

# Ethnobotanical Study from Padel village, Taluka Devgad, Dist. Sindhudurg, Maharashtra, India

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**Abstract-** Ethnobotanical survey was conducted in Padel Village, Maharashtra, to document traditional knowledge of plant usage amongst inhabitants aged 18 to 70. Padel village is spread over 1314.55 hectare which is inhabited by a population of approximately 3500 belonging to Hindu-Kunbi, Vaishyavani, Brahmins and Buddhist communities.

Present paper deals with 112 plant species from 50 families which are used in medicine, food, as NTFP, and other purposes. documented from the study area.

During our ethnobotanical survey, four heritage trees, including a very large century old banyan tree, ancient temples and petroglyphs, were also recorded in the village. All these elements help us to consider this small village as a potential ethno-tourism location. A first-hand report is generated through the study which will be used for the updating of people's biodiversity register of Padel Village, which may be used by the decision-making authorities in decision making process for conservation in future.

**Keywords:** Traditional knowledge, Medicinal uses, Cultural heritage, PBR, Ethno-tourism.

## INTRODUCTION

Ethnobotany involves studying the historical and cultural relationship between humans and plants. In a biodiversity-rich country like India, traditional knowledge about plant uses has been passed down through generations; however, this knowledge is at risk due to urbanization and modernization [4]. Herbal medicine is widely practiced from ancient period throughout the world [2]. Padel village consists of diverse vegetation types, mainly mangroves, cultivation fields, sacred groves, and plateau areas. On one of these plateaus, there are petroglyphs. The present study aims to document the knowledge about the use of plants amongst local people, especially for medicinal, cultural, dietary, and non-timber forest products, as well as important establishments such as temples, heritage trees, and other structures associated with traditional knowledge. This work intends to provide firsthand information to update People's Biodiversity Register (PBR) of the village. Challenges to this work include limited transmission of knowledge to younger generations and threats of migration from the village in search of better livelihood opportunities. By documenting and sharing this knowledge, the initiative aims to safeguard Traditional knowledge, promote Sustainable Practices, and encourage Conservation efforts.

## MATERIALS AND METHODS

Planning of the ethnobotanical study was done with the help from elderly people of the village. Prior Informed consent forms and a survey questionnaire were designed. The preliminary draft of the PBR of Padel Village, available with the Gram Panchayet was collected and studied for reference purposes. It is noted that ethnobotanical documentation from the study area has not been streamlined. In the beginning, visits were planned in all the seasons in order to document traditional practices and other ethnobotanical information. Data provided by villagers (Table 2) on the usage of plants was documented in addition to the primary interview.

During the study regular visits were made, and information was gathered on plant utilization for medicinal, dietary, and non-timber forest purposes from the villagers between November 2021 till September 2023 in all seasons of the year (at least three to four days per visit). Information was acquired through household survey with the help of survey questionnaires (Fig. 2A), Semi-directive interviews with local practitioners, healers, village ladies (Fig. 2B) and field surveys with villagers (Fig. 2C) focusing on plant usage (both wild and cultivated) in their day-to-day lives. In addition to plants and their traditional uses, visits were also made to ancient temples, plateaus, and different vegetation for the purpose of documentation.

**Table 1: Demographic representation of data**

Sr. No	Variable	Categories	Count	Percentage
1	Gender	Male	64	70
		Female	27	30
3	Age	< 18	04	04
		19-30	16	18
		31-50	31	34
		50-70	32	35
		> 70	08	09
4	Education	Higher Secondary	10	11
		Secondary	70	77
		Primary	08	09
		None	03	03
5	Occupation	Farmer	65	71
		Teacher	04	04
		Government servant	03	03
		Entrepreneur	04	04
		Student	15	16

### DATA COLLECTION AND DATA ANALYSIS

The study involved 91 informants (randomly selected) spread in Padel village (16° 28' 50.1564" N ,73° 23' 12.7968" E). The information gathered during the survey includes the local names of the plant, parts used, and various uses. Photographs of plants used by the people are taken for reference. Insights into traditional medicine uses, time of collection, seasonal availability of plants, recipes of plants used as vegetables, and other uses of plants were documented using a Survey questionnaire and also by interviewing people randomly in the field. Botanical names were determined using standard taxonomic literature and herbarium resources. Survey Questionnaires filled out by the villagers are preserved in the library of RDNCNCP.

Data obtained during the survey resulted in the documentation of medicinal, edible, ornamental, non-timber forest produces, and ornamental species, etc. Information about plants was tabulated using a Microsoft Excel spread sheet and analyzed. Quantitative assessment was conducted using Use Value (UV) which is calculated by dividing the sum of individual plant use reports (U) by the total number of informants (n). This method showed us the significance of specific plant species within the community. The species Use Value is a sum of the researcher generated scores for each of its uses. "Major" uses are scored 1 while "minor" uses are scored 0.5. Uses refer to use categories (such as construction or food), not specific uses [1].

A century old Vitthal mandir (temple) located at Ghadi wadi (Fig.3B), where Krishna Janmashtami and Ashadi Ekadashi are celebrated on large scale. There is a 100 years old Banyan tree (*Ficus benghalensis* L.) situated at Gotankar wadi (Fig.3C) that supports at least 10 species of plants and birds, such as Black drongo, Indian mynah, Parakeets, Spotted dove etc. Many small and big insects are also seen on this banyan tree. Besides these, there are four more very large trees documented in the village which are growing in the temple campus. Two petroglyphs are documented from Ovalichi baav plateau (Fig.3A) which is one of the major attractions in Padel Village.

### RESULT AND DISCUSSION

The village's main livelihood revolves around agriculture, primarily the cultivation of two crops i.e. Rice (*Oryza sativa* L.) and Finger millet (*Eleusine coracana* (L.) Gaertn.). It is supplemented by fruit crops such as Mango (*Mangifera indica* L.) and Cashew (*Anacardium occidentale* L.). Devgad Alphonso Mango stands as a main income source, generating approximately 1,00,000 Rs. per family seasonally! Women entrepreneurs thrive by preparing mango-based products (Fig.5B). At least one person from every household has migrated to larger cities like Ratnagiri or Mumbai, Thane in search of better livelihood opportunities, leading to a diminished reliance on traditional plant remedies.

It is noted that knowledge of plants used in medicine is concentrated only on a few elderly individuals who address common ailments using locally accessible plant species. Leaves are commonly used for medicinal use, followed by

roots, seeds, fruits, bark, stems, bulbs, and flowers respectively. Medicines are mostly consumed orally as crude juice or extracts, often blended with other botanicals in the form of decoction or juice or applied externally as paste.

During the survey, total 112 species of plants belonging to 50 families are recorded during the ethnobotanical survey in Padel Village. These are categorized as Trees (40.54%), Shrubs (24.32%), Herbs (15.31%), and Climbing (17.11%). Of these, 38 species are medicinally important, 49 are used as vegetables and processed products, 25 species are ornamental, 16 non-timber forest produces, and 5 contribute to traditional utensils (Fig.4 A and B). The family Fabaceae predominates, representing 25% of species, followed by Apocynaceae, Phyllanthaceae, Moraceae, and Malvaceae.

Out of 38 species of medicinal plants belonging to 35 genera and 18 families, the most used plant part is leaves (72.5%), followed by fruits (20%), roots (17.5%), and twigs (5%). Amongst these, 30 are wild species (28 genera, 18 families) and 8 are cultivated species (8 genera, 8 families). During the survey, *Celosia argentea* L. had the highest use value (1), followed by *Senegalia rugata* (Lam.) Britton & Rose (0.92), *Terminalia bellirica* (Gaertn.) Roxb. (0.91), *Ficus benghalensis* L. (0.90), *Phyllanthus emblica* L. (0.87), and *Canavalia gladiata* (Jacq.) DC. (0.80).

A total of 49 species belonging to 47 genera and 29 families are used as edible species, with the family Fabaceae contributing the most (50%). These plants are either used as vegetables or fruits or in fruit juices. Villagers, especially women in the village significantly cultivate, harvest, and trade these vegetables, constituting approximately half of family income. Notable species, such as *Moringa oleifera* Lam. (use value 1), *Cocos nucifera* L. (use value 1), *Areca catechu* L. (use value 1), Brinjals, Bananas, Leafy vegetables, and various seeds, are sold locally. Species like Snake gourd (Padval), Bitter gourd (Karale), Pumpkin (Bhopla), and Marking nut (Bibba) which are grown around their house, are also sold in the weekly market. Some wild edible fruits are *Carissa carandas* L. (use value 1), *Bridelia retusa* (L.) A. Juss. (Use value 0.24) (Fig.5D). The Nutritional value of wild plants is higher than several known common vegetables and fruits [3]. But dependency on wild food plant is quite low the in-study area.

Several wild vegetables possess high use values, including *Celosia argentea* L. (use value 1), *Rothea serratum* (L.) Steane & Mabb. (use value 0.93), and *Antidesma ghaesembilla* Gaertn. (use value 0.85). Similarly, cultivated vegetables like *Trichosanthes cucurmina* L. (use value 1), *Vigna radiata* (L.) R. Wilczek (use value 0.94), and *Pterospermum acerifolium* (L.) Willd. (use value 0.58) hold significant use values, reflecting their importance in local diets and economics.

Apart from conventional fruit juices such as kokam *Garcinia indica* (Thours) Choisy. (use value 1) And mango / amba *Mangifera indica* L. (use value 1), local villagers prepare refreshing and cooling beverages using locally available fruits and flowers, whether cultivated or wild. A study documented 20 species belonging to 17 genera and 15 families that are utilized for these juices (Fig.5C). Plants such as *Garcinia indica* (Thours) Choisy. (use value 1), *Carissa carandas* L. (use value 1), and *Cordia dichotoma* (use value 0.94) possess the highest use values, underscoring their significance in crafting these beverages.

Most of the households in Padel have ornamental plants in front of the house. The traditional use of plants and their parts during some festival occasions by people is an aspect of human life. In India, many plant species are associated with religious functions, rituals and also in celebration of festivals [7].

Flowers are also collected from nearby forests for worshipping on a daily basis, during the Ganpati festival, Dussehra, Diwali and other festivals such as Janmashtami, Gudhi Padva etc. In Ganpati festivals *Crossandra infundibuliformis* (L.) Nees, *Hibiscus rosa-sinensis* L., *Hibiscus schizopetalus* (Mast.) Hook.f. *Abelmoschus esculentus* (L.) Moench are used to decorate the Mandap. During Diwali *Mangifera indica* L. leaves are used for making torans. There are five very old trees in the village. A heritage Banyan tree (*Ficus benghalensis* L.) is approximately 100 years old which is worshipped by village ladies during Vat Pournima celebration.

The forest is a source of timber. The wood from trees that are planted around the village are used for the purpose of construction, making of utensils for puja rituals, etc. It is noted that no naturally growing healthy trees are cut for use.

**Table 2: Enumeration of plants documented during the Ethnobotanical Survey**

Botanical Name	Family	C/W	Habit	Local Name	Parts used	Use value	Use category	Use
<i>Abelmoschus esculentus</i> (L.) Moench	Malvaceae	C	S	Ranbhendi	Fruits	1	Food	Fruits chopped, sauted with onion, green chilies & kokum

<i>Abelmoschus manihot</i> L. (Medik)	Malvaceae	W	S	Ranbhendi	Fruits	0.92	Food	Fruits are sauted with onion, green chilies, dried, mixed with grated coconut
<i>Acalypha hispida</i> Burm.f.	Euphorbiaceae	C	S	-	Flowers	0.19	Ornamental	Garden plant
<i>Acalypha wilkesiana</i> Mull.Arg.	Euphorbiaceae	C	T	-	Flowers	0.13	Ornamental	Worshipping
<i>Aegiceras corniculatum</i> (L.) Blanco	Primulaceae	W	S	Kajala	Fruit rind	0.43	NTFP	Fruit rind used as fish poison.
					Whole plant	0.43	medicinal	Arthritis
<i>Allophylus cobbe</i> (L.) Forsyth f.	Sapindaceae	W	Cl	Tivati	Whole plant	0.21	Medicinal	Skin, Arthritis
<i>Amaranthus cruentus</i> L.	Amaranthaceae	C	H	Laal Math	Leaves	1	food	Leaves are cooked with onion, green chilies, and fresh grated coconut.
<i>Anacardium occidentale</i> L.	Anacardiaceae	C	T	Cashew	Seeds	1	food	Seeds roasted or used to prepare vegetable dishes
<i>Andrographis paniculata</i> (Burm.f.) Wall. ex Nees	Acanthaceae	C	H	Kaduchirait	Tubers	0.85	food	Tubers roasted, mixed with jiggery.
<i>Annona reticulata</i> L.	Annonaceae	C	T	Ramphal	Bark	1	Food	Consume fruit as a delicacy, Blood pressure
					Fruit			
<i>Antidesma ghaesembilla</i> Gaertn.	Phyllanthaceae	W	T	Khatoi	Branch	0.41	NTFP	Wood used for field making instruments.
					young leaves	0.41	Food	Fruits used in pickles with spices.
<i>Argyrea nervosa</i> (Burm.f.) Bojer	Convolvulaceae	W	Cl	Dudhvel	Leaves	0.24	Food	Leaves cooked with onion, green chilies, salt, fresh grated coconut.

<i>Artocarpus altilis</i> (Parkinson) Fosberg.	Moraceae	C	T	Nirfanas	Fruits	1	Food	Dry chips prepared from fruit bulbs
<i>Avicennia officinalis</i> L.	Acanthaceae	W	T	Tivar	Leaves	0.24	Medicinal	Asthma
<i>Azadirachta indica</i> A. Juss.	Meliaceae	C	T	Kadu neem	Leaves, twigs; Seeds	0.93	Medicinal	Swelling of gum, dental care.
							NTFP	Insecticide from seeds
<i>Azanza lampas</i> (Cav.) Alef.	Malvaceae	W	S	Ban Kapus	Roots and leaves	0.32	Medicinal	Skin
<i>Bahunia variegata</i> L.	Fabaceae	C	T	Kanchan	Flowers	0.13	Ornamental	Worshipping
<i>Barleria cristata</i> (Barleria noctiflora L.f.)	Acanthaceae	C	H	Koranti	Flowers	0.19	Ornamental	Garden plant
<i>Bauhinia purpurea</i> L.	Fabaceae	C	T	Kachnar/Tambuda Manar	Flowers	0.78	Ornamental	Garden plant
<i>Bauhinia racemosa</i> Lam.	Fabaceae	W	T	Apta	Bark	0.89	NTFP	Bark used for rope making
<i>Butea monosperma</i> (Lam.) Kuntze	Fabaceae	W	T	Palash	Flowers & fruits	0.21; 0.35	food; medicinal	Soak flowers in water, make juice with sugar; Inflammation
<i>Calophyllum inophyllum</i>	Calophyllaceae	W	T	Undilfale	Fruits	0.65	NTFP	Fruits used for making whistles
<i>Calotropis gigantea</i> (L.) W.T. Aiton	Apocynaceae	W	S	Pandri rui	Leaves	0.74	Medicinal	Bone fracture/joint pain, Swelling
					Leaves	0.85	NTFP	Leaves used as fertilizers
<i>Canavalia gladiata</i> (Jacq.) DC.	Fabaceae	C	Cl	Ranghevda	Leaves, Seeds	0.82 0.89	Medicinal Food	Cough, Cold & Stomach ache Leaves & seeds sauted with spices, post delivery
<i>Cansjera rheedei</i> J.F. Gmel.	Opiliaceae	W	S	-	Whole plant	0.3	Medicinal	Anti-helminthic
<i>Capparis zeylanica</i> Roxb.	Capparaceae	W	St. S	Choti deepamal	Fruits	0.18	Food	Fruits boiled & sauted with spices, potato, peanuts, and grated coconut
<i>Careya arborea</i> Roxb.	Lecythidaceae	W	T	Kumbhkhod	Twigs	0.54	NTFP	Wood for washing

								clothes, fertilizers
<i>Carissa carandus</i> L.	Apocynaceae	W	Cl	Karvand	Fruits	1	Food	fruit juice with rock salt
<i>Caryota urens</i> L.	Arecaceae	C	T	Surmad	Flowers	1	Ornamental	Worshipping
					Foliage leaves	0.87	NTFP	Mid veins used to make pens
<i>Cassia fistula</i> L.	Fabaceae	W	T	Bahava	Roots	0.24	Medicinal	Arthritis
					Flowers	0.16	Food	Soak flowers in water, make juice with sugar
<i>Celosia argentea</i> L.	Amaranthaceae	W	H	Kurdu	Leaves	1	Medicinal	Heart care Digestion,
							Food	Leaves sauted with oil, onion, red chilies, salt, jaggery, and coconut,
<i>Ceriops tagal</i> (Perr.) C.B. Rob.	Rhizophoraceae	W	T	Sonchippi	Strong branches	0.67	NTFP	Wood for boats, construction
<i>Bridelia retusa</i> (L.) A. Juss.	Phyllanthaceae	W	T	Asana	Fruit	0.24	Food	Ripe fruit is edible
<i>Chlorophytum tuberosum</i> (Roxb.) Baker	Asparagaceae	W	H	Phodshi	Leaves	1	Food	Leaves sauted with onion, green chilies, salt, and fresh grated coconut.
<i>Clitoria ternatea</i> L.	Fabaceae	C	Cl	Gokarna	Flowers	0.85	Ornamental	Garden plant
<i>Coleus blumei</i> (L.) Benth.	Lamiaceae	C	H	-	Flowers	0.6	Ornamental	Garland (Gajra)
<i>Combretum albidum</i> G. Don	Combretaceae	W	Cl	Haladvel	Stem	0.23	Medicinal	Swelling, Bone fracture/joint pain
<i>Combretum indicum</i> (L.) DeFilippis	Combretaceae	C	Cl	Madhumalti	Fruits	0.38	Medicinal	Cough & Cold
<i>Cordia dichotoma</i> G. Frost	Boraginaceae	W	T	Bhokar	Fruits	0.94	Food	Fruits used to prepare pickles.
<i>Crassocephalum crepedioides</i> (Benth.) S. Moore	Asteraceae	W	S	Mhatari	Young leaves	0.38	Food	Young leaves sauted with various ingredients.
<i>Crateva adansonii</i> DC.	Capparaceae	W	T	Barna/Vayvayarna	Fruits	0.1	Food	Edible fruits with soft inner shell

<i>Crossandra infundibuliformis</i> (L.) Nees	Acanthaceae	W	H	Aboli	Flowers	1	Ornamental	Garden plant
<i>Croton variegatum</i> (L.) Rumph. ex A. Juss.	Euphorbiaceae	C	T	-	Flowers	0.06	Ornamental	Garland (Gajra)
<i>Cryptolepis buchananii</i> R.Br. ex Roem. & Schult.	Apocynaceae	W	Cl	Wakandi/Kavali	Leaves & Roots	0.4	Medicinal	Bone fracture/joint pain
<i>Curcuma amada</i> Roxb.	Zingiberaceae	W	H	Ambe halad	Rhizome	1	Medicinal	Joint pain, cough and wounds
<i>Derris trifoliata</i> Lour.	Fabaceae	W	Cl	Karanjvel	Seeds	0.46	Medicinal	Cuts and Wounds
<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	W	Cl	Karanda/Gajkarand	Fruits	1	Food	Bulbils boiled and eaten with jaggery.
<i>Diospyros melanoxylon</i> Roxb.	Ebenaceae	W	T	Tembhurni	Wood	0.63	Utensils	Yadnyapatra
<i>Dunbaria glandulosa</i> (Dalzell & A. Gibson) Prain	Fabaceae	W	Cl	Ranghevda	Seeds	0.65	Food	Fruits cut, tossed with various spices, and grated coconut.
<i>Eranthemum roseum</i> (Vahl) R.Br. ex Roem. & Schult.	Acanthaceae	W	H	Ran aboli	Flowers	0.65	Ornamental	Worshipping
<i>Excoecaria agallocha</i> L.	Euphorbiaceae	W	S	Funagi	Leaves	0.38	NTFP	Leaves used for fish poison
<i>Ficus benghalensis</i> L.	Moraceae	W	T	Vad	Roots	0.9	Medicinal	Hair care
<i>Ficus exasperate</i> Vahl.	Moraceae	W	T	Karvat	Leaves	0.38	NTFP	Leaves for furniture polishing
<i>Ficus hispida</i> Blanco.	Moraceae	W	T	Umber/Kakodumbar/Kala Umber	Fruits	0.94	Food	Fruits used to make vegetable & sweet dishes.
<i>Ficus microcarpa</i> L. f	Moraceae	W	T	Nandruk	Fruits, Leaves, Aerial roots	0.35	Medicinal	Stomach ache, Intestinal Disorders & Arthritis
<i>Ficus racemosa</i> L.	Moraceae	C	T	Umber	Fruits	0.16	Food	Fresh fruit juice with cumin, salt, sugar
<i>Ficus religiosa</i> L.	Moraceae	W	T	Pimpal	Leaves	0.81	NTFP	Used for small children who fumbles
					Wood	1	Utensils	Yadnyapatra

<i>Flueggea leucopyrus</i> Willd.	Phyllanthaceae	W	S	Pusheri	Leaves and fruits	0.62	Medicinal	Malaria, Jaundice
<i>Garcinia indica</i> (Thouars) Choisy	Clusiaceae	W	T	Kokum	Fruits	1	Food	Juice is prepared from mature fruits & sugar
<i>Gardenia jasminoides</i> J. Ellis	Rubiaceae	C	T	Anant	Flowers	0.72	ornamental	Garden Plant
<i>Geissaspis cristata</i> Wight & Arn.	Fabaceae	W	H	Ranmasur	Seeds	0.38	Food	Vegetable prepared from seeds
<i>Grewia tilifolia</i> Vahl.	Malvaceae	W	S	Dhaman	Fruits	0.2	Food	Crush ripe fruits with salt & sugar
<i>Guilandina bonduc</i> L.	Fabaceae	W	Cl	Sagargota	Seeds	0.38	Medicinal	Stomach ache
<i>Heliconia psittacorum</i> L.f.	Heliconiaceae	C	H	-	Flowers	0.06	Ornamental	Worshipping
<i>Hellinia speciosa</i> (J. Koenig) S.R. Dutta	Costaceae	W	H	Kebuk/Pev	Leaves	0.21	Food	Saute chopped leaves with onion, red chili powder, peanuts, salt, and fresh grated coconut
<i>Hibiscus rosasinensis</i> L.	Malvaceae	C	S	Jaswand	Flowers	1	Ornamental	Worshipping
<i>Hibiscus schizopetalus</i> (Mast.) Hook.f.	Malvaceae	C	S	Katri Jaswand	Flowers	1	Ornamental	Worshipping
<i>Holarrhaena pubescens</i> Wall ex Don.	Apocynaceae	W	S	Kuda	Seeds	1	Food	vegetable prepared from seeds
<i>Hymenodictyon orixense</i> (Roxb.) Mabb.	Rubiaceae	W	T	Bhormal	Wood	0.79	Utensils	Measuring Utensils
<i>Ixora coccinea</i> L.	Rubiaceae	W	S	Patkal	Fruits, Roots	0.35	Medicinal	Cooling agent, Blood purifier
					Flowers	0.1	Food	Juice is prepared by soaking flowers in water with sugar & salt
					Flowers	1	Ornamental	Garden Plant
<i>Jatropha curcas</i> L.	Euphorbiaceae	C	S	Mowgli Erand	Leaves	0.35	Medicinal	Digestion
<i>Lantana camara</i> subsp. <i>aculeata</i> (L.)	Verbinaceae	W	S	Ghaneri	Flowers	0.06	Ornamental	Garden plant, Flower



<i>Litsea glutinosa</i> (Lour.) C.B. Rob.	Lauraceae	W	T	Sandruki	Whole plant	0.66	Medicinal	Bad breath, Bone fracture/joint pain, Arthritis
<i>Litsea monopetala</i> (Roxb.) Pers.	Lauraceae	W	T	Ranamba	Leaves	0.21	Medicinal	Swelling
<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae	C	T	Chafa	Flowers	0.94	Ornamental	Worshipping
<i>Mammea suriga</i> (Buch.-Ham. Ex Roxb.) Kosterm	Calophyllaceae	W	T	Surangi	Flowers	0.19	Ornamental	Worshipping
					Leaves	0.49	Medicinal	Bad breath, Cough and cold
<i>Mangifera indica</i> L.	Anacardiaceae	W	T	Mango/Am ba	Fruits	1	Food	Mix raw mango pulp with black pepper, sugar; ripe fruit pulp with sugar, milk, cardamom
<i>Memecylon umbellatum</i> Burm.f.	Melastomaceae	W	T	Anjani	Fruits	0.54	Food	fruit juice is prepared with sugar and rock salt
<i>Mirabilis jalapa</i> L.	Nyctaginaceae	C	H	Gulabas	Flowers	0.52	Ornamental	Worshipping,
<i>Momordica dioca</i> ex Willd.	Cucurbitaceae	W	Cl	Katla	Fruits	1	Food	Saute chopped fruits with onion, garlic, turmeric powder, red chili powder, salt, jaggery, and fresh grated coconut.
<i>Moringa oleifera</i> Lam.	Moringaceae	C	T	Shavga	Fruits, Leaves	1	Food	Fruits and leaves used to prepare vegetables.
<i>Musa paradisiaca</i> L.	Musaceae	C	H	Banana	Flowers	1	Food	flowers used to prepare vegetables.
<i>Nyctanthes arbor-tristis</i> L	Oleaceae	C	T	Parijat	Flowers	0.82	NTFP	Petiole yields dye
					Flowers	0.65	Ornamental	Garden plants
<i>Pandanus odorifer</i> (Forssk.) Kuntze	Pandanaceae	C	H	Kevda	Flowers	0.26	Ornamental	Flowers in flavouring rice.

<i>Areca catechu</i> L.	Areaceae	C	T	Pofali	fruit	1	Food	Mastication with betel leaves.
<i>Cocos nucifera</i> L.	Areaceae	C	T	Naral	Fruit, leaves	1	Food Ornamental	Fruit used in cooking, coconut husk used to make ropes, leaves used to make broom.
<i>Phyllanthus emblica</i> L.	Phyllanthaceae	C	T	Avla	Fruits	0.87	Medicinal	Cough & Cold
					Fruits	1	Food	Juice is prepared from fruits with sugar & cumin powder.
<i>Pinda concanensis</i> (Dalzell) P.K. Mukh. & Constance	Apiaceae	W	H	Rankothimbir	Leaves	0.27	Food	Saute chopped leaves with onion, red chili powder, roasted peanuts, rock salt, and fresh grated coconut.
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	C	S	Chitrak	Flowers	0.19	ornamental	Garden plant
<i>Premna serratifolia</i> L.	Lamiaceae	W	S	Agnimanthan	Leaves	0.24	Medicinal	Swelling
					Branch	0.54	NTFP	Used to produce fire
					Dried flowers	0.38	Food	In the past, dried flowers were placed on cooked rice to infuse a sweet fragrance
<i>Pterospermum acerifolium</i> (L.) Willd	Malvaceae	C	T	Muchkund	Whole plant	0.79	Medicinal	Cough & Cold, Ulcers
					Flowers	0.44	Ornamental	Flowers in flavouring rice.
<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.	Fabaceae	C	Cl	-	Tuber	0.21	Medicinal	Digestion
<i>Rhizophora mucronata</i> Poir.	Rhizophoraceae	W	T	Tambdakandal	Leaves	0.24	Medicinal	Diabetes
					Leaves	0.24	Medicinal	Skin
<i>Rotheca serratum</i> (L.) Steane & Mabb.	Verbanaceae	W	S	Bharangi	Leaves	0.93	Food	Saute leaves with onion, green chilies, and grated coconut
		W	S	Khakan	Fruits	0.6	Medicinal	Cough & Cold

<i>Salvadora persica</i> L.	Salvadoraceae				Twigs	0.6	Medicinal	Dental care
<i>Senegalia catechu</i> (L.f.) P.J.H. Hurter & Mabb.	Fabaceae	W	T	Khair	Wood	1	Utensils	Yadnyapatra
<i>Senegalia rugata</i> (Lam.) Britton & Rose	Fabaceae	W	Cl	Shikakai	Fruits	0.93	Medicinal	Hair care
<i>Senna tora</i> (L.) Roxb.	Fabaceae	W	S	Takla	Leaves	1	Food	Mix with Celosia leaves, add onion, green chilies, and grated coconut
<i>Solanum indicum</i> L.	Solanaceae	W	H	Dorli	Fruits	0.65	Food	Saute chopped fruits with onion, garlic, chili powder, tamarind, salt, jaggery, and roasted peanuts
<i>Solena amplexicaulis</i> (Lam.) Gandhi	Cucurbitaceae	W	Cl	Ghometa	Fruits	0.49	Food	Saute chopped fruits with mustard seeds, cumin seeds, turmeric, salt, and grated coconut
<i>Syzygium cumini</i> L. Skeels	Myrtaceae	W	T	Jambhul	Fruits	1	Food	ripe fruits are used to make juice with sugar.
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	W	T	Behada	Fruits	0.91	Medicinal	Cough & Cold
<i>Terminalia elliptica</i> Willd.	Combretaceae	W	T	Aain	Wood	0.75	Utensils	“Dhopatna”
<i>Ticanto crista</i> (L.) R. Clark & Gagnon	Fabaceae	W	Cl	Khari Waghatai	Leaves	0.37	Medicinal	Jaundice
<i>Trichosanthes cucurmina</i> L.	Cucurbitaceae	C	Cl	Padval	Fruits	1	Food	Saute the chopped fruits with onion, green chilies, turmeric, salt, grated coconut, and coriander
<i>Vachellia nilotica</i> (L.) P.J.H. Hurter & Mabb.	Fabaceae	W	T	Khari Babhal	Resin	0.65	Medicinal	Cuts and Wounds, Bone fracture, joint pain

					Leaves, Bark	0.65	Medicinal	Stomach ache
<i>Vallisneria spiralis</i> (Roth ex Roem. & Schult.) Kuntze	Apocynaceae	W	Cl	Vallari mhatari	Whole plant	0.25	Medicinal	Snake bite, skin
<i>Vigna radiata</i> (L.) R. Wilczek	Fabaceae	C	Cl	Ranmasur	Seeds	0.94	Food	Saute seeds with onion, red chili powder, and turmeric powder
<i>Vitex negundo</i> L.	Lamiaceae	C	S	Nirgudi	Leaves	0.42	Medicinal	Bone fracture/joint pain, Arthritis
					Leaves	0.78	NTFP	Leaves burnt to reduce foul smell.
<i>Volkameria inermis</i> L.	Lamiaceae	W	S	-	Leaves	0.46	Medicinal	skin
<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	W	S	Bor	Fruits	0.93	Food	Fruit is eaten raw
<i>Ziziphus rugosa</i> Lam.	Rhamnaceae	W	S	Torna	Fruits	0.85	Food	Fruits are eaten raw
				Toran/Churna	Fruits	0.93	Ornamental	Garden plant

Abbreviations Used: NTFP- Non-Timber Forest Products, C-Cultivated, W- Wild, S-Shrub, T-Tree, H-Herb, Cl-Climber, St. S-Stragglng Shrub

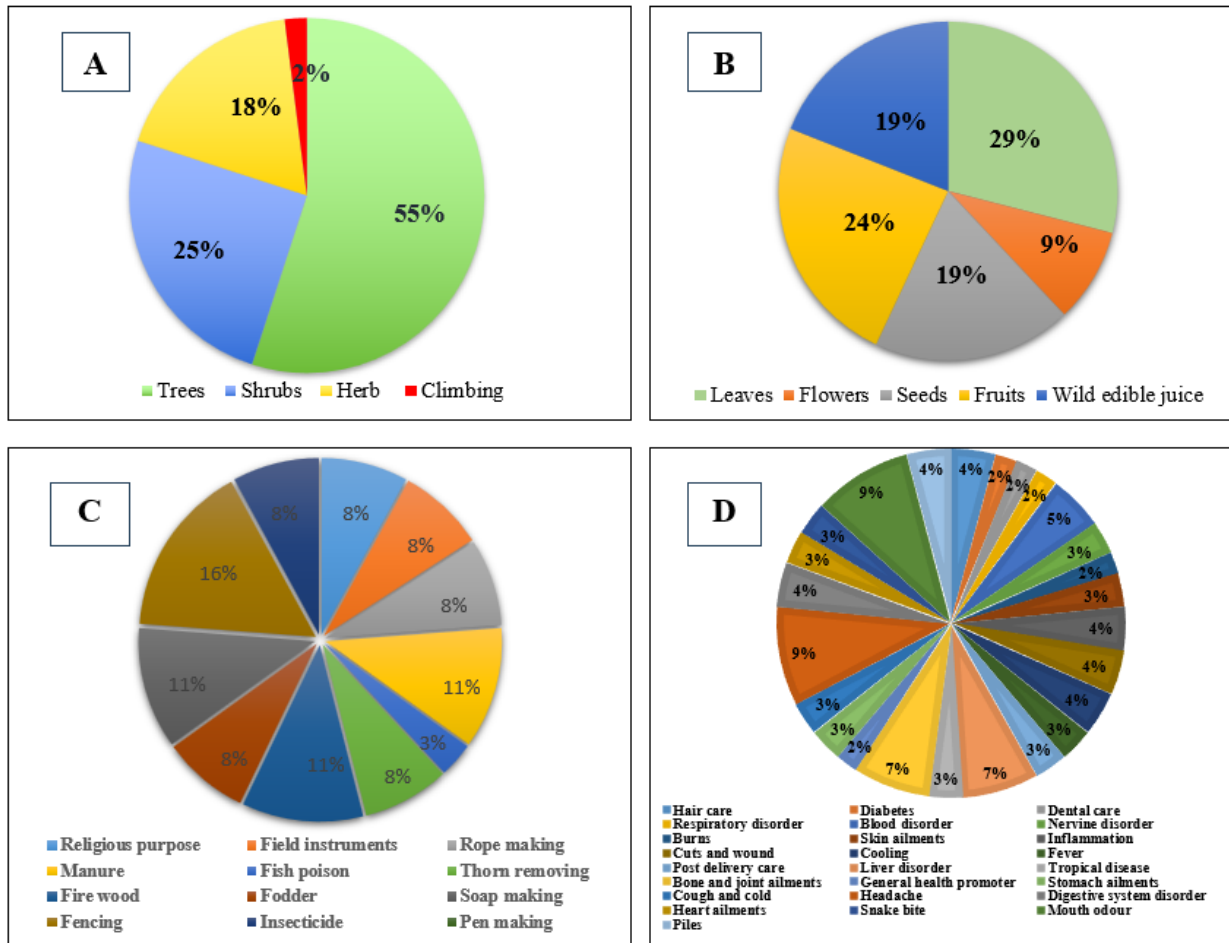
## CONCLUSION

The first-hand information gathered during the study will be handed over to the biodiversity committee constituted at Padel village by the gram panchayet for updating the Peoples Biodiversity Register. This in turn will help decision making authorities in planning strategies for conservation of different habitats such as plateaus, mangrove vegetation, and ethnobotanical knowledge available to people in the village, etc.

The present study gives detailed information on diversity and traditional knowledge based on plants in Padel village. We have found that there is a good diversity of useful plants in our study area. Ripe Mango based small scale industry is set up in three wadis, namely, khalcha vatar, Hemlewadi and Patankar wadi. The scope of this kind of set up may be established in other areas in Padel to help generating more revenue for the villagers. Shevga (*Moringa oleifera* Lam.) is produced in most of the wadis in the village which is consumed locally as well as sold in nearby city markets (Fig.5 A).

Urban culture has influenced the celebration of cultural festivals in the village. People have started using artificial flowers whereas a lot of plants which can be used as decorating materials. Plaster of Paris Ganpati idol has replaced the traditional fire clay idol. This would increase pollution in the long run.

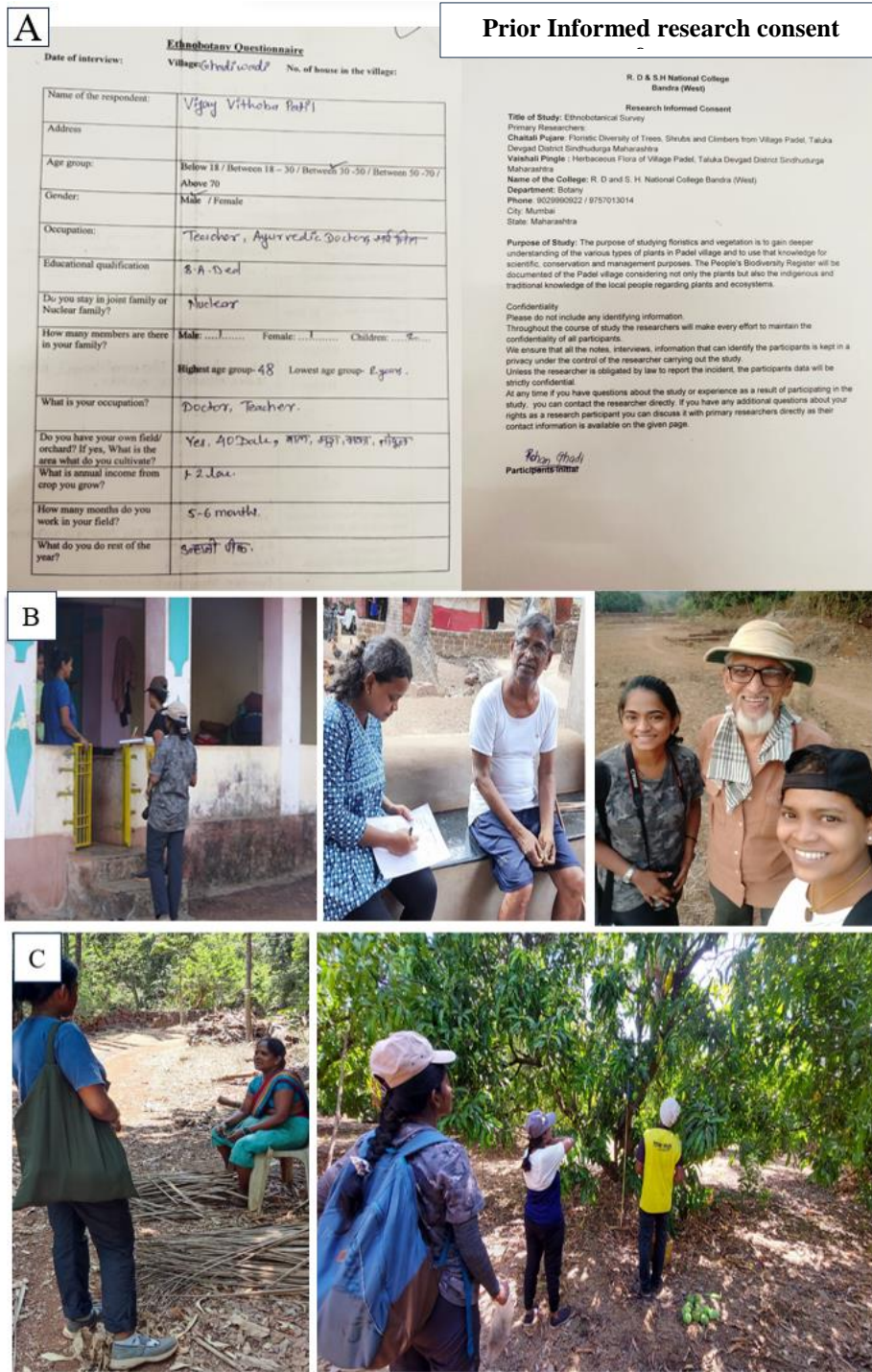
Presence of diverse habitat ranging from mangrove vegetation to cultivation field and, old temples and petroglyphs show that this area holds good potential of developing an ethno-tourism in the village. This will increase the possibility of additional income generation for local villagers.



**Fig.1.** Quantitative analysis of Ethnobotanical data

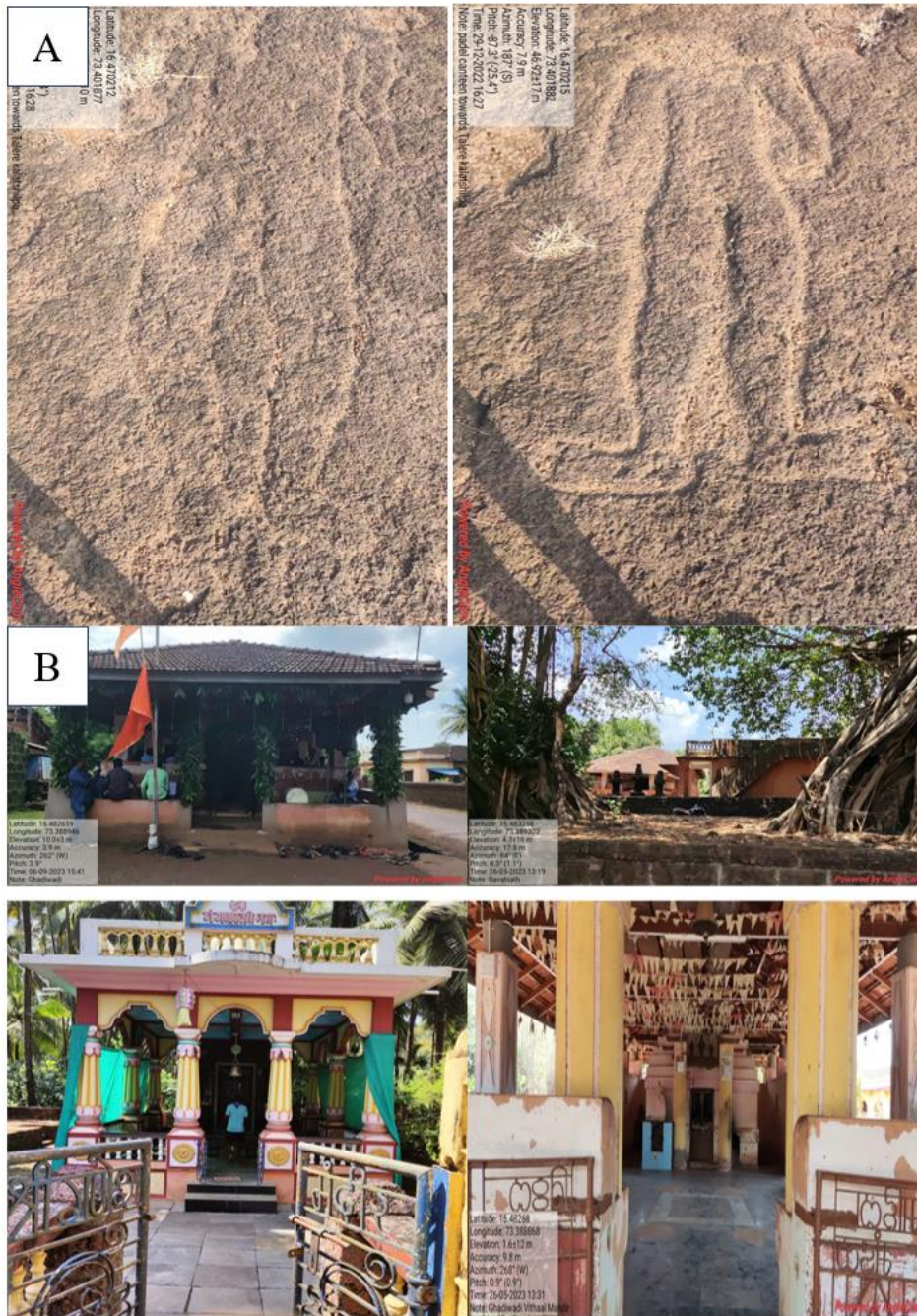
**A.** Habit-wise classification of medicinal plants **B.** Plant part-wise distribution of wild vegetables **C.** Non-timber plants  
**D.** Medicinal plants used in various ailments

Survey questionnaire



**Fig.2** Documentation during survey

**A.** Survey questionnaire and Prior Informed research consent form, **B.** Semi directive interviews, **C.** Field survey with villagers



**Fig.3 A. Petroglyphs B. Ancient Temples C. 100 years old Banyan tree (*Ficus benghalensis* L.) worshipped by village ladies during vatpournima**



**Fig.4-** Traditional utensils **A.** Yadnyapatra **B.** Grain measuring vessels  
**Information and Photo courtesy:** Mr. Vasant Kale(Tanawade wadi), Padel Village



**Fig.5. Weekly market, fruit based finished products, Wild fruit juices & fruit**  
**Ai.** Ladies sell Drumstick (Shevga) grown by them in village in Thursday market. **Aii.** Sacks of Drumstick (Shevga) are sent to Kankavli market by the villagers for selling **Aiii-v:** Local weekly (Thursday) market at padel village, **B.** Products prepared by business women from padel -Mango pulp, Raw mango, Gooseberry and



Chilly pickles **C.** Fruits juices demonstrated by Mr. Vasant Kale prepared from flowers and fruits of *Memecylon*, *Butea*, *Ixora* **D.** Young boy collecting *Bridelia retusa* (L.) A. Juss ripened fruit.

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