

Case Study

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A Case Study of Medicinal Plants in Govt. Gramya Bharti College, Korba, Chhattisgarh, India

Ranu Rathore^{1*} and Umashankar Chandra²

Govt. Gramya Bharti College, Hardibazar, Korba, Chhattisgarh, India

**Corresponding author*

ABSTRACT

Govt.Gramya Bharti College at Hardibazar, Korba, Chhattisgarh, India conducted a survey on the diversity of medicinal plants. The M.Sc. students' observations and field visits to every location on our college campus served as the basis for this survey. A total of 70 species medicinal plants were identified during the survey tour. This survey's primary goal is to gather information on the medicinal plants that can be found on our college campus in order to protect its priceless bio-resources. Following the field study, observed medicinal plants were identified, and existing literature was sought for information on their therapeutic applications. 46 families include the total of 70 species of medicinal plants that have been recognized. 35 of the 70 kinds of medicinal plants were trees, 13 were shrubs, and 18 were herbaceous. The college campus was found to have a high concentration of plants belonging to the Fabaceae family, totaling 05 plants, and a second largest plant family, the Rutaceae family, with 03 plants detected. Numerous medical qualities found in all these plants include anti-bacterial, anticancer, anti-diabetic, antiviral, antifungal, antidote, anthelmintic, and anti-analgesic effects. They can also be used to treat skin conditions, snakebite, ulcers, diarrhoea, cough, and colds. Owing to the vast therapeutic qualities of the plants under assessment, certain valuable species that are vulnerable to these risks are being added to the list of "endangered plants." We hope that this survey will be useful to the forthcoming batches of M.Sc. students, as they can receive some ideas and information about medicinal plants of GramyaBharti College campus. After a few decades, certain precious plants may disappear in our college campus due to those threats.

Keywords

Species richness, Ethno-medicinal plants, Traditional healers, forests

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Introduction

Approximately 70% of the world's population (primarily in developing nations) exclusively relies on such traditional medical therapies as their primary form of healthcare, and plants are a source of direct or indirect therapeutic agents in modern medicine (Kumar *et al.*,

2017a, b, c; Mishra *et al.*, 2021; Thakur *et al.*, 2024a, b). People's changing lifestyles and eating habits also lead to the development of herbal medicine as an alternative or complementary therapeutic measure. Some of the most valuable anticancer drugs, such vinblastin and paclitaxel, are obtained exclusively from plant sources, while aspirin, an analgesic, was first synthesized from species

of *Salix* and spire (Lewis *et al.*, 2003). Chhattisgarh is home to a large number of medicinal plants and has a great richness of plant life (Patel *et al.*, 2012; Thakur *et al.*, 2014, 2019; Verma *et al.*, 2017; Thakur, 2018).

In addition to being an essential component of our everyday existence, biodiversity provides the resources that support families, communities, countries, and coming generations (Mansoori *et al.*, 2022; Mishra *et al.*, 2022; Pandey *et al.*, 2022). Since the dawn of human civilization's existence on Earth, the plant kingdom has been vital to its survival (Barya *et al.*, 2020a, b, 2022; Darro *et al.*, 2020).

In addition to producing our staple foods, building materials, oils, lubricants, rubber and other latexes, resins, waxes, and medications, plants also supply fibers, colors, and fragrances. Only around 10% of plants have ever had their potential for medicine or agriculture studied, therefore there are undoubtedly a lot of novel medications and crops that have not yet been found.

Medicinal and aromatic plants have been used for centuries by various cultures around the world for their therapeutic, aromatic, and healing properties. These plants contain bioactive compounds that have medicinal value and are used in traditional medicine systems like Ayurveda, Traditional Chinese Medicine, and Unani.

Medicinal plants are those plants that have healing properties and are used to prevent, alleviate, or cure various ailments and diseases. They are a vital source of natural remedies and are often preferred for their minimal side effects compared to synthetic drugs.

Medicinal plants are rich in bioactive compounds such as alkaloids, flavonoids, terpenoids, and phenolics, which contribute to their medicinal properties (Mansoori *et al.*, 2020; Singh *et al.*, 2021).

Aromatic plants are those plants that produce aromatic compounds in their leaves, flowers, stems, or roots. These plants are valued for their pleasant aroma and are used in perfumery, aromatherapy, culinary purposes, and for making essential oils.

Aromatic plants like lavender, rosemary, peppermint, and lemongrass are popular for their fragrant oils that have therapeutic benefits and are used for relaxation, stress relief, and skincare.

Both medicinal and aromatic plants play a crucial role in various industries such as pharmaceuticals, cosmetics, food, and agriculture (Sahoo *et al.*, 2021; Tariyal *et al.*, 2022). They are also important for biodiversity conservation, sustainable agriculture, and traditional knowledge preservation.

The study and utilization of medicinal and aromatic plants continue to be an area of interest for researchers, herbalists, and practitioners seeking natural and holistic approaches to health and well-being (Sahoo *et al.*, 2021; Thakur *et al.*, 2022a, b, c, 2023; Swamy *et al.*, 2023).

The diverse properties and uses of these plants make them valuable resources with immense potential for further exploration and application in modern healthcare and other industries.

This report aims to determine the distribution of plant diversity on the campus Govt. GramyaBharti College Hardi Bazar Korba Chhattisgarh India. The study covers an area of around 57.40 acres of open space in addition to the educational, administrative, and garden buildings and lawns. The current study was conducted at Govt GramyaBharti College Hardibazar Korba Chhattisgarh India, with the goals of investigating plant variety and promoting sustainable plant resource use.

The campus is home to a sizable plant population, and a review of the literature finds that there isn't any published information about the university's flora which shows a composition of flowers that is intriguing. The study's conclusions could be useful for more research in the fields of botany and related sciences.

Materials and Methods

The primary objective of the survey was to gather data regarding the wild and medicinal plant species that are utilized by the local population. Additionally, samples of plant species were collected in order to identify and describe the species. Plant identification was the first step in the survey process, which was then followed by the botanical name, family, habitat, uses, and propagation.

A tour of the college was made in order to gather medicinal plants, and digital pictures of them were also taken. A review of the literature was also used to identify the items (Hooker, 1875; Bijalwan *et al.*, 2010, 2017, 2020). A medicinal plant herbarium was created in the lab from the gathered plants.

After being identified, the plants were included in the table alphabetically under the following headings: Common Name, Botanical Name, Family, Habit, Medicinal Uses, Parts Used, Numerous writers have also explored the ethnomedicinal value of plants. Additionally, their paper was cited for the purpose of identifying medical uses. Chatterjee (2014); Edirijeera (2009); Kadavul and Dixit (2009) are the names of the individuals that are included in this list.

Study area

Since its founding in July 1983, the college—which is the first of its kind in the northern region of Chhattisgarh has gained recognition. About 1700 students from various disciplines attend the institution, which is located in Hardibazar on 57.40 acres of land in the centre of the coal area 4 kilometres from the SECL Gevra Project. The Hardibazar College campus served as the research location for a botanical survey of therapeutic plants, and data was recorded in a field note book. (First Map). Every structure and block has a variety of attractive plants, trees, and climber surrounding it.

Some commonly found medicinal and aromatic plants in current study may include:

1. Aloe Vera
2. Neem
3. Tulsi (Holy Basil)
4. Ashwagandha
5. Giloy
6. Brahmi
7. Harad (*Terminalia chebula*)
8. Baheda (*Terminalia bellirica*)
9. Amla (Indian Gooseberry)
10. Lemongrass
11. Mentha (Mint)
12. Patchouli
13. Vetiver
14. Citronella

These plants are known for their medicinal properties and are used in traditional medicine systems like Ayurveda. They are also used in the production of essential oils for various purposes.

Plant collection

The field study was conducted between October 2023 and January 2024 for a total of four months. Medicinal

plant species and other pertinent data were gathered as part of this study.

To avoid desiccation, the plant specimens were gathered in polythene bags. Field data were recorded about their habit, habitat, phenology, flower colour, etc. within a field notebook.

Survey of Vegetation

The plants are grouped according to the following pattern:

Table 1 lists the plants' botanical name, family, habit, part used, uses, and propagation. In the nation, a vast number of medicinal plants are regularly cultivated.

Results and Discussion

This field work Survey of vegetation in Botany Department Govt. GramyaBharti College, Korba, Chhattisgarh, India has led to the conclusion that the campus is home to 70 species divided into 46 groups. The varied behaviors of the collected medicinal plants included trees, herbs/climbers, and shrubs.

Here is a brief description of some of the medicinal and aromatic plants commonly found in College campus, Korba, Chhattisgarh:

1. Aloe Vera: Aloe Vera is a succulent plant known for its gel, which is commonly used in skincare and haircare products due to its moisturizing and healing properties.
2. Neem: Neem is a tree known for its bitter leaves and seeds, which have antibacterial, antifungal, and insecticidal properties. Neem is used in various traditional medicines and skincare products.
3. Tulsi (Holy Basil): Tulsi is a sacred plant in Hindu culture and is known for its medicinal properties. It is used in Ayurvedic medicine for treating various ailments and is also known for its antioxidant properties.
4. Ashwagandha: Ashwagandha is an adaptogenic herb that is used in Ayurvedic medicine to help reduce stress, improve concentration, and boost overall vitality.
5. Giloy: Giloy, also known as Guduchi, is a climbing shrub known for its immuno-modulatory properties. It is used in Ayurveda to boost immunity and treat various ailments.

6. Brahmi: Brahmi is a herb known for its cognitive-enhancing properties. It is used to improve memory, concentration, and overall brain function.
7. Harad (*Terminalia chebula*): Harad, also known as Haritaki, is a fruit used in Ayurvedic medicine for its digestive and rejuvenating properties.
8. Baheda (*Terminalia bellirica*): Baheda, also known as Bibhitaki, is a fruit that is part of the traditional Ayurvedic formula Triphala. It is known for its detoxifying and digestive properties.
9. Amla (Indian Gooseberry): Amla is a nutrient-rich fruit known for its high vitamin C content. It is used in Ayurveda for its rejuvenating and antioxidant properties.
10. Lemongrass: Lemongrass is a fragrant herb known for its citrus flavour. It is used in cooking, herbal teas, and essential oils for its calming and digestive properties.

These descriptions provide a brief overview of the medicinal and aromatic plants commonly found in the study area. Each plant has unique properties and uses in traditional medicine and other applications.

Table 1 provides a summary of all the reported plants together with information on their common name, botanical name, family, medicinal uses, habit, and method of propagation and similar study has been attempted by several researchers in recent past (Bijalwan *et al.*, 2019, 2021; Dutta *et al.*, 2022; Kumar *et al.*, 2021, 2022; Thakur *et al.*, 2021a, b).

The report's Table 2 displays the reported plant distribution by family. It reveals that the fabaceae family, which has 05 plants, is the most prevalent family on campus, followed by the Rutaceae family, which has 04 reported plants.

The current study provides a thorough description of the medicinal plants found on the Govt. GramyaBharti College Hardibazar campus, which exhibits a high level of plant variety. Numerous endangered plant species have had their natural habitats maintained by Botany department. Medicinal and aromatic plants play a

significant role in traditional medicine, herbal remedies, aromatherapy, and various other applications.

Here are some key points that can be drawn as a conclusion regarding the significance of medicinal and aromatic plants: Medicinal plants like Aloe Vera, Neem, Tulsi, Ashwagandha, and others have been used for centuries for their therapeutic properties.

They offer a natural and holistic approach to treating various ailments and promoting overall well-being. Many of these plants hold cultural and religious significance in India and are deeply integrated into traditional healing practices like Ayurveda. They are an essential part of the cultural heritage and knowledge passed down through generations.

The rich diversity of medicinal and aromatic plants in regions like Chhattisgarh highlights the importance of biodiversity conservation. Preserving these plant species is crucial for maintaining ecological balance and sustaining traditional knowledge systems. MAPs also have economic importance.

They contribute to livelihoods through the herbal medicine industry, essential oil production, herbal cosmetics, and other commercial ventures. Sustainable harvesting and cultivation practices can support local economies. Many aromatic plants contribute to environmental benefits such as pest control, soil improvement, and biodiversity enhancement.

Their cultivation can have positive effects on the environment and promote sustainable agricultural practices. In conclusion, medicinal and aromatic plants in Chhattisgarh and beyond are invaluable resources that offer a wide range of health, cultural, economic, and environmental benefits.

Their continued conservation, sustainable utilization, and further research can lead to a deeper understanding of their potential and contribute to the well-being of both people and the planet.

Table.1 Survey of vegetation in Botany Department Govt. GramyaBharti College, Korba, Chhattisgarh, India

S.No.	Local Name	Botanical Name	Family	Habit	Parts Used	Medicinal Use
1.	Mahua	<i>Madhuca longifolia</i>	Sapotaceae	Tree	Mahua flowers	Beneficial for skin & eye diseases
2.	Aam	<i>Mangifera indica</i>	Anacardiaceae	Tree	Root, Leaves, Fruit & Flower	Potential anticancer effect
3.	Bel	<i>Aegle marmelos L.</i>	Rutaceae	Tree	Unripe fruit, Root, Leaf & Branches	Used for constipation, Diarrhoea, Diabetes
4.	Karanj	<i>Pongamia pinnata</i>	Fabaceae	Tree	Roots, Flowers, Leaves & Bark	Used to treat all skin diseases, Liver pain & Scabies
5.	Palash	<i>Butea monosperma</i>	Fabaceae	Tree	Leaves, Young shoots	Regulating high blood- sugar
6.	Amaltas	<i>Cassia fistula</i>	Fabaceae	Tree	Root, Stem & Leaves	Ringworms, Eczema & Skin eruption
7.	Kadam	<i>Neolamarckia cadamba</i>	Rubiaceae	Tree	Root, Leave & Bark	Dysentery and colitis
8.	Semal	<i>Bombox ceiba</i>	Bombacaceae	Tree	Root, Stem, Bark & seed	Cough, Impotency, Treatment of cholera
9.	Saal	<i>Shorea robusta</i>	Dipterocarpaceae	Tree	Leaves & Bark	Wounds, Ulcers, Cough, Diarrhoea & Headache
10.	Amla	<i>Phyllanthus emblica</i>	Phyllanthaceae	Tree	All parts specially the fruit	Used in ayurveda Treatment of diarrhoea & Jaundice
11.	Ber	<i>Zizyphus mauritiana L.</i>	Rhamnaceae	Tree	Fruit, seed & Leaves	Reduce fever due to its antipyretic activity
12.	Sitaphal	<i>Annona squamosa</i>	Annonaceae	Tree	Fruit	Improve digestion, Skin health, eye
13.	Char	<i>Buchanania lanzan</i>	Anacardiaceae	Tree	Fruit	Skin disease
14.	Gulmohar	<i>Peltophorum pterocarpum</i>	Fabaceae	Tree	Leaf	Relieve intestine, disorder after pain
15.	Amrud	<i>Psidium guajava</i>	Myrtaceae	Tree	Leaf, fruit	Mouth ulcer, diabetes, anti-

						oxidant, anti-fungal, immunity booster
16.	Nilgiri	<i>Eucalyptus obliqua</i>	Myrtaceae	Shrub	Bark, leaf, flower	Burns, wounds, abrasions, ulcers, cuts and sores
17.	Bans	<i>Bombusa polymorpha</i>	Poaceae	Grass	Leaf bark	Cardio-vascular Disease, cancer
18.	Munga	<i>Moringa oleifera</i>	Moringaceae	Tree	Fruit, Leaves, Root, flower	Anti-piletic, anti-spasmodic, cholesterol lowering
19.	Jasmul	<i>Elephantopus scaber</i>	Aesteraceae	Herb	Whole plant	Eczema, bladder stone
20.	Siris	<i>Albizia lebbbeck</i>	Mimosaceae	Tree	Stem, bark	Cough, eye ailment, flu and lung ailment
21	Tendu	<i>Diospyros melanoxylon</i>	Ebenaceae	Tree	Leaf, Stem,fruit	Significant anti-plasmodial effects against Plasmodium falciparum which causes malaria in humans
22.	Bargad	<i>Ficus benghalensis</i>	Moraceae	Tree	Fruit	Diabetes, liver disorder, diarrhoea, respiratory and urinary disease
23.	Jamun	<i>Syzygium cumini</i>	Myrtaceae	Tree	Fruit, leaf	Sugar, Stomach pain, arthritis heart issue
24.	Saja	<i>Terminalia elliptica</i>	Combretaceae	Tree	bark and leaves	Treatment of ulcer, Vitamins, fracture, haemorrhage, bronchitis and diarrhoea
25.	Pipal	<i>Ficus religiosa</i>	Moraceae	Tree	Root, bark, stem bark, roots, leaves and fruits	treatment of asthma, cough, sexual disorders, diarrhoea, earache and toothache, migraine, eye troubles and gastric problems

26.	Kasai	<i>Pometia pinnata</i>	Sapindaceae	Tree	Leaf, flower	Anti-cancer, anti-laprotic, anti-malarial, anti-bacterial, analgesic and anti-inflammatory
27.	Makoi	<i>Solanum nigrum</i>	Solanaceae	Shrub	fruit, leaf	treatment of various diseases including cancer
28.	Dhaura	<i>Anogeissus latifolia</i>	Combretaceae	Tree	Stem	treating diarrhoea, dysentery and skin disorders
29.	Kosam	<i>Schleichera oleosa</i>	Sapindaceae	Tree	Fruit, Seed, Stem	cures leprosy, skin diseases, inflammation, ulcers
30.	Aak	<i>Calotropis procera</i>	Asclepiadaceae	Shrub	Root	Digestive, fever
31.	Pilikateri	<i>Argemone maxicana</i>	Papaveraceae	Herb	Root	Malaria, jaundice
32.	Jungali bhindi	<i>Abelmoschus ficulneus</i>	Malvaceae	Shrub	Fruit	Stomach irritation
33.	Chirchita	<i>Achyranthus aspera</i>	Amaranthaceae	Herb	Seed	Asthma, dropsy, cold
34.	Adusa	<i>Adhatoda vasica</i>	Acanthaceae	Shrub	Leaf	T.B., bronchitis
35.	Satawar	<i>Asparagus recemosus</i>	Liliaceae	Herb	Leaf	Milk production for breastfeeding
36.	Karonda	<i>Carissa carandas</i>	Apocynaceae	Shrub	Fruit	Anti-oxidant, diabetic
37.	Vajradanti	<i>Barlerai prionitis</i>	Acanthaceae	Shrub	Stem	Dental hygiene
38.	Arjun	<i>Terminalia arjuna</i>	Combretaceae	Tree	Bark, leaf, fruit	Anti-microbial, reduces heart diseases
39.	Hurhur	<i>Capparis decidua</i>	Capparidaceae	Shrub	Fruit	Anti-bacterial, anti-diabetic
40.	Ulatkanta	<i>Capparis zeylanica</i>	Capparaceae	Shrub	Leaf	Boils and piles
41.	Jungali kundru	<i>Coccinia grandis</i>	Cucurbitaceae	Herb	Fruit	Skin disease, anorexia
42.	Charota	<i>Cassia tora</i>	Fabaceae	Herb	Seed	Liver treatment
43.	Safed musli	<i>Chlorophytum borivilianum</i>	Asparagaceae	Herb	Root	Increase sperm of male
44.	Kali musli	<i>Curculigo orchioides</i>	Hypoxidaceae	Herb	Root	Muscles strength increase
45.	Punarnava	<i>Boerhavia diffusa</i>	Nyctaginaceae	Herb	Whole plant	Skin disease
46.	Kanphuti	<i>Cardiospermum helicacabum</i>	Sapindaceae	Climber	Leaf	Earache, rheumatism
47.	Marodphalli	<i>Helicteres isora</i>	Sterculiaceae	Shrub	Fruit,bark	Stomach infection

48	Keokanda	<i>Costus speciosus</i>	Zingiberaceae	Herb	Rhizome	Bronchitis, burning skin
49	Vantulsi	<i>Hyptis suaveolans</i>	Lamiaceae	Herb	Whole plant	Parasitical disease
50	Amarbel	<i>Cuscuta reflexa</i>	Convolvulaceae	Herb	Stem	Intestinal worms
51	Bhuineem	<i>Andrographis paniculata</i>	Acanthaceae	Herb	Whole plant	Malaria, diarrhoea
52	Mahul	<i>Bauhinia vahlli</i>	Caesalpinaceae	Climber	Whole plant	Tumors, wounds
53	Malkangani	<i>Celastrus paniculata</i>	Celastraceae	Woody climber	Seed	Nervous system
54	Dudhi	<i>Euphorbia parviflora</i>	Euphorbiaceae	Shrub	Fruit flower	Leucorrhoea
55	Hadjod	<i>Cissus quadrangularis</i>	Vitaceae	Climber	Stem	Bone fracture
56	Bathua	<i>Chenopodium album</i>	Chenopodiaceae	Herb	Leaf	Swollen feet, sunstroke
57	Wood of beecheskhamhar	<i>Gmelina arborea</i>	Lamiaceae	Tree	Whole plant	Antidote, weakness
58	Dang kanda	<i>Dioscorea bulbifera</i>	Dioscoreaceae	Herb	Stem, leaf	Dysentery, piles
59	Bhringraj	<i>Eclipta prostrata</i>	Asteraceae	Herb	Leaf	Night blindness
60	Sacred Pipal	<i>Ficus religiosa</i>	Moraceae	Tree	Bark	Snake bite, jaundice
61	Hinglaj	<i>Cassia alata</i>	Caesalpinaceae	Shrub	Leaf	Small pox, ringworm
62	Anantmul	<i>Hemidesmus indicus</i>	Apocynaceae	Climber	Root	Digestive, laxative
63	Babul	<i>Acacia nilotica</i>	Leguminosae	Tree	Leaf	Anti-inflammatory
64	Ashoka	<i>Saraca asoca</i>	Fabaceae	Tree	Leaf, bark	Reduces blood sugar, arthritis, bacterial infections, depression
65	Kanghi	<i>Abutilon indicum</i>	Malvaceae	Herb	Fruit	Toothache
66	Dikamalli	<i>Gardenia gummifera</i>	Rubiaceae	Tree	Leaf	Vata, kapha
67	Haldu	<i>Haldina cordifolia</i>	Rubiaceae	Tree	Leaf	Fever, burning sensation
68	Bhelwa	<i>Semecarpus anacardius</i>	Anacardiaceae	Tree	Seed	Colitis, dyspepsia
69	Khajur	<i>Phoenix sylvestris</i>	Arecaceae	Tree	Seed	Rich antioxidant
70	Guldukri	<i>Grewia hirshuta</i>	Tiliaceae	Shrub	Leaf	Anticancer, antimicrobial

Table.2 Family wise summary of Medicinal plants in Botany Department Govt. Gramya Bharti College, Korba, Chhattisgarh, India

S.No.	Family Total	Plant species	Herbs	Shrubs	Trees	Climbers/grass
1.	Acanthaceae	3	1	2	-	-
2.	Asteraceae	2	2	-	-	-
3.	Amaranthaceae	1	1	-	-	-
4.	Anacardiaceae	3	-	-	3	-
5.	Annonaceae	1	-	-	1	-
6.	Apocynaceae	2	-	1	-	1
7.	Arecaceae	1	-	-	1	-
8.	Asclepiadaceae	1	1	-	-	-
9.	Asparagaceae	1	1	-	-	-
10.	Bombacaceae	1	-	-	1	-
11.	Caesalpiniaceae	2	-	1	-	1
12.	Capparaceae	1	-	1	-	-
13.	Capparidaceae	1	-	1	-	-
14.	Celastraceae	1	-	-	-	1
15.	Chenopodiaceae	1	1	-	-	-
16.	Combretaceae	3	-	-	3	-
17.	Convolvulaceae	1	1	-	-	-
18.	Cucurbitaceae	1	1	-	-	-
19.	Dioscoreaceae	1	1	-	-	-
20.	Dipterocarpaceae	1	-	-	1	-
21.	Ebenaceae	1	-	-	1	-
22.	Euphorbiaceae	1	-	1	-	-
23.	Fabaceae	6	1	-	5	-
24.	Hypoxidaceae	1	1	-	-	-
25.	Lamiaceae	2	1	-	1	-
26.	Leguminosae	1	-	-	1	-
27.	Liliaceae	1	1	-	-	-
28.	Malvaceae	2	2	-	-	-
29.	Mimosaceae	1	-	-	1	-
30.	Moraceae	3	-	-	3	-
31.	Moringaceae	1	-	-	1	-
32.	Myrtaceae	3	-	1	2	-
33.	Nyctaginaceae	1	-	1	-	-
34.	Papaveraceae	1	1	-	-	-
35.	Phyllanthaceae	1	-	-	1	-
36.	Poaceae	1	-	-	-	1
37.	Rhamnaceae	1	-	-	1	-
38.	Rubiaceae	3	-	-	3	-
39.	Rutaceae	1	-	-	1	-
40.	Sapindaceae	3	-	-	2	1
41.	Sapotaceae	1	-	-	1	-

42.	Solanaceae	1	-	1	-	-
43.	Sterculiaceae	1	-	1	-	-
44.	Tiliaceae	1	-	1	-	-
45.	Vitaceae	1	-	-	-	1
46.	Zingiberaceae	1	1	-	-	-

Figure.1 Study site

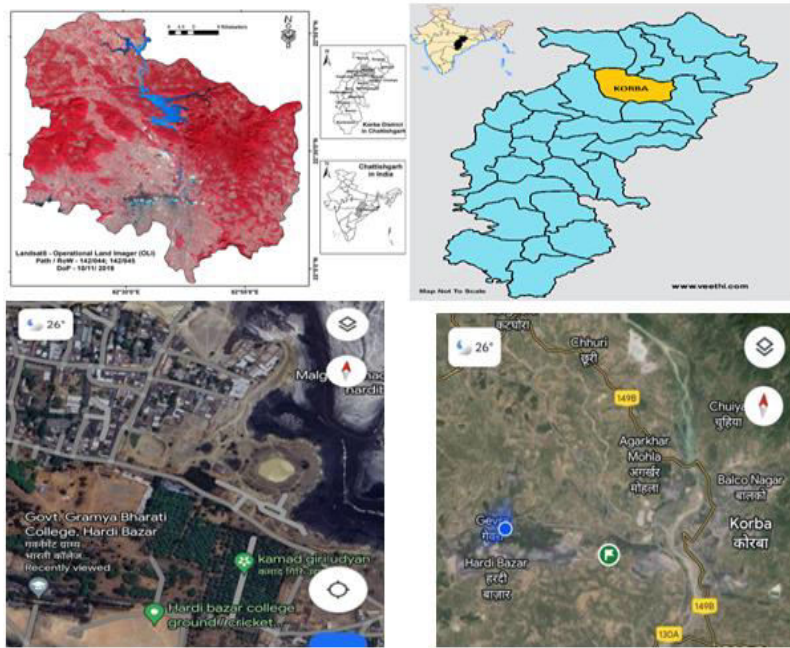


Figure.2 Some medicinal plants in study area

Bhuiamla

Anantmul

Merimia

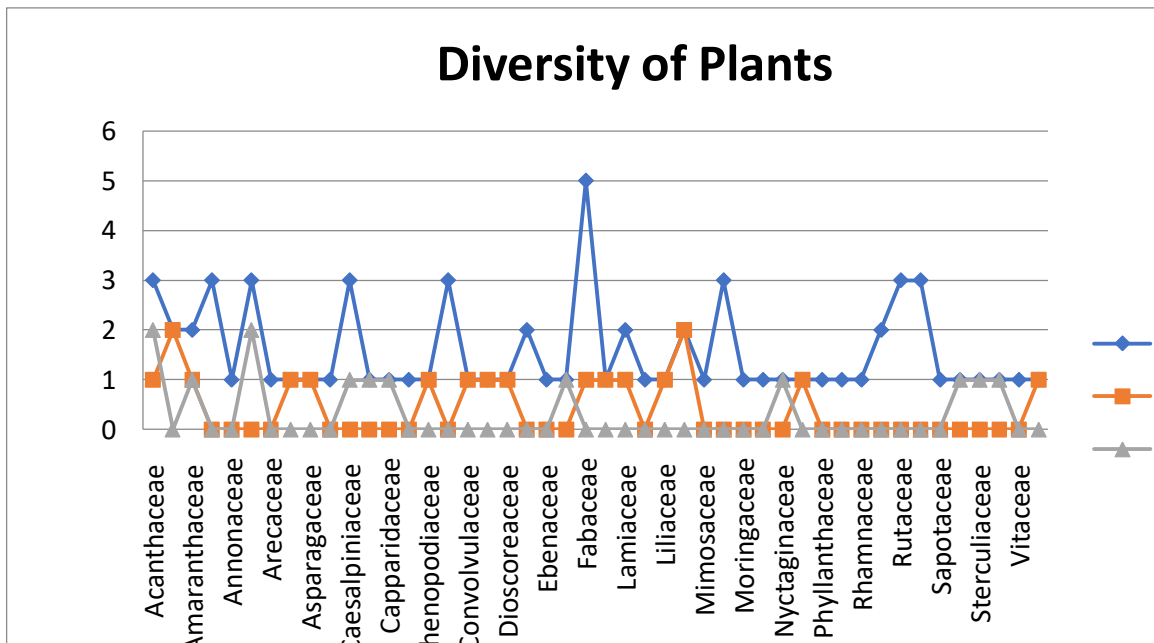
Bhringraj



Figure.3 Plant collection



Chart.1 Diversity of Plants



Author Contributions

Ranu Rathore: Investigation, formal analysis, writing—original draft. Umashankar Chandra: Validation, methodology, writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

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