# Urban ethnobotanical study of Patan taluka, Gujarat, India

### Aishwarya Darji\*, Juhi Gajjar, and Hitesh Solanki

Post Graduate Student, Department of Botany, USOS, Gujarat University, Ahmedabad-380009, India \*E-mail: <u>darjiaishwarya@yahoo.com</u>

### Abstract:

Ethnobotany is the study of traditional knowledge associated with plants in a social group such as regions or cultures. Urban ethnobotany is a term used to define ethnobotany in urban areas. The present paper deals with the urban ethnobotanical study of Patan taluka of Gujarat state. Plants of ethnobotanical importance with their uses were recorded. A total of 116 plants belonging to 56 families were recorded. The most used families were Poaceae with 9 plants followed by Umbelliferae, Fabaceae, and Lamiaceae family with 7, 6, and 5 plants respectively. Fruits were the most used plant part. Herbs were most used for treating various diseases and ailments. The main source of plants used was from homes, farms, roadside, markets, and shops. Traditional knowledge persists in urban areas because the knowledge is being passed on from forefathers to the next generations.

#### Key Words: Gujarat, Patan, Traditional knowledge, Urban ethnobotany

#### **Introduction:**

Harshberger (1895) brought up and defined the term ethnobotany as "the use of plants by aboriginal people". Ethnobotany is a term used to describe the interaction between humans and plants. Ethnobotanical studies document the traditional knowledge of people about plants and their uses. Prehistoric man was dependent on plants for his livelihood. The ancient medicine system treating human disease by using plants popularly known as Ayurveda appeared and developed between 2600 and 500 BC in India (Subhose *et al.*, 2005; Pandey, 2021). Ethnobotany is the mother of all other systems of medicine such as Ayurveda, Siddha, Unani, Nature cure, and even modern medicine (Vedavathy, S. 2012). (Tapsell *et. al.*, 2004) said that medicinal plants have been identified and used throughout human history. Plants can synthesize a wide variety of chemical compounds that are used to perform important biological functions and to defend against attack from predators such as insects, fungi, and herbivorous mammals (Kokni *et. al.*, 2016).

Even today, in many parts of the world, access to modern healthcare is difficult or not affordable (Suma *et al.*, 2018). Hence in developing countries, traditional way of curing diseases is still preferred over modern-day medical facilities due to its safety, no risks, and associated side effects.



In this constantly changing modern era, people are being influenced by western medicine systems because of instant relief and ignoring the risks and hazards caused in the long term. Due to this traditional knowledge is vanishing slowly but, some sort of knowledge persists, and thus, it is need of the hour to conserve and document the precious traditional knowledge we are using for ages.

## Methodology:

#### Study Area:

The study was done in urban areas of Patan taluka of Gujarat state. Patan taluka is situated in the northern part of Gujarat state. It is situated in Patan district, Gujarat, India. Its geographical coordinates are 23.8500°N, 72.1210°E. The climate of the city is temperate with a moderate



proportion of heat and cold. There are three main seasons viz. monsoon, winter, and summer. The annual temperature ranges between 24°C-34°C. The overall weather is pleasant most of the time.

### Field Survey and Data Collection:

Local urban areas of Patan were visited two to three times a week. The fieldwork was carried out for three months, and relevant information gathered from local people through personal interviews was noted down in the field diary. During fieldwork, photographs of the plants along with habitat, leaves, and floral parts were captured if available. Ethnobotanical information was obtained from the respondents constituting herb sellers, vaidyas healers, herbalists, farmers, priests, and aged persons of the house. The use of semi-structural questionnaires and oral interviews were adopted to obtain the relevant data. The questionnaire was prepared in the form of Google forms and administered to respondents. The questionnaire gathered details follows.

- Name of the person
- Address
- Contact number
- Gender
- Botanical name
- Family
- Local name
- Habit
- Useful parts
- Use
- Location
- Source of plant
- Other ingredients (if any)
- Source of knowledge

#### Data Analysis:

The information obtained from 23 people was recorded in Google forms and all the responses were downloaded in the form of an excel spreadsheet. The collected data was filtered, compiled, and analyzed. From the data, families that used most number of plants were listed out and for each family number of plants was recorded. In the same way, the most used plant parts and habits of the plants were recorded. For each category viz; part used, habit, and the number of plants in different families, data representation was done using charts.

### Preparation of Herbarium:

Each specimen consisting of a stem with attached leaves and flower or inflorescence (if available) was collected during the field study. The collected specimens were photographed and immediately pressed in old journals and later on, specimens were dried between old newspaper sheets. Information related to the collected specimen like name, family, habit, and place of the collection was recorded. After poisoning and drying, the specimens were mounted on an herbarium sheet with all the information. The herbarium sheets then prepared were deposited in the Department of Botany, USOS, Gujarat University, Ahmedabad.

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# **Result and Discussion:**

Initially, 185 plants were recorded during the study and after compilation, and a sorting total of 116 plants belonging to 56 families were reported. The plants with their uses are listed in **Table 1**.

# Table 1. List of plants recorded

Sr.	Botanical	Family	Local name	Habit	Useful	Uses
no	name				part	
1	Abrus		Chanothi	Climber	Leaves	Leaves are chewed to treat
	precatorius L.	Papilionaceae				mouth ulcers
2	Acacia nilotica	Mimosaceae	Desi bawal	Tree	Stem,	Young twigs are chewed as
	L.				leaves,	toothbrushes, leaves are
					gum	chewed after meals for
						better digestion, gum
						reduces Vata and pitta
						dosha as per Ayurveda
3	Achyranthes	Amaranthacea	Anghedi	Shrub	Leaves,	Unripe seeds are anti-aging
	aspera L.	e			seeds	leaves are used to remove
						tumors in the uterus
4	Adhatoda	Acanthaceae	Ardusi	Shrub	Leaves	Cure cough
	vasica L.					
5	Aegle	Rutaceae	Bili	Shrub	Leaves,	Leaves are offered to Lord
	marmelos L.				fruit	Shiva in religious worships,
						fruit is anti-diabetic
6	Allium cepa L.	Liliaceae	Dungali	Herb	Leaves	Leaf juice is applied to hair
						to treat dandruff and
						increase hair growth, green
						leaves used to prepare and
						garnish dishes
7	Allium sativum	Liliaceae	Lasan	Herb	Cloves	Oil is used to cure
	L.					headaches and cold
8	Aloe	Liliaceae	Kuwarpathu	Herb	Leaves	Gel applied on the face to
	barbadensis					rejuvenate skin and in hair
	Mill.					with coconut oil to make
						hair smooth
9	Anethum	Umbelliferae	Suva	Herb	Seed	Seeds are chewed as moth
	graveolens L.					freshener
10	Areca catechu	Arecaceae	Sopari	Tree	Seed	Seeds are chewed with betel
	L.					leaf as a mouth freshener
11	Asparagus	Asparagaceae	Shatavari	Climber	Root	Diabetes
	racemosus					
12	Azadirachta	Meliaceae	Limdo	Tree	Leaf,	Young stem is chewed as
	indica A. Juss				stem,	toothbrush, leaves are
					flower,	added to hot water and used



					bark,	for bathing, flower
					fruit	decoction is used to avoid
						any viral fever, oil from
						ripened seeds are used to
						kill lice
13	Basella rubra	Chenopodiace	Poi ni bhaii	Climber	Leaves	Treat iron deficiency.
	L.	ae				cooked as subji
14	Beta vulgaris	Amaranthacea	Beet	Climber	Root	Juice is taken to increase
	L.	e				the haemoglobin content in
						the blood
15	Bixa orellana	Bixaceae	Sindoor	Tree	Seeds	Dve from seeds is offered
10	L		2			to Lord Hanuman and Lord
	<b>L</b> .					Ganesh in religious
						worships married women
						culturally apply it in the
						middle of the head
16	Bougainvillea	Nyctaginaceae	Boganvel	Climber	Whole	For decoration and making
	spectabilis				plant	fence
	Willd.				I ····	
17	Brassica	Brassicaceae	Rai	Herb	Seeds,	Seeds are used in seasoning
	juncea L.				whole	dishes, leftover plants after
	5				plant	harvesting seeds are used as
						fodder
18	Bryonia	Cucurbitaceae	Shivlingi	Climber	Seed	Increase fertility
	lacuniosa					
19	Butea	Fabaceae	Palash, kesudo,	Tree	Leaves,	Leaves are stitched together
	monosperma		khakhro		flower	and used as plates, flowers
	Lam.					are soaked in water and
						used for bathing to maintain
						the coolness of the body in
						summer, dye obtained from
						the flower is used to play
						Holi festival
20	Caesalpinia	Caesalpinacea	Kachka	Tree	Seed	Treat piles
	bonduc	e				
21	Calotropis	Asclepidaceae	Aankdo	Shrub	Leaves	Leaves are used in joint
	procera Ait.				flower	pain; flowers are offered to
						Lord Hanuman in religious
						worships
22	Capsicum	Solanaceae	Marcha	Herb	Fruit	Spice
	annum L.					
23	Carica papaya	Caricaceae	Papaiyu	Tree	Fruit,	Leaf juice is used in fever,
	L.				leaves	also increases WBC count
						in dengue and malaria, fruit
						is laxative in nature



24	Casaghala	Anormore	Dili Varan	Chaub	Flower	Deligious worships
24	thevetia L	Apocynaceae	Pin Karen	Shrub	Flower	decoration
25	Cassia fistula	Caesalninacea	Garmalo	Tree	Fruit	The sentum between seeds
25	L.	e	Guimaio	1100	Tun	is laxative in nature
26	Chenopodium	Chenopodiace	Chil ni bhaji	Herb	Leaves	Anti-diabetic
	album L.	ae	C C			
27	Chlorophytum	Asparagaceae	Safed Musli	Herb	Root	Aphrodisiac
	borivilianum					_
	Sant.					
28	Cicer arietinum	Papilionaceae	Chana	Herb	Seed	Seed flour mixed with milk
	L.					and turmeric is used in the
						beautification of the face
29	Cinnamomum	Lauraceae	Tej patta, tamal	Tree	Leaves	Condiment
	tamala (Buch-		patra			
	Ham.)					
30	Cinnamomum	Lauraceae	Тај	Tree	Bark	Condiment
	verum					
31	Cissus	Vitaceae	Hadsankal	Herb	Stem	Heals Joints and broken
	quadrangularis					bones
	L.					
32	Citrus limon L.	Rutaceae	Limbu	Tree	Fruit	Stop vomiting, source of
						vitamin C, preserved as
						pickle, get rid of dandruff
33	Citrus medica	Rutaceae	Bijoru	Tree	Fruit	Remove kidney stone
34	Cocos nucifera	Palmae	Nariyal	Tree	Fruit	An important part of rituals,
	L.					used to prepare chutneys,
						the endosperm is nutritive,
						oil is applied to hair
35	Coleus	Lamiaceae	Ajma patta	Herb	Leaves	Dried leaves are used as a
	amboinicus					spice
	Lour.					
36	Commiphora	Burseraceae	Gugal	Shrub	Resin	Dried resin burnt for its
	wightii (Arn.)					smell during evening time
						and in prayers
37	Cordia	Boraginaceae	Gunda	Tree	Fruit	Cooked as vegetable and
	dichotoma					preserved as a pickle
	Forst.					
38	Coriandrum	Umbelliferae	Kothmi, dhana	Herb	Leaves,	Leaves are used to make
	sativum L.				seeds	chutneys and garnishing
						dishes; seeds are used as a
						spice
39	Crocus sativus	Iridaceae	Kesar	Herb	Stigma	Condiment
	L.				of	
					flower	
4	Cucurbita	Cucurbitaceae	Kolu	Climber	Fruit,	Fruit offered to God at the
	maxima Duch				seed	ending of all religious



						hawans, seeds treat vitamin B12 deficiency
41	Cuminum	Umbelliferae	Jeeru	Herb	Seed	Condiment, treat gastric
	cymium L.					problems
42	Curcuma longa	Zingiberaceae	Haldar	Herb	Rhizom	Colouring agent, heal
	L.				e	wounds, beautification
43	Cynodon	Poaceae	Dharo	Herb	Whole	Cheek swelling offered to
	dactylon L.				plant	Lord Ganesha in religious
						worships
44	Datura metel	Solanaceae	Dhaturo	Herb	Flower,	Offered to Lord Shiva in
	L.				fruit	religious worships
45	Daucus carota	Umbelliferae	Gajar	Herb	Root,	Root improves eyesight,
	L.				leaves	source of vitamin A, leaves
						are used as fodder
46	Duranta repens	Verbenaceae	Damayanti	Shrub	Whole	Decoration and as a hedge
	L.				plant	plant
47	Eclipta	Asteraceae	Bhrungraj	Herb	Leaves	The oil is used to stop
	prostrata L.					greying of hair
48	Elettaria	Zingiberaceae	Elaichi	Herb	Fruit,	Condiment
	cardamomum	-			seed	
49	Eleusine	Poaceae	Raagi	Herb	Seeds	Anti-aging, weight loss,
	coracana L.		_			calcium deficiency
50	Eucalyptus	Myrtaceae	Nilgiri	Tree	Leaf	The oil used for headaches
	globulus Labill.					and cold
51	Ferula	Umbelliferae	Hing	Herb	Root	Condiment, treat the gastric
	asafoetida				latex	problem
52	Ficus	Urticaceae	Vad	Tree	Whole	The plant is considered
	benghalensis L.				plant	sacred and as per religion
						worshipped by married
						women for the well-being
						of their husbands
53	Ficus racemosa	Urticaceae	Umro	Tree	Whole	The plant is considered
	L.				plant	sacred as it is connected to
						Lord Dattatreya as per
						religion
54	Ficus religiosa	Urticaceae	Piplo	Tree	Whole	The plant is considered
					plant	sacred as it is connected
						with Lord Vishnu as per
						religion and thus, it is
						worshipped
55	Foeniculum	Umbelliferae	Variyali	Herb	Seed	Seeds are chewed as mouth
	vulgare Mill.					freshener; the juice is taken
						to save oneself from heat
						stroke



56	Gossypium herbaceum L.	Malvaceae	Kapas	Herb	Fruit, seed	Fiber from fruit is used in medical operations and making wicks, seeds are used to extract oil used in cooking, leaf over seeds are then used as fodder
57	Hibiscus rosa- sinensis L.	Malvaceae	Jasud	Shrub	Flower	Offered to Lord Ganesh in religious worships, oil applied to hair
58	Hordeum vulgare L.	Poaceae	Jav	Herb	Seeds	Used in hawan
59	Jasminum sambac L.	Oleaceae	Mogro	Climber	Flower	Flowers are stringed together and tied in hair, the oil used to make perfumes
60	Kalanchoe pinnata	Crassulaceae	Patthar vel	Herb	Leaves	Remove kidney stones
61	Lagenaria siceraria (Molina) Standi	Cucurbitaceae	Dudhi	Climber	Fruit	Juice is used to reduce blood cholesterol, good for heart patient
62	Lawsonia inermis L.	Lythraceae	Mehendi	Shrub	Leaves	Leaf paste is applied to hair and designs are made on hands on special occasions
63	Mangifera indica L.	Anacardiaceae	Keri	Tree	Fruit, leaves	Fruit is preserved as pickle, the fruit pulp is nutritive, seeds are used to make kajal, leaves are tied and hung on front doors for positive energy, dried fruit powder is used for sour taste in dal and sambhar
64	Medicago sativa L.	Papilionaceae	Rajko	Herb	Whole plant	Fodder
65	<i>Mentha spicata</i> L.	Lamiaceae	Fudino	Herb	Leaves	Making chutneys and sharbat
66	Mimusops elengi L.	Sapotaceae	Borsalli	Tree	Flower	Making perfume
67	Moringa olerifera	Moringaceae	Saragvo	Tree	Leaves, fruit	Weight loss, leaves, and fruits are used to prepare curry, dal, and sambhar, relieve body pain, used in diabetes

Leaves

68

Murraya

koenigi L.

Rutaceae

Meetho limdo

Tree

						for hair growth
69	Musa paradisiaca L.	Musaceae	Kel	Herb	Leaves, fruit	Leaves are used as plates; fruit is a good source of potassium and calcium
70	Nelumbo nucifera Gaertn.	Nelumbonace ae	Kamal	Herb	Flower, seeds	The flower is offered to Goddess Laxmi in religious worships; seeds are also used in religious worships
71	Nyctanthes arbiritis L.	Oleaceae	Parijat	Tree	Flower	Decoration and religious worships
72	Ocimum basilicum L.	Lamiaceae	Takmariya	Herb	Seed	Weight loss cures menstrual problems
73	Ocimum sanctum L.	Lamiaceae	Tulsi	Herb	Whole plant	The plant is considered sacred as it is believed to have a connection with Lord Vishnu and Goddess Laxmi, leaves are used to cure colds and cough
74	Opium poppy	Papaveraceae	Afin	Shrub	Seed	Increase stamina and fertility, treat diarrhea in children
75	<i>Opuntia elatior</i> Mill.	Cactaceae	Thor	Shrub	Fruit	Juice is taken to increase haemoglobin in the blood, treat anemia
76	Origanum majorana	Lamiaceae	Marvo	Herb	Flower	Offered to Lord Shiva in religious worships, inhaling the smell of flowers relieve tension
77	Oryza sativa	Poaceae	Chokha	Herb	Seeds	Religious worships
78	Pandanus odorifer (Forssk.)	Pandanaceae	Kevdo	Tree	Flower	Offered to Lord Shiva in religious worships
79	Pedalium murex L.	Pedaliaceae	Gokhru	Herb	Whole plant	Body pain
80	Pennisetum glaucum L.	Poaceae	Bajri	Herb	Seed	Fodder
81	Phyllanthus emblica L.	Euphorbiaceae	Amla	Tree	Fruit	Fruits are preserved as pickles, dried fruit is stored as candy, dried fruit powder is used to cure constipation, a good source of vitamin C improves eyesight and controls hair fall, oil is applied to hair



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added and boiled in hair oil



82	Piper betel L.	Piperaceae	Paan , naagar vel na paan	Climber	Leaves	Religious worships, leaves are chewed as a mouth freshener
83	Piper longum L.	Piperaceae	Pipramul, ganthola	Climber	Fruit	Cold, gastric problems, keeps the body warm in winters
84	Piper nigrum L.	Piperaceae	Kala Mari	Climber	Fruit	Cold
85	<i>Plantago ovata</i> Forsk.	Plantaginacea e	Isabgul	Herb	Seeds	Seeds are taken with milk to cure constipation, laxative in nature
86	<i>Plumeria rubra</i> L.	Apocynaceae	Safed champo	Tree	Flower	Decoration, worshipping
87	Polyalthia longifolia Sonn.	Annonaceae	Asopalav	Tree	Leaves, fruit	Leaves are tied together and hung on the front doors of the house for maintaining positive energy, fruit increases fertility
88	Pongamia pinnata L.	Fabaceae	Kanji	Tree	Leaves	Skin disease
89	Prosopis cineraria L.	Fabaceae	Khijdo	Tree	Wood	The wood used in the hawan in marriage rituals, the plant is of religious importance
90	Punica granatum L.	Lythraceae	Dadam	Shrub	Fruit, seed	Fruit peel is used to cure cough, seeds are used in garnishing dishes, dried seed powder is used as a flavoring agent, fruit juice treats vitamin B12 deficiency and anemia
91	Randia dumetorum	Rubiaceae	Mindhal	Tree	Fruit	Dried fruits are tied to the wrists of the bride and groom in marriage, used to eliminate the effects of poison
92	Raphanus sativus L.	Brassicaceae	Mulo	Herb	Root	Roots are eaten as salad and preserved as a pickles
93	Ricinus communis L.	Euphorbiaceae	Aerando, divela	Shrub	Seed	Oil is laxative in nature, grains are coated with oil for long storage
94	Rosa indica	Rosaceae	Gulab	Shrub	Flower	Planted for decoration, petals are stored in sugar syrup called gulkand and used in making paan, religious worships, petals



						are boiled in water and
						condensed water droplets
						recollected as rose water
						and used as a cleanser
95	Saccharum	Poaceae	Sherdi	Herb	Stem	Juice is used in Jaggery and
20	officinarum L	1 040040	Sherai	11010	Stem	sugar making fresh jujce is
	officinarian E.					used as a beverage
96	Santalum	Santalacaaa	Chandan	Tree	Wood	Wood powder is used in
70	album I	Santalaceae	Chandan	1100	wood	religious worships, applied
	uibum L.					on the face with turmoric
						rose water and been for
						hose water, and besam for
07	S in data	Conindoceco	A with a	Trees	Emit	Washing hair
97	Sapindus emarginatus Vahl	Sapindaceae	Aritha	Tree	Fruit	wasning hair
98	Sesamum	Pedaliaceae	Tal	Herb	Seed	Religious worships, the
	indicum					oil used in cooking and
						massaging the body, seeds
						are a good source of
						calcium, mixed with
						jaggery to make chikki,
						used in hawan, chewed with
						fennel seeds as a mouth
						freshener
99	Senegalia catechu	Fabaceae	Katho	Tree	Wood	Mouth ulcers
100	Solanum	Solanaceae	Bhoy ringani	Herb	Seed	Arthritis, expelling insects
	xanthocarpum					out of ears, toothache, and
	Lam.					headache
101	Sorghum	Poaceae	Juwar	Herb	Whole	Fodder, food
	bicolor L.				plant	
102	Spinacia	Amaranthacea	Palak	Herb	Leaves	Improving eyesight, curing
	oleracea L.	e				iron and mineral deficiency,
						anti-oxidant
103	Syzygium	Myrtaceae	Jambu	Tree	Fruit	Control diabetes
	<i>cumini</i> L.					
104	Syzygium	Myrtaceae	Laving	Tree	Flower	Unopened flower buds are
	aromaticum					used as a condiment, the oil
						used in toothache
105	Tagetes erectus	Asteraceae	Galgoto	Herb	Flower	Decoration, religious
	L.					worships
106	Tamarindus	Fabaceae	Amli	Tree	Fruit,	Used to make chutneys, dal,
	indica L.				seed	and sambhar, seeds are used
						as a blood thinner

107	<i>Terminalia</i> <i>bellirica</i> Gaertn.	Combretaceae	Baheda	Tree	Fruit	Relieve constipation
108	Terminalia chebula Retz.	Combretaceae	Harde	Tree	Fruit	Relieve constipation, aid in digestion
109	<i>Tinospora</i> <i>cordifolia</i> Willd.	Menispermace ae	Galo	Climber	Stem	Boost immune system, control diabetes, treat jaundice and arthritis
110	Trachyspermu m ammi L.	Umbelliferae	Ajmo	Herb	seeds	Gastric problem, indigestion
111	<i>Trapa natans</i> L.	Lythraceae	Shinghoda	Herb	Fruit	Antioxidant, source of minerals, low in calories, treat joint pain
112	Trigonella foenum- graecum L.	Fabaceae	Methi	Herb	Leaves, seeds	Leaves are cooked and eaten, seed paste applied in hair, soaked seeds used by the diabetic patient, oil applied in hair
113	Triticum aestivum L.	Poaceae	Ghau	Herb	Whole plant	Staple food, the leftover plant is used as fodder after harvesting seeds
114	Vitex negundo L.	Verbenaceae	Nagod	Shrub	Whole plant	Arthritis, rheumatism
115	Zea mays L.	Poaceae	Makai	Herb	Whole plant	Fodder
116	Zingiber officinale Roscoe	Zingiberaceae	Aadu	Herb	Rhizom e	Dried rhizome powder is used to cure acidity and aids in digestion, appetizer, the fresh rhizome is used to treat cough and cold

Maximum plants were reported from the Poaceae family with 9 plants followed by Umbelliferae, Fabaceae, and Lamiaceae family with 7, 6, and 5 plants respectively (**Figure. 2**).







Figure 2: Family distribution with number of species based on data collected on ethnobotanical use among urban families

All the plant species collected during the survey were used to cure various diseases and ailments. The common disease or sickness reported was cold, cough, and gastric problems. Most of the plants used were obtained from the surrounding environment i.e., home, farm, roadside, market, and shops.

Fruits were reported to be the most used plant part (22%) followed by seeds and leaves (21%). The least used plant parts were resin and gum (1%) (**Figure 3**).



Figure 3: plant parts used in percentage



The most used plants were herbs (43%) followed by trees (33%). Climbers were the least used plants (11%) (**Figure 4**).



Figure 4: Habits of plants in percentage

## **Conclusion:**

With the incredible research and development occurring in both traditional and modern medicine, people still use their traditional knowledge in daily life. The ethnobotanical knowledge was found to persist even today in modern societies of the urban area. All the knowledge people have today is given by forefathers- from grandparents to their grandchildren, from Dadi, Nani to mothers, and next generations. The knowledge was not limited to food and medicine but plants used as fodder, in cosmetics, rituals, and plants of religious importance were also reported. Both men and women know plants and their uses.

The study indicated that ethnobotanical knowledge persists among urban people but, more research and validation is still required to explore the important medicinal properties of plants with their proper documentation. Thus, it is very necessary to document and preserve this wealth of knowledge for the next generations to come.

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Suggested citation:

Darji A., Gajjar J. & Solanki H. (2023). Urban ethnobotanical study of Patan taluka, Gujarat, India, Prithivya, An Official Newsletter of WCB Research Foundation and WCB Research Lab. Vol 3(1) 8-22.