



RESEARCH ARTICLE

Conservation and Sustainable Utilization of Medicinal Plants of Chandauli and Obra Forests of Uttar Pradesh

¹Rama Shankar, ²Sanjeev K Lale, ³Rajesh K Mudaiya

ABSTRACT

Aims: This article deals with the pharmaceutically important medicinal plants from Obra and Chandauli forest divisions of Uttar Pradesh. Exploration of the two adjoining forest divisions has been carried out during 2014 and 2017. The study was conducted to prepare records of medicinal plants in the study areas.

Outcome of the study: During exploration, records of pharmaceutically important medicinal plants with its Global Positioning System (GPS) and potential in the field were taken. The important medicinal plants, such as *Aegle marmelos*, *Bacopa monnieri*, *Boswellia serrata*, *Celastrus paniculata*, *Centella asiatica*, *Desmodium gangeticum*, *Gymnema sylvestris*, *Holarrhena antidysenterica*, *Oroxylum indicum*, *Solanum nigrum*, and *Terminalia tomentosa* were recorded, which can be undertaken for mass cultivation by the farmers by adding some other medicinal plants having commercial value, viz. *Aloe barbadensis* and *Withania somnifera*.

Conclusion: The study area is widely occupied by plants of *Holarrhena antidysenterica* and *Woodfordia fruticosa* for commercialization, whereas plants of *Oroxylum indicum*, *Gymnema sylvestre*, *Butea superba*, etc., need conservation in the habitat.

Keywords: Conservation, Exploration, Medicinal plants, Utilization.

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INTRODUCTION

Uttar Pradesh, the largest state of India, is located in the northern part of India bordering with states of Bihar in

the east, Uttaranchal and Delhi in the north, and Madhya Pradesh in the west and south. It covers an area of mostly Upper Gangetic plains and Bundelkhand just adjacent to Madhya Pradesh with a forest cover of tropics only. It occupies a land area of 27,164,25 km² and comprises of 75 districts.

The areas covered under extensive exploration in Uttar Pradesh are Chandauli and Obra falling into Vindhyan belt distinguished with the prominent river Sonbhadra and its tributaries. Chandauli forest divisions are surrounded by state of Bihar in the east, Varanasi and Mirzapur in the west and Bihar states in the east, and Robertsganj and Obra forest divisions in the south where the two studied areas of Chandauli and Obra divisions are meeting each other. Chandauli in the north is surrounded by Ghazipur district of Uttar Pradesh separated with river Ganga; eastern part of Obra is bounded by the state of Jharkhand, whereas in the west, it is surrounded by Madhya Pradesh. The northwestern part of Obra forest division is surrounded by Robertsganj forest division of Sonbhadra district and Chandauli and southern part by Renukoot forest division. Major areas are occupied by tribal and nontribal people.

As per the State Forest Report 2003, published by the Forest Survey of India, Uttar Pradesh has a forest cover of 21.833 km², which is 5.8% of the total geographical area of the state. These forests receive moderate rainfall and maintain a reasonable floral and faunal biodiversity.

Authors made an extensive exploration of Obra and Chandauli forest divisions for the first time with a noting on GPS status that has not yet been recorded in past.¹⁻¹⁶ Ethnobotany of Chandauli district was described,¹⁷ as well as the medicoethnobotanical studies of different tribes and areas of Sonbhadra district and Sonapati tribes of Sonbhadra district of Uttar Pradesh have also been carried out.¹⁸⁻²²

Exploration of ethnomedicinal plants in Obra and Chandauli forest areas has been conducted during 2013 to 2014 and 2016 to 2017 respectively. But these areas had not yet been explored in the past. The article represents the exploration of medicinal wealth with an emphasis on commercially viable medicinal plants in the explored areas. However, commercial exploration of medicinal

^{1,3}Research Officer (Botany), ²Research Officer (Ayurveda)

^{1,2}Regional Ayurveda Research Institute, Jhansi, Uttar Pradesh India

³Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Government of India, New Delhi, India

Corresponding Author: Rama Shankar, Research Officer (Botany), Regional Ayurveda Research Institute, Jhansi, Uttar Pradesh, India, Phone: +919436898754, e-mail: rshankar58@gmail.com

plants with GPS location has been studied. Emphasis on pharmaceutical potential for conservational aspects of traditionally used medicinal plants has been described for the first time in the concerned forest divisions falling under Vindhyan plateau areas of Uttar Pradesh.

MATERIALS AND METHODS

Extensive exploration has been conducted in different forest areas falling under Obra and Chandauli forest divisions of Uttar Pradesh. Records of the collections have been observed with GPS at different places with their distribution and been recorded at different spots. The herbarium vouchers were made by drying, poisoning, and mounting on herbarium sheets²³ and deposited in the Herbarium of Regional Ayurveda Research Institute. Authenticity of herbarium was made after consulting the Herbarium of the Institute, which was confirmed by comparing with herbarium sheets kept in the Herbarium of Botanical Survey of India, Allahabad. During field

observation, suitability of medicinal plants with high demand and commercial values as well as methods for conservation has been studied by bringing the sufficient germplasm in the Garden of Regional Ayurveda Research Institute, Jhansi. Attempts have also been made to know the potential of highly used medicinal plants in the area and the attempts made for commercialization as well as their conservation.

OBSERVATIONS

Extensive exploration of medicinal plants in Uttar Pradesh has been made in different seasons with an emphasis on pressure of exploitation and status as per GPS records for most of the forest areas in the state. The important medicinal plants distributed in the study areas of Obra and Chandauli forest divisions of Uttar Pradesh are given in Table 1. The potential in the field has also been recorded and presented through this communication (Maps 1 to 3).

Table 1: Medicinal plants from the studied areas of Chandauli and Obra forest divisions

Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
1	<i>Abrus precatorius</i> L.	Gunja, Chunahati	Seed, root—gastrointestinal, diarrhea including dysentery, aphrodisiac	Muzaffarpur beat (C) Sasanai (O)	7815 9790	N24°01.157 E083°09.579 N24°28.537 E083°09.327
2	<i>Abutilon indicum</i> L.	Atibala, Kanghi	Seed, root—aphrodisiac	Chikni beat (C) Obra (O)	7900 9928	N24°47.100 E083°14.154 N24°26.338 E082°57.942
3	<i>A. catechu</i> (L.f.) Willd.	Khadir	Heart wood—hypoglycemic, respiratory problems	Sasanai (O)	9780	N24°28.437 E083°09.321
4	<i>A. leucophloea</i> Willd.	Vitta Khadir	Root—hypoglycemic, respiratory	Muzaffarpur beat (C) Ranitali Gurmura Purvi (O)	7813 9879	N24°01.177 E083°09.669 N24°21.411 E083°01.832
5	<i>A. nilotica</i> L.	Babbul	Bark, gum, fruit—diarrhea, dysentery	Daxini Saraia	9855	N24°21.346 E083°20.371
6	<i>Achyranthes aspera</i> L.	Apamarga, Chirchiri	Seed, root—gastrointestinal	Gangapur beat (C) Sasanai beat (O)	7887 9807	N24°44.445 E083°16.886 N24°29.230 E083°12.267
7	<i>Acmella oleracea</i> (L.) R.K.Jansen	Akarkara	Whole plant—respiratory-throat, toothache	Mubarakpur beat (C)	7807	N24°58.111 E083°15.263
8	<i>A. uliginosa</i> (L.) R.Br.	Akarkara	Whole plant—anticaries	Ramgarh (O)	9863	N24°21.467 E083°20.830
9	<i>Acorus calamus</i> L.	Vacha	Rhizome—respiratory, cardiac	Ramgarh (O)	9862	N24°26.485 E083°17.975
10	<i>Adiantum lunulatum</i> Burm.f.	Hanspadi	Whole plant—respiratory problems	Mubarakpur beat (C)	7809	N24°58.114 E083°15.245
11	<i>Aegle marmelos</i> (L.) Corr.	Bilva, Bael	Fruit—gastrointestinal	Jamsoti beat (C)	7770	N26°49.900 E084°09.501
12	<i>Aerva lanata</i> (L.) Juss.	Gorakh Sikanja	Root—diuretic	Agori (O)	9900	N24°32.368 E082°57.137

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Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
13	<i>Ageratum conyzoides</i> L.		Leaf—bleeding	Saiwhoan beat (C)	7873	N24°53.844 E83°11.328
				Bageswati (O)	9865	N24°21.104 E083°08.906
14	<i>Ailanthus excelsa</i> Roxb.	Aralu, Arlu	Bark—skin diseases	Muzaffarpur beat (C)	7811	N24°01.159 E083°09.887
				Chakia range		
15	<i>Alangium salvifolium</i> (L. f.) Wang.	Ankol	Bark—gastrointestinal	Muzaffarpur beat (C)	7820	N24°01.121 E083°09.556
				Sasanai (O)	9781	N24°28.437 E083°09.321
16	<i>Albizzia lebbbeck</i> Benth.	Shirish	Bark—allergic, respiratory problems	North Narkati beat (C)	7869	N24°52.599 E083°10.380
				Jaimohani Range		
				Parsoi beat (O)	9932	N24°25.025 E082°55.855
17	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC.	Matsyakshi	Whole plant—gastrointestinal	Sasanai (O)	9799	N24°29.468 E083°12.357
18	<i>Amaranthus viridis</i> L.	Tandulikabhed, Chorai	Whole plant—gastrointestinal	Agori (O)	9891	N24°32.368 E083°57.137
19	<i>Annona squamosa</i> L.	Gundagatra, Sharifa	Fruit—malnutrition	West Gahila beat (C)	7864	N24°48.847 E083°15.447
				Agori (O)	9887	N24°32.858 E083°57.807
20	<i>Alstonia scholaris</i> (L.) R. Br.	Saptaparn, Chhitauni	Bark—malaria, fever	Jugail beat (O)	9920	N24°30.700 E082°50.555
21	<i>Anogeissus latifolia</i> Wallich.	Dhav, Dhavada Dhaurar	Bark, gum—hair tonic as shampoo, aphrodisiac	Dhuria beat	7821	N24°57.316 E083°09.650
				Chandraprabha range (C)		
				Machchhar mara Jharua (O)	9813	N24°29.758 E083°14.446
22	<i>Argemone mexicana</i> L.	Swarnshiri, Bhabhad	Latex, root—respiratory problem	Pathroar beat (C)	7862	N24°51.572 E083°21.318
				Machchhar mara (O)	9818	N24°29.949 E083°14.840
23	<i>A. orcholeuca</i> (Sweet) Lindl.	Swarnakshiri	Latex, root—respiratory problem	Ranitali Guramura (O)	9878	N24°21.175 E083°09.218
24	<i>Argyreia nervosa</i> (Burm. f.) Boje.	Vidhdaru	Root—tonic	Jugail (O)	9917	N24°30.700 E082°50.555
25	<i>Aristolochia indica</i> L.	Ishwari, Isarmula	Root—fever	Musakhanda beat (C)	7778	N26°49.900 E084°09.501
				Chakia range		
26	<i>Artocarpus heterophyllus</i> Lam.	Panas	Fruit—tonic	Jugail (O)	9919	N24°30.700 E082°50.555
27	<i>Artocarpus lakoocha</i> Roxb.	Lakooch, Badahar	Fruit—malnutrition	Muzaffarpur beat (C)	7817	N2401.139 E083°09.569
28	<i>Asparagus racemosus</i> Willd.	Shatavari, Shatavar	Root—tonic	Pathroar beat (C)	7856	N24°51.927 E083°21.152
				Naugarh range		
29	<i>Astercantha longifolia</i> Nees.	Kokilaksha	Seed, whole plant—aphrodisiac, hepatoprotective	North Narkati beat (C)	7871	N240 52.535 E0830 10.257
				Agori (O)	9915	N24°31.746 E082°52.152
30	<i>Azadirachta indica</i> A. Juss.	Nimba, Neem	Leaf, bark, seed—skin, diabetes	Ramgarh (O)	9861	N24°18.956 E083°22.733
31	<i>Bacopa moneierii</i> (L.) Pennel	Brahmi	Whole plant—gastrointestinal, nervine	Daxini Saraia (O)	9858	N24°21.467 E083°20.830
32	<i>Bambusa bambos</i> Druce.	Vansh, Bans	Bark—bleeding	Gangapur beat (C)	7891	N24°44.301 E083°16.789
33	<i>Barringtonia acutangula</i> (L.) Gaertn.	Nichal, Paniha	Fruit—tumors, antibacterial	Musakhanda beat (C)	7784	N26°49.900 E084°09.501
34	<i>Bauhinia racemosa</i> L.	Kanchanar	Bark—respiratory-throat glandular infection	Machchhar mara (O)	9814	N24°29.758 E083°14.446

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Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
35	<i>B. variegata</i> L.	Kanchanar	Bark—respiratory-throat	Jugail (O)	9918	N24°30.700 E082°50.555
36	<i>Blumea lacera</i> Burm. f.) DC.	Kukundar, Kukraundha	Leaf—bleeding	Chakaria (O)	9809	N24°29.461 E083°12.911
37	<i>Boerhaavia diffusa</i> L.	Punarnava	Root—hepatoprotective, urinary	Machchhrmara (O)	9817	N24°29.949 E083°14.840
38	<i>Bombax ceiba</i> L.	Salmali, Shemal	Root—aphrodisiac	Jugail beat (O)	9921	N24°30.700 E082°50.555
39	<i>Boswellia serrata</i> Roxb.	Shallaki, Salai	Gum—anti-inflammatory	Chandraprabha beat (C)	7827	N24°56.945, E083°10.361
				Subhash beat (O)	9844	N24°23.885 E083°13.231
40	<i>Brassica campestris</i> L.	Sarshapa, Sarson	Root, leaf, seed—malnutrition, rheumatism	Gangapur beat (C)	7886	N24°44.473, E083°16.826
41	<i>Bridelia retusa</i> Spreng.	Kamboji, Kasahi	Fruit—rheumatism	Jamsoti beat Chakia range (C)	7765	N26°49.900 E084°09.501
42	<i>Buchanania cochinchinensis</i> (Lour.) L. R. Almeida	Priyala, Chironji	Seed kernel—malnutrition	Jamsoti beat (C)	7776	N26°49.900 E084°09.501
				Subhash beat (O)	9847	N24°23.206 E083°14.225
43	<i>Butea monosperma</i> (Lam.) Taub.	Palash, Dhak	Bark—urinary	Muzaffarpur beat (C)	7812	N24°01.179 E083°09.673
				Taria (O)	9778	N24°28.380 E083°08.985
44	<i>B. superba</i> Roxb.	Lata Palash	Bark—urinary	Machchhar mara, Jharia (O)	9823	N24°31.110 E083°14.645
45	<i>Cajanus cajan</i> L.	Adhaki, Arhar	Seed—lactation deficiency	Mubarakpur beat (C)	7790	N24°58.270 E083°15.520
				Saraia Uttari (O)	9851	N24°22.184 E083°15.484
46	<i>Calotropis gigantea</i> (L.) R.Br.	Ark, Madar	Flower, latex—respiratory problem	Chikni beat	7904	N24°43.78 E083°17.120
				Kota (O)	9840	N24°26.729 E083°12.301
47	<i>C. procera</i> (Aiton) W. Aiton	Arka	Flower, latex—respiratory problem	Sasanai (O)	9806	N24°29.230 E083°12.267
48	<i>Cannabis sativa</i> L.	Bhanga, Bhang	Leaf—gastrointestinal	Agori (O)	9904	N24°32.314 E082°58.280
49	<i>Capparis sepiaria</i> L.	Gradhnakhi, Karerua	Root—boils, swelling	Sadapur beat (C)	7831	N24°59.600, E083°15.891
				Sasanai (O)	9811	N24°29.734 E083°14.171
				Agori (O)	9901	N24°32.941 E082°85.095
50	<i>Cardiospermum halicacabum</i> L.	Karnshota	Diaphoretic, diuretic	Machchhar mara, Jharia (O)	9830	N24°29.949 E083°14.840
51	<i>Carissa carandas</i> L.	Karmard, Karaunda	Fruit—gastrointestinal	Bageswati (O)	9860	N24°18.920 E083°22.842
52	<i>C. opaca</i> Stapf. ex.Haines.	Jangali Karavan	Gastrointestinal	Musakhand beat (C)	7786	N26°49.900 E084°09.501
53	<i>Casearia graveolens</i> Dalz.	—	Fruit—urinary tract disorder	Sadapur beat (C)	7835	N24°59.375, E083°04.142
54	<i>Cassine glauca</i> (Rottb.) Auntze <i>Elaeodendron glaucum</i>	Mamar	Leaf—headache, hysteria	Subhash (O)	9848	N24°23.206 E083°14.225
55	<i>Casearia tomentosa</i> Roxb.	Chilhak, Beri	Root—tonic	Agori beat (O)	9913	N24°31.668 E082°52.183

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Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
56	<i>Cayaponia laciniosa</i> (L.) C. Jeffrey Syn. <i>Bryonopsis laciniosa</i> (L.) Naudin	Shivalingi	Seed—gastrointestinal	Kota beat Dalla (O)	9841	N24°26.729 E083°12.301
57	<i>Celastrus paniculatus</i> Willd.	Jyotishmati	Seed, oil—gastrointestinal, nervine	Musakhand beat (C)	7785	N26°49.900 E084°09.501
58	<i>Celosia argentea</i> L.	Shitivarak	Seed—urinary disease	Sasanai (O)	9803	N24°29.230 E083°12.267
59	<i>Centella asiatica</i> (L.) Urban	Mandukparni	Whole plant—gastrointestinal, nervine	Chikni beat Mujhgai Range	7899	N24°47.105 E083°14.186
60	<i>Ceriscoides turgid</i> (Roxb.) Pirveng syn. <i>Gardenia. turgid</i> Roxb..	Mahapinditaru, Papara	Bark—skin diseases	Daxini Saraia (O)	9854	N24°20.776 E083°16.655
61	<i>Chrozophora rottleri</i> (Geister) A. Juss. ex Spreng.		Leaf—skin diseases	Obra beat (O)	9924	N24°29.603 E082°58.039
62	<i>Clerodendrum infortunatum</i> L..	Bhandir, Bhand	Leaf—gastrointestinal worm infestation	Mubarakpur beat (C)	7788	N24°58.270 E083°15.520
63	<i>C. phlomides</i> L. f.	Laghu Agnimantha, Gandharaula	Leaf—gastrointestinal worm infestation	Agori (O)	9889	N24°32.368 E082°57.137
64	<i>Cocculus hirsutus</i> (L.) Diels.	Patalgurugi Chilhant	Leaf—gastrointestinal acidity, aphrodisiac	Musakhand beat (C)	7781	N26°49.900 E084°09.501
65	<i>Cochlospermum religiosum</i> (L.) Alst.	Shemal	Gum—aphrodisiac	Machchhar mara Jharia (O)	9816 9822	N24°29.949 E083°14.840 N24°30.905 E083°14.103
66	<i>Combretum decandrum</i> Roxb.	Malakangani	Leaf —malarial fever	Kota, Dalla (O)	9834	N24°30.269 E083°15.332
67	<i>Convolvulus pluricaulis</i> L.	Shankhpushpi	Whole plant —nervine	Mubarakpur beat (C)	7805	N24°58.996 E083°15.271
68	<i>Convolvulus arvensis</i> L.	Nervine	Whole plant—nervine	Kota Dalla (O)	9837	N24°26.939 E083°07.628
69	<i>Cordia myxa</i> Roxb.	Sleshmatak, Lasora	Fruit—respiratory	Mubarakpur beat (C)	7795	N24°58.287 E083°15.533
70	<i>Crinum defixum</i> Ker Gawl.	Vishnukund	Bulb—fever, malaria	Padoti beat (C) Naugarh range	7865	N24°48.135 E083°17.459
71	<i>Crotalaria juncea</i> L.	Sana	Seed, flower—gastrointestinal worm infestation	Agori (O)	9885	N24°31.852 E083°57.775
72	<i>Cryptolepis buchmanii</i> Roem & Schult.	Krishna Sariva	Root—arthritis	Machchhar mara	9829	N24°31.009 E083°14.393
73	<i>Curculigo orchioides</i> Gaertn.	Talamuli, Kali Musli	Root—aphrodisiac tonic	North Naugarh beat (C)	7850	N24°51.737 E083°16.839
74	<i>Cuscuta reflexa</i> Roxb.	Akasvalli, Amarvela	Whole plant—gastrointestinal worm infestation, hair fall	Muzaffarpur beat (C)	7819	N24°01.121 E083°09.557
75	<i>Dalbergia sissoo</i> DC.	Shisham	Heart wood—gastrointestinal ulcer, diabetes	Machchhar mara (O)	9815	N24°29.949 E083°14.840
76	<i>Datura innoxia</i> L.	Dhattura	Leaf, seed—respiratory problem, pain	Agori (O)	9893	N24°32.368 E083°57.137
77	<i>D. metel</i> L.	Krishna dhatur, Kala Dhatura	Leaf, seed—respiratory problem, pain	North Mujhgai beat (C)	7879	N24°49.798 E084°10.723
78	<i>D. stramonium</i> L.	Dhatura	Leaf, seed—respiratory problem, pain	Agori (O)	9903	N24°31.421 E082°59.119
				Oroba Tanda beat (C)	7853	N24°51.824 E083°16.196
				Agori (O)	9911	N24°32.779 E082°57.796

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Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
79	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Vansh, Bans	Bark, inner cortex—bleeding, tonic	Chandraprabha beat (C) Sasanai (O)	7829 9794	N24°56.930 E083°10.307 N24°28.733 E083°09.306
80	<i>Dendrophthoe falcata</i> (L.f.) Etting.	Vikshadani, Banna	Uterine, respiratory problem	Saiwhoan beat (C) Daxini Saraia (O)	7877 9853	N24°53.582 E83°11.370 N24°20.784 E083°16.675
81	<i>Diospyros embryopteris</i> Pers.	Tindook, Tendu	Bark, fruit—gastrointestinal, respiratory	Musakhand beat (C)	7783	N26°49.900 E084°09.501
82	<i>Diospyros melanoxylo</i> Roxb.	Tendu, Biri	Fruit—gastrointestinal, respiratory problems	Sasanai (O)	9793	N24°28.661 E083°09.331
83	<i>Echinops echinatus</i> Roxb.	Ustakantak	Root—anti-inflammation	Chandraprabha beat (C) Saraia Uttari ((O)	7841 9849	N24°59.642 E083°04.902 N24°22.184 E083°15.484
84	<i>Eclipta prostrata</i> (L.) L.	Bhirangraja, Bhangaraia	Whole plant—gastrointestinal, hepatoprotective	Oroba Tanda beat Naugarh Range (C) Daxini Saraia (O)	7852 9856	N24°51.996 E083°16.204 N24°21.467 E083°20.830
85	<i>Ehretia laevis</i> Roxb.	Chamivriksh	Bark—gonorrhoea, syphilis	Mubarakpur beat (C) Sasanai (O)	7798 9795	N24°58.271 E083°15.529 N24°28.733 E083°09.306
86	<i>Euphorbia dracunculoides</i> Lam.	Shankhini, Titali	Whole plant, seed—skin diseases	Dalla (O)	9835	N24°26.939 E083°07.628
87	<i>E. hirta</i> L.	Dugdika Brihat, Duddhi	Whole plant—skin diseases	Mahadeva beat	7894	N24°43.841 E083°17.166
88	<i>E. neriifolia</i> L.	Snuhi, Sehud	Leaf—respiratory problem	Chandraprabha beat (C) Chandraprabha range Machchhar mara (O)	7825 9825	N24°56.953 E083°10.364 N24°31.110 E083°14.645
89	<i>E. thymifolia</i> L..	Dugdika Brihat, Duddhi	Whole plant—skin diseases, diarrhea	Sadapur beat (C) Jugail beat (O)	7836 9922	N24°59.517 E083°04.074 N24°30.700 E082°50.555
90	<i>Evolvulus alsinoides</i> L	Neel Shankhpushpi	Whole plant—gastrointestinal, nervine	Mubarakpur beat (C)	7802	N24°58.233 E083°15.277
91	<i>Ficus benghalensis</i> L.	Nigrodha, Bargad	Bark—gastrointestinal	Dhodhaba beat (C) Jugail (O)	7881 9816	N24°52.650 E083°07.464 N24°31.403 E082°51.813
92	<i>F. hispida</i> L.f.	Kastodumber, Kathagular	Bark, fruit—gastrointestinal	Sadapur beat (C)	7840	N24°59.653 E083°04.945
93	<i>F. racemosa</i> L.	Udumbar	Bark, fruit—gastrointestinal	Ranitali Gudmuro Purvi (O)	9884	N24°21.074 E083°09.223
94	<i>F. religiosa</i> L.	Ashwatha, Pipal	Bark—gastrointestinal	Gangapur beat (C) Saraia Uttari (O)	7889 9850	N24°44.379 E083°16.847 N24°22.184 E083°15.484
95	<i>F. sarmentosa</i> Buch. Ham ex. Sm.		Bark—gastrointestinal	Ranitali Guramura Purvi (O)	9867	N24°21.104 E083°08.906
96	<i>Firmiana simplex</i> (L.) W. Wight	Kadai	Gum—gastrointestinal, laxative	Chandraprabha beat (C)	7828	N24°56.940 E083°10.357
97	<i>Flacourtia indica</i> (Burm. F.) Merr.	Vikankat, Katai	Leaf—hepatoprotective, jaundice	Saiwhoan beat (C)	7874	N24°53.944 E83°11.203
98	<i>Fumaria indica</i> (Hausk.) Pugslay	Parpata	Whole plant—respiratory problems	Padoti beat (C)	7867	N24°48.250 E083°17.530

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Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
99	<i>Gardenia latifolia</i> DC.	Parpataki, Papara	Bark—skin diseases	Jamsoti beat (C)	7777	N26°49.900 E084°09.501
				Machchhar mara Jharia (O)	9827	N24°31.075 E083°14.517
100	<i>Grangea maderaspatana</i> (L.) Poir.	Mustaru	Whole plant—gastrointestinal, stomachic, eye disease	Mubarakpur beat (C)	7804	N24°58.117 E083°15.277
				Bageswati (O)	9857	N24°21.467 E083°20.830
101	<i>Gmelina arborea</i> Roxb.	Gumbhari, Gamar	Root, bark—tonic	Jamsoti beat (C)	7767	N26°49.900 E084°09.501
102	<i>Gymnema sylvestre</i> R. Br.	Meshshringi, Gudamar	Leaf—diabetes	Mubarakpur beat (C)	7803	N24°58.231 E083°15.279
				Machchhar mara, Jharia (O)	9828	N24°31.054 E083°14.462
103	<i>Haldina cordifolia</i> (Roxb.) Ridsdale	Haridru, Haldu	Heart wood—skin diseases	Mubarakpur beat (C)	7801	N24°58.247 E083°15.307
				Sasanai (O)	9797	N24°28.733 E083°09.306
104	<i>Hardwickia binata</i> Roxb.	Anjan, Ajan	Oil—pain, bleeding	Sasanai (O)	9791	N24°28.537 E083°09.327
105	<i>Hemidesmus indicus</i> (L.) R. Br.	Sariva, Duddhi	Root—arthritis	Mubarakpur beat (C)	7810	N24°58.113 E083°15.240
				Machchhar mara Jharia (O)	9820	N24°29.987 E083°14.603
106	<i>Helicteres isora</i> L.	Avartani, Aithi	Fruit—gastrointestinal	Mubarakpur beat (C)	7799	N24°58.269 E083°15.511
				Sasanai (O)	9786	N24°28.437 E083°09.321
107	<i>Holoptelia integrifolia</i> (Roxb.) Planch.	Chirabilva, Chilbil	Bark—skin diseases—leprosy, rheumatism	Sasanai (O)	9784	N24°28.437 E083°09.321
108	<i>Holarrhena antidysenterica</i> Wall.	Kutaj, Kurraya	Bark, seed—gastrointestinal, dysentery	Jamsoti beat (C)	7769	N26°49.900 E084°09.501
				Sasanai (O)	9788	N24°28.511 E083°09.322
109	<i>Hyptis suaveolens</i> Poit.	Vantulsi	Leaf—respiratory problem	Sasanai (O)	9798	N24°28.733 E083°09.306
110	<i>Ichnocarpus frutescens</i> (L.) R. Br.	Kali Dudddhi	Root—gastrointestinal, arthritis	Muzaffarpur beat (C)	7814	N24°01.169 E083°09.663
				Sasanai (O)	9789	N24°28.511 E083°09.322
111	<i>Indigofera tinctoria</i> L.	Neel	Leaf—hair tonic	Jugail (O)	9923	N24°30.354 E082°53.245
112	<i>Justicia adhatoda</i> L.	Vasa/Adusa	Root, leaf—respiratory problem—cough, rheumatism	Pathroar beat (C)	7859	N24°51.656 E083°21.065
				Agori (O)	9886	N24°32.858 E082°57.807
113	<i>Lagerstroemia parviflora</i> Roxb.	Jarul	Leaf—diabetes, cardiac	Jamsoti beat (C)	7773	N26°49.900 E084°09.501
				Sasanai (O)	9785	N24°28.437 E083°09.321
114	<i>Lannea coromandelica</i> (Houtt.) Merr.	Jingani, Jigna	Bark—anti-inflammatory, antioxidant	Sasanai (O)	9792	N24°28.537 E083°09.327
115	<i>Lannea grandis</i> (Dennst.) Engl.	Jigani	Bark—anti-inflammatory	Mahadeva beat (C)	7898	N24°43.259 E083°17.341
116	<i>Limonia crenulata</i> Roxb.	Kapitapatri, Kaith	Fruit—gastrointestinal	Musakhand beat (C)	7779	N26°49.900 E084°09.501
117	<i>Lathyrus sativus</i> L.	Triput, Khesari	Leaf, seed—malnutrition	Ranitali Gurmura Purvi	9870	N24°21.127 E083°08.898

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Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
118	<i>Leucas cephalitis</i> Spreng.	Dronpushpi	Leaf—sinusitis	Machchhar mara, Jharia (O)	9832	N24°29.461 E083°12.911
119	<i>Linum utisatisimum</i> L.	Atasi, Alasi	Seed, oil—joint pain	Gangapur beat (C)	7890	N24°44.325 E083°16.801
				Saraia Uttari (O)	9852	N24°22.184 E083°15.484
120	<i>Litsea chinensis</i> Lamk.	Madasak, Meda	Leaf, fruit—gastrointestinal mosquito	Oroba Tanda beat (C)2	7855	N24°51.731 E083°16.175
121	<i>Madhuca indica</i> J.F.Gmel	Madhuk, Mahua	Flower—aphrodisiac	Saiwhoan beat (C)	7875	N24°53.591 E83°11.384
				Machchhar mara (O)	9819	N24°29.987 E083°14.603
122	<i>Mallotus nudiflorus</i> (L.) Kulju & Welzen	Gutel	Root—tonic	Agori (O)	9907	N24°32.693 E082°57.958
123	<i>M. philippensis</i> Muell.-Arg.	Kampillak, Roina	Fruit—gastrointestinal	Mubarakpur beat (C)	7794	N24°58.281 E083°15.531
				Ranitali Guramura Purvi (O)	9874	N24°21.203 E083°09.117
124	<i>Mangifera indica</i> L.	Amra	Fruit—malnutrition	Sasanai (O)	9804	N24°29.230 E083°12.267
125	<i>Marsilea minuta</i> L.	Suni sannaka	Whole plant—nervine	Saiwhoan beat (C)	7876	N24°53.590 E83°11.381
				Agori (O)	9914	N24°31.746 E082°52.152
126	<i>Melia azedarach</i> L.	Mahanimb, Bakayan	Bark—skin diseases, diabetes	North Narkati beat (C)	7870	N24°52.587 E083°10.277
				Kota (O)	9839	N24°26.826 E083°08.764
127	<i>Mimusops hexandra</i> Roxb.	Rajdan, Khirmi	Fruit—malnutrition	Muzaffarpur beat (C)	7818	N24°01.122 E083°09.559
128	<i>Mitragyna parviflora</i> (Roxb.) Kurth.	Toru Kadamb, Phhadu	Bark—muscular pain	Jamsoti beat (C)	7772	N26°49.900 E084°09.501
				Machchhar mara (O)	9812	N24°29.734 E083°14.171
129	<i>Morus alba</i> L.	Toot	Fruit—gastrointestinal	Mubarakpur beat (C)	7797	N24°58.277 E083°15.531
130	<i>Mucuna pruriens</i> (L.) DC.	Kapikacchu	Seed—aphrodisiac tonic	Machchhar mara Jharia (O)	9821	N24°30.269 E083°15.332
131	<i>Murraya paniculata</i> (L.) Jack.	Saurabh Neem Meethi Nim	Leaf—gastrointestinal	Dhusuria beat (C)	7824	N24°57.403 E083°09.507
132	<i>Nigella sativa</i> L.	Upkunchika	Seed—gastrointestinal	Ranitali Guramura Purvi (O)	9882	N24°21.104 E083°08.906
133	<i>Nyctanthus arbortristis</i> L.	Parijat, Har singar	Leaf—fever, malaria	Jamsoti beat (C)	7766	N26°49.900 E084°09.501
134	<i>Ocimum americanum</i> L. Syn. <i>Ocimum canum</i> Sims	Barbari, Mamri	Leaf—respiratory	Agori (O)	9905	N24°32.675 E082°58.006
135	<i>Opuntia robusta</i> J.C. Wendle	Nagaphani	Phylloclade—swelling, pain	Agori(O)	9896	N24°32.952 E082°55.182
136	<i>Oroxylum indicum</i> (L.) Vent.	Shyonak	Root, bark—gastrointestinal, hepatic cancer	Sadapur beat (C)	7843	N24°59.629 E083°04.751
				Kota, Dalla (O)	9836	N24°26.939 E083°07.628
137	<i>Oxalix corniculata</i> L.	Changari, Charpatia	Whole plant—gastrointestinal	Pathroar beat (C)	7860	N24°51.647 E083°21.139
				Ranitali Gurmura Purvi (O)	9869	N24°21.104 E083°08.906
138	<i>Peristrophe bicalyculata</i> (Retz.) Nees	Kakjangha	Whole plant—respiratory	Sasanai (O)	9801	N24°29.468 E083°12.357

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Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
139	<i>Physalis minima</i> L.	Parpoti, Pukhuawa Chirpota	Fruit—gastrointestinal	Mahadeva beat (C)	7896	N24°43.341 E083°17.386
				Ranipatti Guramara (Purvi) (O)	9880	N24°21.104 E083°08.906
140	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Jangal Jalebi	Fruit—malnutrition	Parsoi beat (O)	9930	N24°25.559 E082°55.324
141	<i>Plumbago zeylanica</i> L.	Chittrak	Root—gastrointestinal	Mahadeva beat (C)	7897	N24°43.287 E083°17.356
				Angori (O)	9908	N24°32.698 E082°57.941
142	<i>Pongamia pinnata</i> (L.) Merr.	Karanja, Karanj	Seed, oil—skin diseases	Sadapur beat (C)	7839	N24°59.551 E083°04.058
				Sasanai (O)	9779	N24°28.437 E083°09.321
143	<i>Pterocarpus marsupium</i> Roxb.	Bijak, Bijasar	Heart wood—diabetes	Jamsoti beat (C)	7768	N26°49.900 E084°09.501
145	<i>Randia spinosa</i> Keary	Madanphal, Mainahar	Bark—respiratory, rheumatism	Pathroar beat (C)	7858	N24°51.681 E083°21.089
146	<i>R. uliginosa</i> DC.	Pindar, Pedar	Bark—respiratory, rheumatism	North Naugarh beat (C)	7847	N24°51.718 E083°16.885
147	<i>Ricinus communis</i> L.	Erand, Rendi	Leaf, seed, oil—rheumatism, gastrointestinal disorders	Chikni beat (C)	7901	N24°43.885 E083°17.145
				Agori (O)	9902	N24°32.368 E082°57.137
148	<i>Rungia parviflora</i> Nees	Parpata	Whole plant—respiratory problems	Subhash beat (O)	9846	N24°23.844 E083°13.221
149	<i>Saccharum benghalensis</i> Retz.	Shar	Root—urolithic	Ranitali Guramura Purvi (O)	9864	N24°20.712 E083°05.612
150	<i>S. officinarum</i> L.	Ikashu, Ganna	Root, stem juice—hepatoprotective, jaundice	Mubarakpur beat (C)	7796	N24°58.289 E083°15.535
151	<i>S. spontaneum</i> L.	Kash	Root—urolithic	Obra beat (O)	9926	N24°28.006 E082°57.933
152	<i>Salvia plebeia</i> R. Br.		Antioxidant	Ranitali Gurmura Purvi (O)	9872	N24°21.104 E083°08.906
153	<i>Schliechera oleosa</i> (Lour.) Oken	Koshamra, Kusum	Skin diseases	Dhodhaba beat (C)	7883	N24°52.637 E083°07.441
				Sasanai (O)	9796	N24°28.733 E083°09.306
154	<i>Scoparia dulcis</i> L.	Meethi Patti	Leaf, shoot—hypoglycemic	Saiwhoaan beat (C)	7878	N24°53.573 E83°11.359
				Ranitali Gurmura Purvi (O)	9873	N24°21.097 E083°08.897
155	<i>Shorea robusta</i> Gaertn. F.	Shal, Shakhu	Heart wood skin disease	North Naugarh beat (C)	7846	N24°51.718 E083°16.885
				Subhash beat (O)	9843	N24°23.849 E083°13.185
156	<i>Selaginella bryopteris</i> (L.) Baker	Sanjivvani	Whole plant—hepatoprotective, cardiac	Machchhar mara, Jharia (O)	9826	N24°31.110 E083°14.645
157	<i>Semecarpus anacardium</i> Roxb.f.	Bhallatak, Bhilva	Fruit—tonic, anti-aging	West Gahila beat (C) Naugarh range	7863	N24°47.862 E083°21.497
158	<i>Senna occidentalis</i> (L.) Link	Kasamarda	Leaf, seed—anti-inflammatory	Agori (O)	9895	N24°33.129 E083°56.718
159	<i>S. tora</i> (L.) Roxb.	Chakramarda	Leaf, seed—skin diseases	Ranitali Gurmura Purvi	9868	N24°21.104 E083°08.906
160	<i>Sida acuta</i> Burm. f.	Bala	Root—hepatoprotective tonic	Sasanai(O)	9800	N24°29.468 E083°12.357
162	<i>S. cordata</i> (Burm. f.) Boiss.	Bhumi bala	Root, seed—hepatoprotective, aphrodisiac tonic	Dhusuria beat (C)	7823	N24°57.334 E083°09.406
				Sasanai (O)	9802	N24°29.468 E083°12.357

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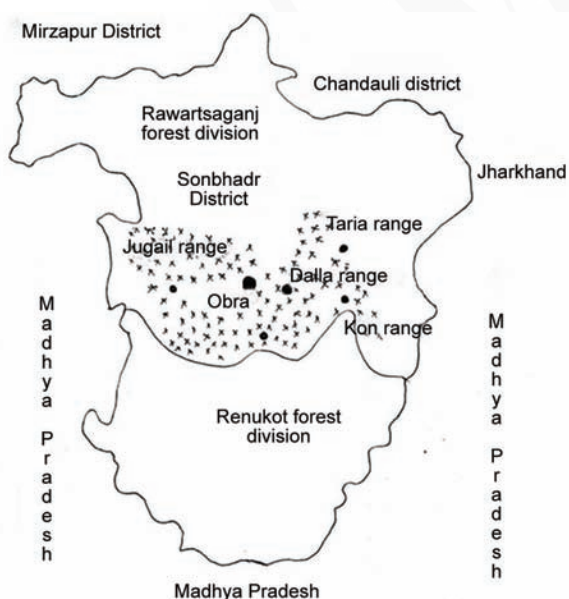
Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
163	<i>S. cordifolia</i> L.	Bala, Bariyar	Root—aphrodisiac	Mubarakpur beat (C) Agori (O)	7800 9906	N24°58.258– 083°15.405 N24°32.675 E082°58.006
164	<i>Smilax zeylanica</i> L.	Ram Datun	Root—tonic	North Naugarh beat (C)	7845	N24°51.710 E083°16.927
165	<i>Solanum incanum</i> L.	Vrihati	Root, fruit—respiratory problems	Musakhand beat (C)	7787	N26°49.900 E084°09.501
166	<i>S. nigrum</i> L.	Kakamachi, Makoy	Shoot—gastrointestinal, hepatic	Chikni beat (C) Sasanai (O)	7902 9890	N24°43.810 E083°17.143 N24°32.368 E083°57.137
167	<i>S. virginianum</i> Schrad & Wendle	Kantakari, Bhatakataiya	Root, fruit, shoot—respiratory problems	Sadapur beat (C) Chakaria (O)	7842 9810	N24°59.632 E083°04.857 N24°29.493 E083°12.911
168	<i>Sphaeranthus indicus</i> L.	Mundika, Gorakhmundi	Flower—aphrodisiac	Pathroar beat (C) Sasanai (O)	7857 9805	N24°51.699 E083°21.036 N24°29.230 E083°12.267
169	<i>Stereospermum suaveolens</i> DC.	Patala, Andhi	Root—tonic, immunity	North Naugarh beat (C)	7848	N24°51.737 E083°16.839
170	<i>Streblus asper</i> Lour.	Shaktak, Shihor	Bark—antibacterial, tuberculosis	Sadapur beat (C)	7833	N24°59.487 E083°15.877
171	<i>Strychnos nux vomica</i> L.	Kuchila	Seed—anti-inflammatory	Agori (O)	9910	N24°32.810 E082°57.845
172	<i>Syzygium cuminii</i> (L.) Skeels	Jumbo, Jamun	Fruit, seed—gastrointestinal, diarrhea, diabetes	Gangapur beat (C) Agori (O)	7888 9899	N24°44.409 E083°16.946 N24°32.941 E082°85.095
173	<i>S. heyneanum</i> Wall.	Nadi Jambu, Jambu	Fruit, seed—gastrointestinal, diarrhea, diabetes	Padoti beat (C) Subhash beat (O)	7868 9842	N24°48.472 E083°17.469 N24°23.849 E083°13.185
174	<i>Tamarindus indica</i> L.	Amlika, Imli	Fruit, seed, leaf, bark—gastrointestinal, sprain	Pathroar beat (C) Agori (O)	7861 9912	N24°51.644 E083°21.172 N24°32.825 E082°57.884
175	<i>Tectona grandis</i> L.f.	Shak, Shagaun	Heart wood—skin diseases	Agori (O)	9929	N24°26.193 E082°56.939
176	<i>Tephrosia purpurea</i> (L.) Pers.	Sharpunkha	Whole plant—skin diseases, leukoderma, diarrhea	Kota (O)	9838	N24°26.826 E083°08.764
177	<i>Terminalia arjuna</i> W.& A	Arjuna	Bark—cardiac	Sadapur beat (C) Ranitali Gurmura Purvi (O)	7830 9866	N24°59.657 E083°15.935 N24°21.104 E083°08.906
178	<i>T. bellirica</i> Roxb.	Bibhitaki, Bahera	Fruit—gastrointestinal	Sadapur beat (C)	7834	N24°59.399 E083°04.123
179	<i>T. tomentosa</i> W.& A.	Asana	Bark—cardiac	Sadapur beat (C) Ranitali Guramara Pashchimi (O)	7838 7880	N24°59.551 E083°04.058 N24°21.434 E083°20.515
180	<i>Trichosanthes dioica</i> Roxb.	Patol, Parwal	Fruit—gastrointestinal	Mahadeva beat	7895	N24°43.770 E083°17.187
181	<i>Trigonella foenum-graeceum</i> L.	Methika	Seed—hypoglycemic	Mubarakpur beat (C)	7792	N24°58.279 E083°15.527

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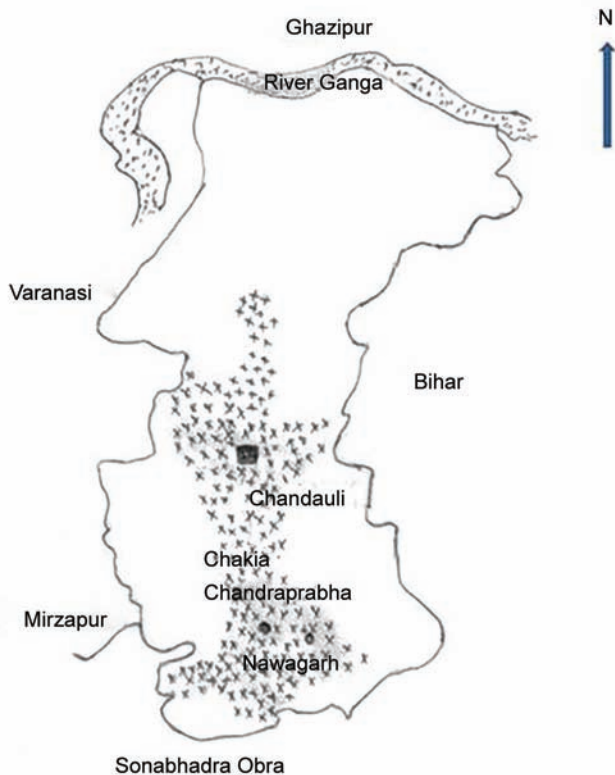
Sl. no.	Botanical name	Vernacular name	Part used—disease	Locality found	Herbarium specimen no.	Geographical location
182	<i>Typha angustata</i> Bory & Chaub. <i>Typha domingensis</i> Pers syn.	Gundra	Root—urolithic	Obra	9925	N24°28.006 E082°57.933
183	<i>Urena lobata</i> L.	Vanabhenda	Root—aphrodisiac tonic	North Narkati beat (C) Machchhar mara Jharia (O)	7872 9833	N24°52.512 E083°10.212 N24°29.468 E083°12.357
185	<i>Vanda tassellata</i> Lodd.	Virkshadani, Banna	Root—tonic, arthritis	North Naugarh beat (C) Agori (O)	7844 9894	N24°51.701 E083°16.913 N24°33.129 E083°56.718
186	<i>Ventilago denticulata</i> Wall.	Kaivartika, Kevati	Bark—cancer, skin diseases	Jamsoti beat (C) Sasanai (O)	7775 9787	N26°49.900 E084°09.501 N24°28.437 E083°09.321
187	<i>Vernonia cinneria</i> Less.	Sahadevi	Whole plant, root—respiratory	Mahadeva beat Mujhgai Range Agori (O)	7892 9892	N24°43.776 E083°17.224 N24°32.368 E083°57.137
188	<i>Vicia sativa</i> L.		Seed—malnutrition	Ranipatti Gurmara Purvi (O)	9871	N24°21.104 E083°08.906
189	<i>Vitex negundo</i> L.	Nirgundi	Leaf—rheumatism	Ranipatti Gurmara (Purvi) (O)	9876	N24°21.175 E083°09.218
190	<i>Woodfordia fruticosa</i> Kurz..	Dhataki, Dhay	Flower—gastrointestinal	Muzaffarpur beat (C) Chakaria (O)	7816 9808	N24°01.144 E083°09.573 N24°29.461 E083°12.911
191	<i>Wrightia tinctoria</i> R.Br.	Swet kutaj	Bark, seed—gastrointestinal	Chandraprabha beat (C) Machchhar mara Jhari (O)	7824 9927	N24°56.879 E083°10.385 N24°31.079 E083°14.770
192	<i>Xanthium strumarium</i> L.	Artagal, Karoni Badar	Leaf—malarial fever	Obra beat (O) Ranipatti Guramara Purvi (O)	9875	N24°28.003 E082°57.942 N24°21.074 E083°09.223
193	<i>Zizyphus xylopyra</i> Willd.	Ghonta, Ghot	Fruit—gastrointestinal	Dhusuria beat (C)	7822	N24°57.349 E083°09.630



Map 1: Eastern Uttar Pradesh showing Chandauli and Obra forest divisions



Map 2: Chandauli forest division showing areas under study



Map 3: Sonbhadra district showing areas under study in Obra forest division

Exploration

Exploration of medicinal plants needs to identify areas for maximum occurrence of commercially viable species of medicinal plants, potential of such species in a particular area for commercial utility, less occurring medicinal plant species whose conservation is the need of time, utilization of medicinally important species under local health practices or other ways of use, such as food, ornamental, or timber, and the land suitable for undertaking medicinal plant cultivation. During various explorations

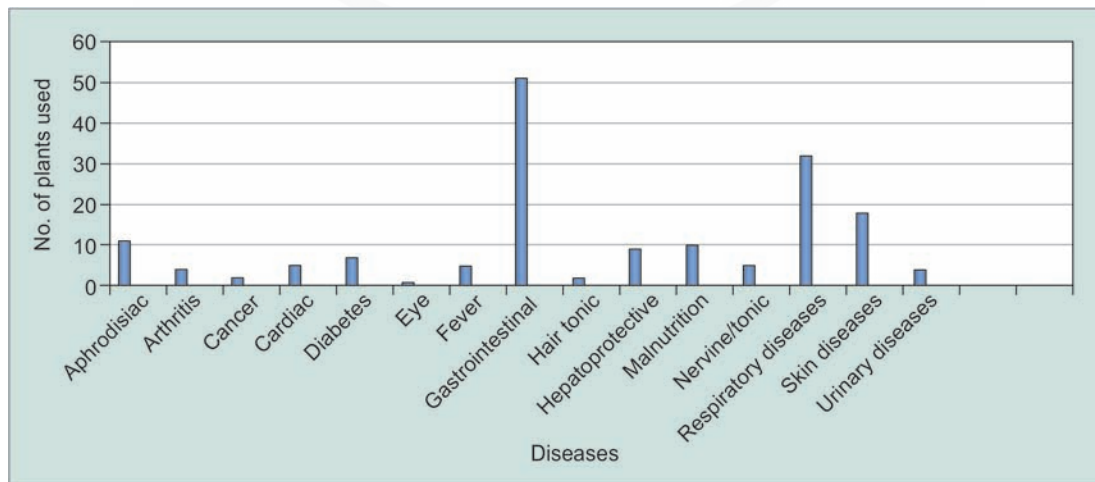
in the state of Uttar Pradesh, all such types of status have been recorded. During the course of exploration, it was observed that local traditional healers are providing treatment of weakness, jaundice, fever, etc., by the use of locally available herbs, such as *Acacia catechu*, *Acacia concinna*, *Achyranthes aspera*, *Adiantum lunulatum*, *Aegle marmelos*, *Alangium salvifolium*, *Boswellia serrata*, *Cardiospermum halicacabum*, *Carissa carandas*, *Centella asiatica*, *Coccinia indica*, *Curcuma longa*, *Curculigo orchioides*, *Cuscuta reflexa*, *Datura stramonium*, *Desmodium gangeticum*, *Eclipta prostrata*, *Gymnema sylvestris*, *Haldina cordifolia*, *Hemidesmus indicus*, *Holarrhena antidysenterica*, *Mallotus philippensis*, *M. nudiflora*, *Oroxylum indicum*, *Phyllanthus amarus*, *Plumbago zeylanica*, *Sida acuta*, *S. cordata*, *S. cordifolia*, *S. rhombifolia*, *Smilax glabra*, *Solanum nigrum*, *S virginianum*, *Woodfordia fruticosa*. People in these areas are unaware of commercial collection and marketing of medicinal plants as most of the areas are agriculture land. Distribution of medicinal plants in different studied forest areas falling under Obra and Chandauli forest divisions as per GPS markings is described in Table 1.

Disease-wise status of plants used has been represented through bar diagram (Graph 1).

Conservation

Conservation of medicinal plants in sub-Himalayan Region of Uttar Pradesh to which the study areas belong needs for enriching the locally available medicinal plants in their vicinity which has the commercial value as it is fact, due to shortage of plant for the root of *Desmodium gangeticum*, the whole plant is traded in market with three different plants in different markets in the name of Shalparni. Similar is the case for certain other plants also.

Maximum number of plants belong to family Fabaceae having 16, followed by Euphorbiaceae with 10, Moraceae



Graph 1: Graphical representation of number of plants used in different diseases

with 9, Asteraceae with 8, Solanaceae with 7, Apocynaceae, Malvaceae with 6, Amaranthaceae, Anacardiaceae, Asclepiadeaceae, Caesalpiniaceae, Combretaceae, Poaceae, Rubiaceae and Verbenaceae with 5, Acanthaceae, Convolvulaceae, Mimosaceae, Lamiaceae and Lythraceae with 4, Amaryllidaceae, Bignoniaceae, Boraginaceae, Celastraceae, Cucurbitaceae, Ebenaceae, Meliaceae, Myrtaceae, Nyctaginaceae, Papaveraceae, Rhamnaceae, Rutaceae, Salicaceae, Sapindaceae 2, Sapotaceae, Scrophulariaceae, Sterculiaceae and Typhaceae with 2 and remaining Adiantaceae, Alangiaceae, Apiaceae, Araceae, Aristolochiaceae, Bombaccaceae, Brassicaceae, Burseraceae, Cactaceae, Cannabaceae, Cappariaceae, Cochlospermaceae, Dipterocarpaceae, Flaccortiacae, Fumariaceae, Hypoxidaceae, Lauraceae, Liliaceae, Linaceae, Loranthaceae, Loganiaceae, Marsiliaceae, Menispermaceae, Oxalidaceae, Pumbginaceae, Ranunculaceae, Selaginaceae¹, Simarubiaceae, Ulmaceae, Zingiberaceae with single species.

Disease-wise analysis has been given in graphical form.

DISCUSSION

Ethnobotany of only Chandra Prabha Wildlife Sanctuary of Chandauli district has been described,¹⁷ whereas the records on Medico-Ethno Botanical investigations of Sonbhadra district and Sonapati tribes of Sonbhadra district of Uttar Pradesh are also available.¹⁸⁻²² Through present communication, authors expressed the GPS status of traditional medicinal plants of Obra forest division falling under Sonbhadra district of Uttar Pradesh.

Unlike experimental experience in the states of north-east India, Chhattisgarh and Uttarakhand have adapted conservation aspects for selected medicinal plants in different suitable localities. However, Madhya Pradesh and Uttar Pradesh are concentrating toward cultivation of *Mentha piperita* and *Chlorophytum borivillianu*, and occasionally *Aloe barbadensis* cultivation. Karnataka and Kerala are concentrating toward cultivation of medicinal plants with dual used, such as *Cinnamomum zeylanica*, *Elettaria cardamomum*, *Santalum album*, and *Pterocarpus santalinus*.

Network of conserving about 30 species of medicinal plants has been initiated by National Medicinal Plants Board, out of which *Aegle marmelos*, *Bacopa monnieri*, and *Emblia officinalis* are being cultivated in Uttar Pradesh. However, large number of medicinal plants growing in Uttar Pradesh are in great demand by the pharmaceuticals. In present, situation plants of *Boerhaavia diffusa*, *Fumaria indica*, *Ocimum tenuiflorum*, *Solanum virginianum*, and *Tinospora cordifolia* are in great demand. Experience of including other species in the states is gradually

increasing. There is no better scope for conservation of medicinal plants in wild under in situ conservation. However, only cultivation can be made for few species of plants, such as *Anogeissus latifolia*, *Gymnema sylvestris*, and *Woodfordia fruticosa*.

Traditional healing practitioners are also gradually reducing from most part of the country and need revitalization through encouraging the knowledge-bearing healers.

Cultivation of medicinal plants is also the criteria for conservation through mixed cropping with agricultural crops which is not in practice as introduction of timber plants, such as *Shorea robusta* and *Tectona grandis*. Most of the conservation areas are confined to the teak forests and road sides only. There is need of motivation of farmers toward cultivation practice of medicinal plants in the waste land and agriculture farms only. Cultivation of *Andrographis paniculata*, *Bacopa monnieri*, *Celastrus paniculatus*, *Oroxylum indicum*, and *Strychnos nux vomica* can be made in the waste land for commercial use of whole plant, root, and bark which are collecting plants in unplanned and nonscientific manner.

The studied areas are mostly the forest hilly lands with less agriculture occupied by the local inhabitants and tribal migrants. Hence, conservation of medicinal plants in the said areas is having a major benefit through *in situ* conservation of highly viable medicinal plants side by side, and cultivation of medicinal plants of both the options is the only way to develop sustainability of the medicinal plants in the areas. However, 192 species of medicinal plants have been collected and identified from different GPS locations. Cultivation can be made in the waste land and agriculture field only through mixed cropping and forest land instead of cultivating *Acacia auriculiformis* and *A mangium*, which is in common practice. Only few traditional healers are practicing the local traditional method of treatment by the use of locally available herbs. This knowledge needs to be exchanged with the folk healers of adjoining areas also.

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हिन्दी सारांश

उत्तर प्रदेश के चंदौली और ओबरा वनों के औषधीय पौधों का संरक्षण और सही उपयोग

¹रमा शंकर, ²संजीव के लाले, ³राजेश के मुद्दिया

उद्देश्य: प्रस्तुत शोधपत्र में उत्तर प्रदेश के चंदौली तथा ओबरा दो संलग्न वनखंडों के पारम्परिक प्रणाली में उपयोगी औषधीय पौधों की प्रचुरता व वर्तमान में की जाने वाली उपयोगिता के उद्देश्य से प्रकाशित किया जा रहा है।

रूपरेखा: यह अध्ययन वर्ष 2014 तथा 2017 में पूर्ण कर शोधपत्र का रूप तैयार किया गया है। विभिन्न सर्वेक्षणों के दौरान प्राप्त औषधीय पौधों का जी पी एस विवरण तथा उपस्थिति के क्षेत्रों में उनकी प्रचुरता का विवरण तैयार किया गया है।

उपलब्धियां: अध्ययन क्षेत्र के अंतर्गत बेल, ब्रह्मी, शल्लकी, ज्योतिष्मती, मंडूकपर्णी, शालपर्णी, मेषश्रुंगी, कुटज, श्योनाक, काकमाची तथा असन आदि प्रमुख पाये गए हैं जिनका किसानों द्वारा कृषि विस्तारण हेतु लिया जा सकता है।

निष्कर्ष: अध्ययन क्षेत्रों में पाई जाने वाली उपर्युक्त वनौषधियों के संरक्षण व नियमित उपयोग के साथ कुछ अन्य आर्थिक महत्व के औषधीय पौधों जैसे घृतकुमारी, श्योनाक व अश्वगंधा, को कृषिकरण द्वारा तथा कुटज व धातकी को ब्यापार हेतु प्रयोग किया जा सकता है।

