-16	N-21^0.28.892_ E-077^{0}23.247 630m	H	2	14	0.27	Tubers	Tubers kept in running water for a day and boiled with the leaves of tamarind and water filtered then cooked and eaten.
Cassia fistula L. / Caesalpinaceae Amaltas / Fls.: May – Aug; Frts.: Oct - Feb. (VBMV-1366) 20-11-16	N-21^0.28.524_ E-077^{0}23.785 659m	T	1	22	0.43	Stem Leaves	Tender leaves cooked with juice of tamarind eaten as vegetable and also used as a purgative. Stem bark pieces tied together and worn as necklace for malarial fever. Tender leaves ground with turmeric and this paste is applied for skin diseases.
Cassia obtusifolia L. / Caesalpinaceae/ Tarota / Fls, & Frts. : Aug.- Nov. (VBMV-1365) 22-11-16	N-21^0.28.497_ E-077^{0}23.661 654m	S	3	8	0.15	Whole Leaves	Whole plants crushed and the extract administered for epilepsy (two spoonfuls once a day for 15 days). The leaf paste applied for cuts, wounds and scorpion stings. Tender leaves used as vegetable.
Clerodendrum serratum (L.) Moon / Verbenaceae Bharanga / Fls-Frts.: Sep.- Dec (NAW-1531) 09-05-14	N-21^0.28.902_ E-077^{0}23.352 648m	S	2	9	0.17	Roots	Roots crushed with that of *Rauwolfia serpentina* and the filtrate administered for fever stomach pain and menstrual disorders (3 spoonfuls once a days for 5 days).
Colebrookea oppositifolia Sm./ Lamiaceae Bhaman / Fls. & Frts.: Dec.- Mar. (NAW-1369) 22-12-16	N-21^0.28.898_ E-077^{0}23.415 657m	S	2	18	0.35	Stem bark Infloresence	Stem bark crushed and the filtrate administered for giddiness (2 spoonfuls twice a day for 3 days). The dried inflorescence used in sorcery.

Curculigo orchioides Gaertn. / Amaryllidaceae Kali musli / Fls. & Frts: June – Sep (VBMV-1750) 22-05-14	N-21^0.28.898_ E-077^{0}23.415 657m	H	3	8	0.15	Tuber	Tuber extract administered for asthma and piles and extract administered for asthma and piles (2 spoonfuls twice a day till cure) and the paste applied on cuts. Raw tuber eaten for dysentery.
Euphorbia hirta L. / Euphorbiaceae/ Dhodhi / Fls. & Frts: Throughout Year/ (NAW-1370) 09-11-15	N-21^0.28.596_ E-077^{0}23.593 646m	H	1	26	0.50	Leaves Latex	Tender leaf extract mixed with sugar administered for dysentery (2 -3 spoonfuls thrice a day). Latex applied on cuts by kurku.
Ficus benghalensis L./ Moraceae/ Wad / Fls.: Feb - June; Frts: Nov.- Jan. (NAW-1107) 08-11-15	N-21^0.28.574_ E-077^{0}23.588 675m	T	2	6	0.11	Latex	Latex applied for breast ulcer.
Ficus religiosa L./ Moraceae/ Piple / Receptacle: Feb –May. (NAW-1108) 08-11-15	N-21^0.28.447_ E-077^{0}23.954 685m	T	2	27	0.52	Stem bark	Stem bark extract mixed with buttermilk administered for paralysis (3 spoonfuls twice a day for 30 days). Branches used in festivals and religious ceremonies.
Adina cordifolia (Roxb.) Hook. f. / Rubiaceae/Haldu / Fls : June-July; Frts. : Feb.-May. (NAW-1373) 22-12-16	N-21^0.28.895_ E-077^{0}23.462 655m	T	2	15	0.29	Root Stem	Root and Stem bark extract mixed with oil of *Sesasum indicum* administered for antifertility (2 spoonfuls thrice a day for 9 days after menstruation).
Hemidesmus indicus (L.) R. Br. Ex Schult. / Periplocaceae Dhodhkadi / Fls . & Frts.: Sep.-Jan. (VBMV-1120) 09-05-14	N-21^0.28.846_ E-077^{0}23.641 675m	H	2	24	0.47	Roots	Roots crushed with garlic (*Allium sativum*) and the extract administered for menstrual disorders (2 spoonfuls twice a day for 5 days). Root powder along with goat milk given orally for impotency and also to tone the health (3-4 spoonfuls once a day for 30 days). Root powder with garlic administered orally as lactagogue.

Holarrhena antidysenterica (Roth) Wall. ex. A. DC. / Apocynaceae Kudda. / Fls.: Apr - July; Frts.: Nov. - Feb. (NAW-1564) 04-05-14	N-21^0.28.888_ E-077^{0}23.573 660m	T	3	12	0.23	Root Stem Latex	Root bark ground with the roots of *Hemidesmus indicus* and the paste made twice a day till cure. Stem bark ground with black pepper and the paste made into pills administered for cough (1-2 pills twice a day for 3 days). Latex applied on cuts.
Lagerstroemia parviflora Roxb. / Lythraceae Landiya / Fls . : Apr.-May; Frts. : Dec.- Jan. (NAW-1142) 08-11-15	N-21^0.28.617_ E-077^{0}23.561 637m	T	2	18	0.35	Leaves	Leaves crushed with that of *Magnifera indica* and *Syzygium cumini* and the filtrate administered for stomach pain. Wood also used for making agricultural implements and house construction.
Lannea coromandelica (Houtt.) Merr. / Anacardiaceae Moin / Fls . : Feb. – Apr.; Frts. : May. - June. (VBMV-1330) 07-01-17	N-21^0.28.607_ E-077^{0}23.459 645m	T	3	16	0.31	Stem bark	Stem bark decoction administered for chest pain gastric trouble and muscle pain (1 spoonful twice a day till cure). Stem bark paste or gum applied on cuts and wounds also used for head ache.
Leea macrophylla Roxb. ex Hornem. / Leeaceae Hattikand / Fls. & Frts. : Oct.-Dec. (VBMV-1156) 09-05-14	N-21^0.28.820_ E-077^{0}23.687 683m	H	3	14	0.27	Root bark Ste	Root bark extract administered orally for stiff joint and rheumatic pains by 2 spoonfuls once a day till cure. Stem bark paste mixed with castor oil mildly heated and applied on cuts and wounds.
Madhuca indica J.F. Gmel. / Sapotaceae Moha / Fls. : Feb.-Mar ; Frts. : June-July. (VBMV-1226) 09-05-14	N-21^0.28.742_ E-077^{0}23.752 707m	T	2	18	0.35	Roots	Root paste applied on abscess boils. Seed cooked and eaten.
Martynia annua L. / Martyniaceae Moha / Fls. & Frts. : Sep.-Nov. (VBMV-1199) 11-12-16	N-21^0.28.710_ E-077^{0}23.797 711m	H	2	12	0.23	Roots Leaves	Roots decoction administered orally for bronchitis by Chenchus. Leaf paste applied over head for cooling effect and headache.

Miliusa tomentosa (Roxb.) J. Sinclair / Annonaceae Humba / Fls. : May-June; Frts. : June - July. (VBMV-1200) 22-11-16	N-21^0.28.497_ E-077^{0}23.661 659m	T	3	16	0.31	Fruits	Fruits edible and Wood also used for making agricultural implements and for house construction.
Mitragyna parviflora (Roxb.) Korth. / Rubiaceae Kalam / Fls . :May.- June; Frts. : Mar.-Apr. (NAW-1203) 07-01-17	N-21^0.28.902_ E-077^{0}23.352 648m	T	2	14	0.27	Stem Leaves	Stem bark crushed with that of *Haldina cordifolia* and the extract administered for peptic ulcers (2 spoonfuls twice a day for 3 days). Stem bark extract missed with jaggery given orally for dysentery (2 spoonfuls twice a day, till cure). Leaf juice poured into eyes for jaundice.
Sida cordata (Burm. f.) Borss. Waalk. / Malvaceae Bhumi / Fls . & Frts. : Aug.- Jan. (VBMV-1146) 24-11-16	N-21^0.28.617_ E-077^{0}23.561 637m	H	2	13	0.25	Leaves	Leaf juice mixed with goats milk administered for paralysis (2 spoonful twice a day till cure). Leaf paste applied for scorpion sting.
Sterculia urens Roxb. / Sterculiaceae Sardol / Fls.: Dec. - Feb; Frts.: Mar. - Apr. (NAW-1376) 03-09-14	N-21^0.28.693_ E-077^{0}23.810 700m	T	3	24	0.47	Stem Gum	Stem bark ground with turmeric, the filtrate mildly heated, and administered for rheumatic pains and peptic ulcers (2 spoonfuls twice a day for 5 days). Gum dissolved in water given orally for cooling the body and also to cure dysentery.
Syzygium cumini (L.) Skeels / Myrtaceae Jamun / Fls . : Apr. – June;Frts. : July.- Aug. (VBMV-1108) 04-05-14	N-21^0.28.632_ E-077^{0}23.867 697m	T	2	34	0.66	Stem Fruits	Stem bark extract administered for leucorrhoea and also for cough (2 spoonfuls twice a day for 5 days). Stem bark ash mixed with niger oil and applied over burns and wounds. Crushed stem bark used as fish-poison. Fruits edible.
Syzygium heyneanum (Duthie) Gamble / Myrtaceae/ Jamon / Fls. : Apr. – June & Frts. : July.-Aug/ (NAW-1344) 04-05-14	N-21^0.28.898_ E-077^{0}23.415 657m	T	3	13	0.25	Fruits	Fruits powder used to control diabetes.

Terminalia chebula Retz. / Combretaceae Hirda / Fls. :Mar. – May Frts.: May.-June. (NAW-1377) 07-01-17	N-21^0.28.895_ E-077^{0}23.462 655m	T	3	14	0.27	Stem Fruits	Fruits ground with the latex of *Ficus racemosa* and the paste applied over for muscle pain and rheumatic pain. Fruit paste mixed with breast milk, administered orally to infants for cough, and also applied on wounds. Crushed stem bark and fruits used as fish-poison.
Wrightia tinctoria R. Br. / Apocynaceae Dodhi / Fls . :Mar.-May; Frts : Oct.-Feb. (NAW-1124) 07-05-14	N-21^0.28.908_ E-077^{0}23.513 655m	T	2	16	0.31	Latex	Latex applied on cuts and also 3-5 drops for preparing instant curd. Bark fiber used for making cordage.
Woodfordia fruticosa (L.) Kurz / Lythraceae Dhin / Fls. : Jan.-Apr & Frts. : Apr.- May (NAW-1378) 07-11-15	N-21^0.28.593_ E-077^{0}23.897 701m	T	3	12	0.23	Stem Leaves	Dried stem bark added to toddy to enhance taste and intoxication. Leaves crushed and mildly heated, gently massaged for rheumatic pain. Leaves boiled in water and taken bath for body pains.
Zizipus xylopyrus (Retz.) Willd. / Rhamnaceae Gorgot / Fls.: Apr. - June & Frts.: Dec. - Jan. (NAW-1286) 07-01-17	N-21^0.28.508_ E-077^{0}23.891 697m	T	2	18	0.35	Stem Fruits	Stem bark paste made into pills and administered orally for cholera by taking 2 pills thrice a day for 2 days. Fruits edible.
Ensete superbum (Roxb.) Cheesman / Musaceae Jangli kela / Fls . & Frts. : Oct. - Jan. (NAW-1287) 04-05-14	N-21^0.28.428_ E-077^{0}23.926 689m	H	3	12	0.23	Roots Fruits	Root powder mix with curd and crystal sugar (1 glass daily) for menstruation problems. Fruits and pithy inner part of stem eaten by local people.
Anisochilus carnosus (L.f.) Wall. / Lamiaceae Chikhal ghass / Fls . & Frts. : Sep.-Nov (NAW-1690) 07-01-17	N-21^0.28.466_ E-077^{0}23.691 692m	H	2	16	0.31	Inflorescence	Inflorescences burnt in a plate and the ash mixed with coconut oil is applied to boils and pimples.
Zizyphus mauritiana Lam. / Rhamnaceae Bor / Fls.: Dec. - Feb & Frts. : Feb. - Apr.	N-21^0.28.632_ E-077^{0}23.513	T	2	14	0.27	Fruits	Tender fruits crushed and the extract administered for diarrhea (2 spoonfuls twice a day for 5 days) and fruit paste applied on head

(NAW-1379) 07-01-17							for cooling effect. Fruits edible.
Emblica officinalis Gaertn. / Euphorbiaceae Aola / Fls.: Feb. - Mar & Frts.: Oct. - Dec. (VBMV-1092) 22-11-15	N-21^0.28.461_ E-077^{0}23.958 691m	T	2	22	0.43	Leaves Fruits	Fruits pickled by korku tribals. Leaf ash mixed with oil applied to burnt skin which prevents black scar formation.
Cyathocline lutea law ex Wight / Asteraceae Piwali Gangawan / Fls &Frts: Feb. – April (NAW/-1380) 04-05-14	N-21^0.28.818_ E-077^{0}23.996 629m	H	4	9	0.17	Roots Whole	Root decoctions are used to relieve stomach pains. Crushed plant is applied on wounds as antimicrobial. Decoctions of whole plant are used as anti-helminthic.

Life Form (Habit of plant): H= Herb; S= Shrub; T= Tree; C= Climber

Abundance: 1 = very common; 2 = common; 3 = uncommon; 4 = rare; 5 = very rare

FC: Frequency Citation

RFC: Relative Frequency Citation

Table No. 2: Definitions of Abundance categories

Value	Category	Definition
1	Very common	Easy to find close to all houses
2	Common	Close to houses, but not always all houses
3	Uncommon	Close to few houses, but very scarce in the natural environment
4	Rare	Hard to find in valleys (inhabited area)
5	Very rare	Hard to find at the scale of the valley

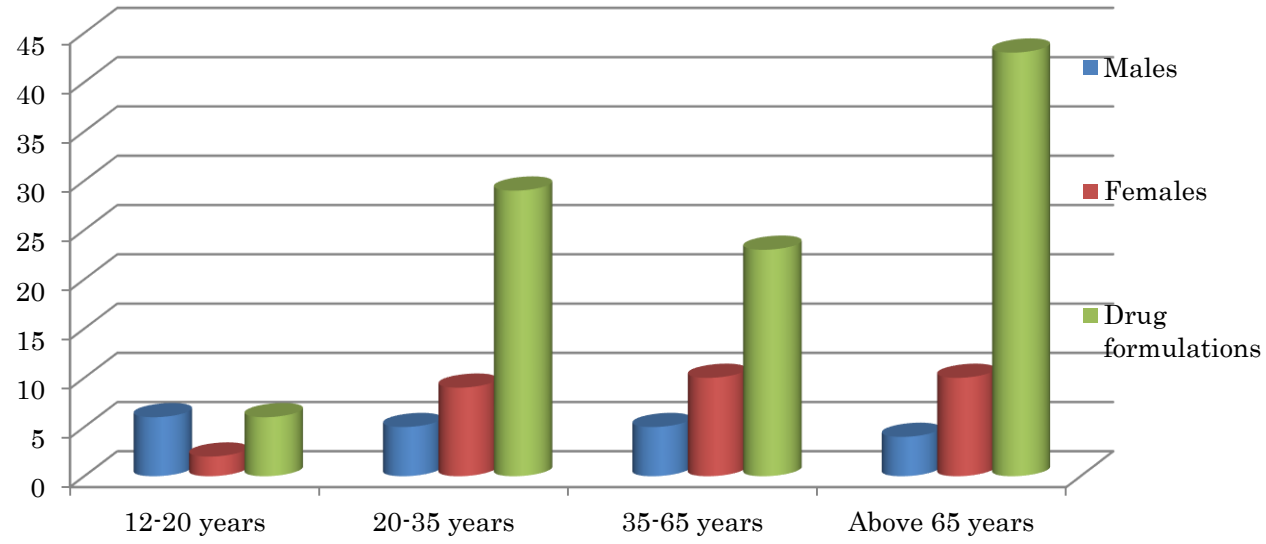


Figure 4: Distribution of gender, age groups and drug formulations of the interviewed informants

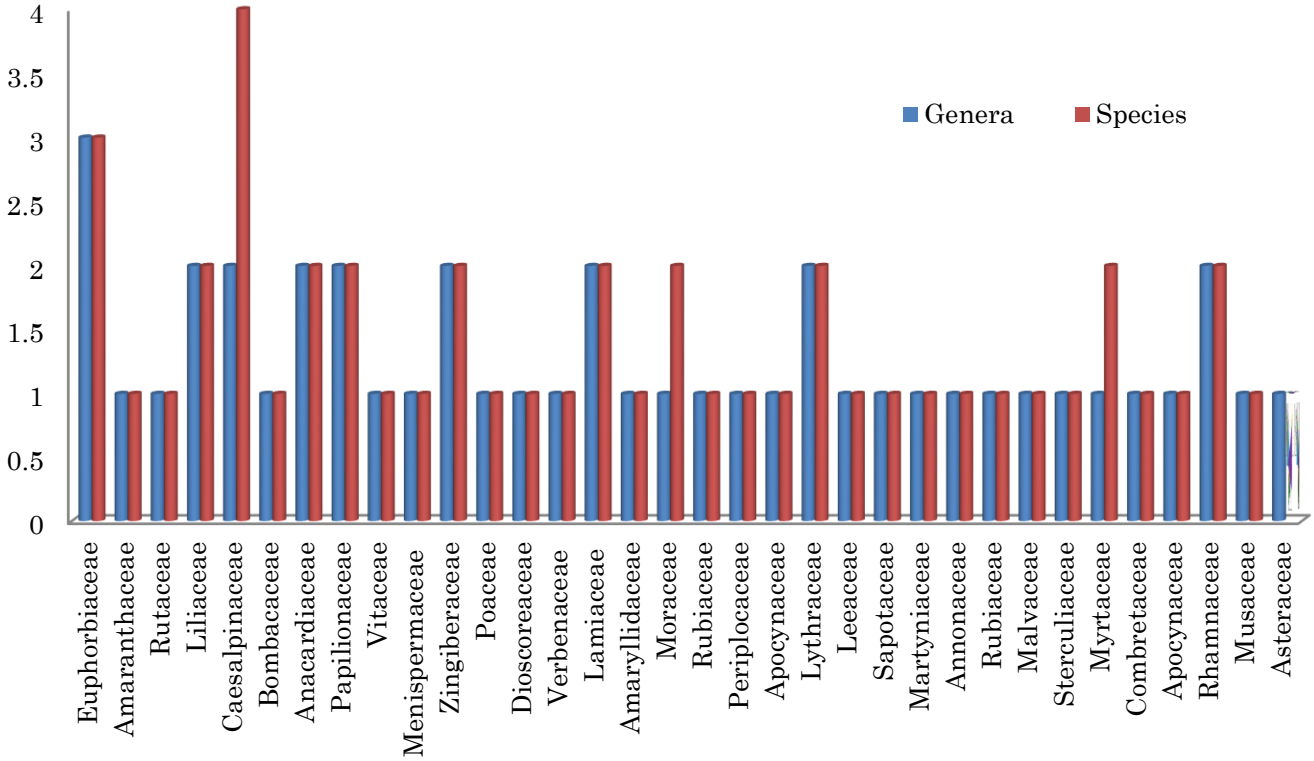


Figure 5 : Familes with their respective genera and species studied

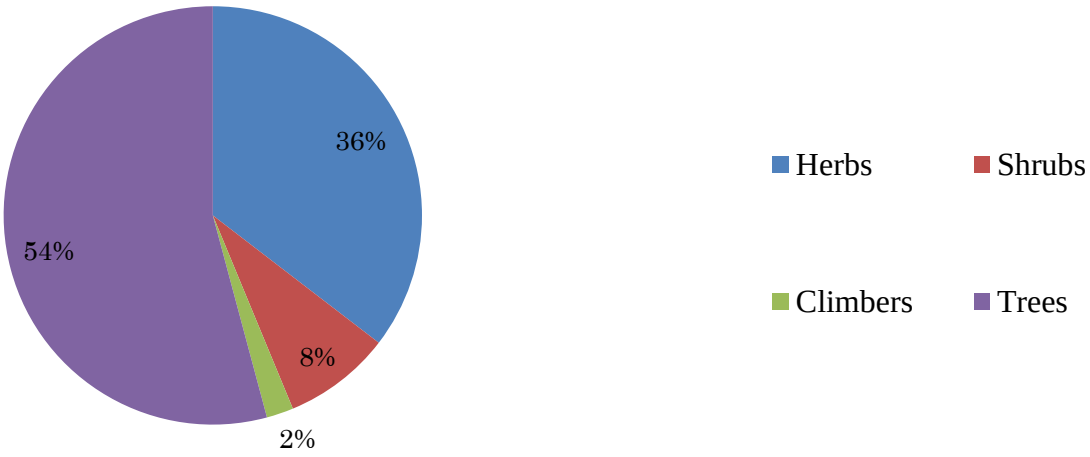


Figure 6 : Life form representation of medicinal plants

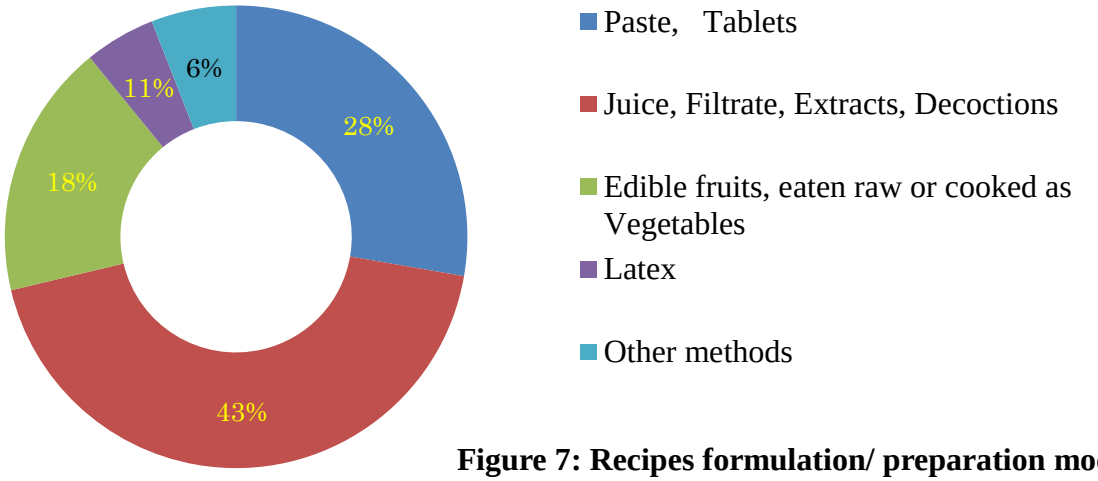


Figure 7: Recipes formulation/ preparation mode

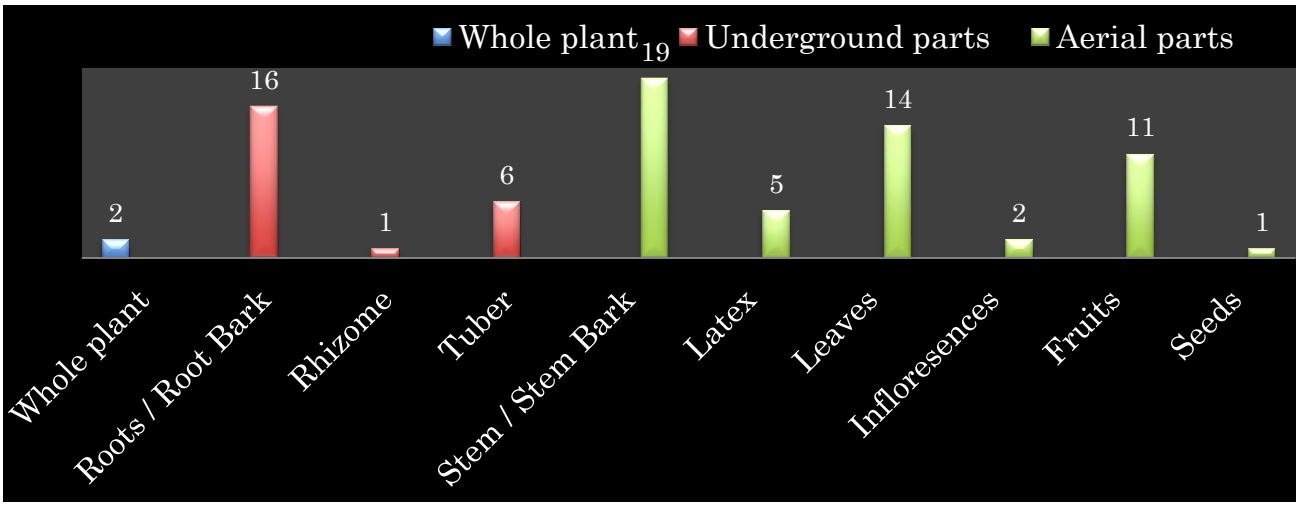


Figure 8: Plant parts used for Herbal drug preparation and Utilization

Photoplate 1

Photoplate 1 showing various pictures of authors taken during the collection and interviewing of the persons of the korku tribe.

Photoplate 2

Bahaunia vahilli

Chlorophytum tuberosum

Clerodendrum serratum

Costus speciosus

Curcilago orchoides

Curcuma pseudomontana

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Photoplate 3

Leae microphylla

Dioscorea bulbifera

Sterculi urens

Wrightia tinctoria

Cyathocline lutea

Butea monosperma

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4. CONCLUSION

This study contributed to the establishment of an inventory of plant based medicines used by korku tribe inhabited in Chikhaldara of Melghat Tiger Reserve, Amravati, Maharashtra, India. A total of 51 inhabitants were interviewed during the survey to document the indigenous knowledge about the use of wildly growing medicinal plants. The paper summarizes a adata of 48 plant species used to treat 101 common ailments. RFC values ranked *Syzygium cumini; Ficus religiosa, Euphorbia hirta, Butea monosperma* as top most cited and well known species in the area. A vast number of ailments were cured by this community with the help of these locally growing medicinal plants. The data provided by informants of the korku tribe clearly shows that they are still dependent on the indigenous knowledge of medicinal plants. This novel information has provided rich ethnopharmacological knowledge that will provide basis for new avenues in future for the pharmacological screening of novel natural compounds which can be used to improve healthcare systems. However, detailed pharmacological investigations must be carried out to improve the use of these medicinal plants globally. The study has also provided good information regarding the used plant parts, formulation and dosage which can be used as medicine. It will also provide various socioeconomic dimensions associated with the common people.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests with any author, agency or institution. And no funding was provided by any agency, institution or any individual.

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