RESEARCH PAPER

Wild Edible Plant Resources Utilized by Tribal Communities of the Rampachodavaram Forest Division and Their Medicinal Relevance

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Abstract
Wild Edible Plants (WEPs) are non-cultivated plant species that grow naturally in forests, grasslands, wetlands, fallow lands, and agro-ecosystems and are consumed by local communities for food, nutrition, and medicine. Field surveys were conducted during 2024–2025 to document wild edible plants and associated traditional knowledge. Informants were selected through purposive sampling, prioritizing elders, women gatherers, and traditional healers. Data were collected using structured questionnaires following standard ethnobotanical methods proposed by S. K. Jain, Gary J. Martin, and T. Cook. The study revealed dominance of Fabaceae (11.69%) and Amaranthaceae (9.09%), with herbs (41.56%) forming the major life form, followed by trees and climbers. Fruits (31.17%) were the most utilized edible part, followed by leaves and underground storage organs. Nutritionally, carbohydrate-rich (27.27%), vitamin-rich (20.78%), and iron/calcium-rich species (18.18%) were prominent. Notably, 67.53% of species showed ethnomedicinal value, mainly for digestive disorders, strength enhancement, and anti-diabetic uses. The study establishes Rampachodavaram Division as a regional nutritional biodiversity hotspot and emphasizes the integration of indigenous wild edible plant knowledge into conservation strategies, tribal nutrition programs, and sustainable livelihood frameworks to safeguard biocultural heritage and enhance food security in the Eastern Ghats landscape.
Keywords: Wild edible plants; Tribal knowledge; Ethnobotany; Nutritional value; Andhra Pradesh; Rampachodavaram division.

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Introduction

Wild edible plants play a vital role in sustaining rural and tribal food systems, particularly in forested and agricultural frontier regions of India (Sivadasan et al., 2011). In India, tribal groups continue to rely on forest plant resources to supplement staple diets, particularly during lean seasons (Naik et al., 2016). Uses of non-cultivated foods, of which fruits form a part, as a diet supplement in times of plenty, as a component of local responses to increasing food insecurity and as one of the major coping mechanisms at times of food shortage is widely documented (Abbink, 1993; Bell, 1995; Edwards, 1992; Guinand and Dechassa, 2000; Mojeremane and Tshwenyane, 2004; Getachew etal., 2005; Redzic 2007) Fruits are generally acceptable as good source of nutrient and supplement for food in a world faced with problem of food scarcity. They are known to be excellent source of nutrients such as minerals and vitamins (Nahar et.al, 1990). Foods from wild resources can play an important role in rescuing lives during famine and war, as seen in Sudan 1973 and 1984,- 1985. Bihar, 1965-1966, Bangladesh 1974- 1975 (FAO, 1999) and recent war in Bosnia-Herzegovia (Redzic, 2007). Although the use of wild fruits has recently decreased, many people in rural areas still use them extensively as a supplement to their basic food requirement, some are preserved for use during periods of scarcity, they are sometime sold in the urban market and are then in competition with exotic fruits. (Manyafu,1971). In Andhra Pradesh, there some investigators carried out work on wild medicinal plants (Rama Rao 1996, Pullaiah 2007; Venkaiah 1998; Raju etal., 2005; Prayaga Murty and Venkaiah, 2010; Prayaga Murty and Narasimha Rao 2010, etc.) Dietary use of wild fruits appears in few records from Andhra Pradesh (Reddy et. al. 2006, Mishra et.al. 2007, Prayaga Murty etal,2015. So far no attempt has been made on the wild edible fruits of Rampachodavaram Division and evaluate their nutritional and ethnomedicinal significance within tribal food systems. By integrating floristic surveys with ethnobotanical documentation, this study seeks to contribute to regional biodiversity records, strengthen understanding of indigenous foodways, and highlight the role of wild edible plants in enhancing food and livelihood security.

Materials and Methods

Study Area

Rampachodavaram Division is located in the hilly tracts of the Eastern Ghats in Alluri Sitarama Raju district, within Andhra Pradesh. The region's coordinates lie roughly between 17°17′–17°48′ N latitude and 81°44′–82°13′ E longitude with varied elevations shaped by the Eastern Ghats topography. The region is characterized

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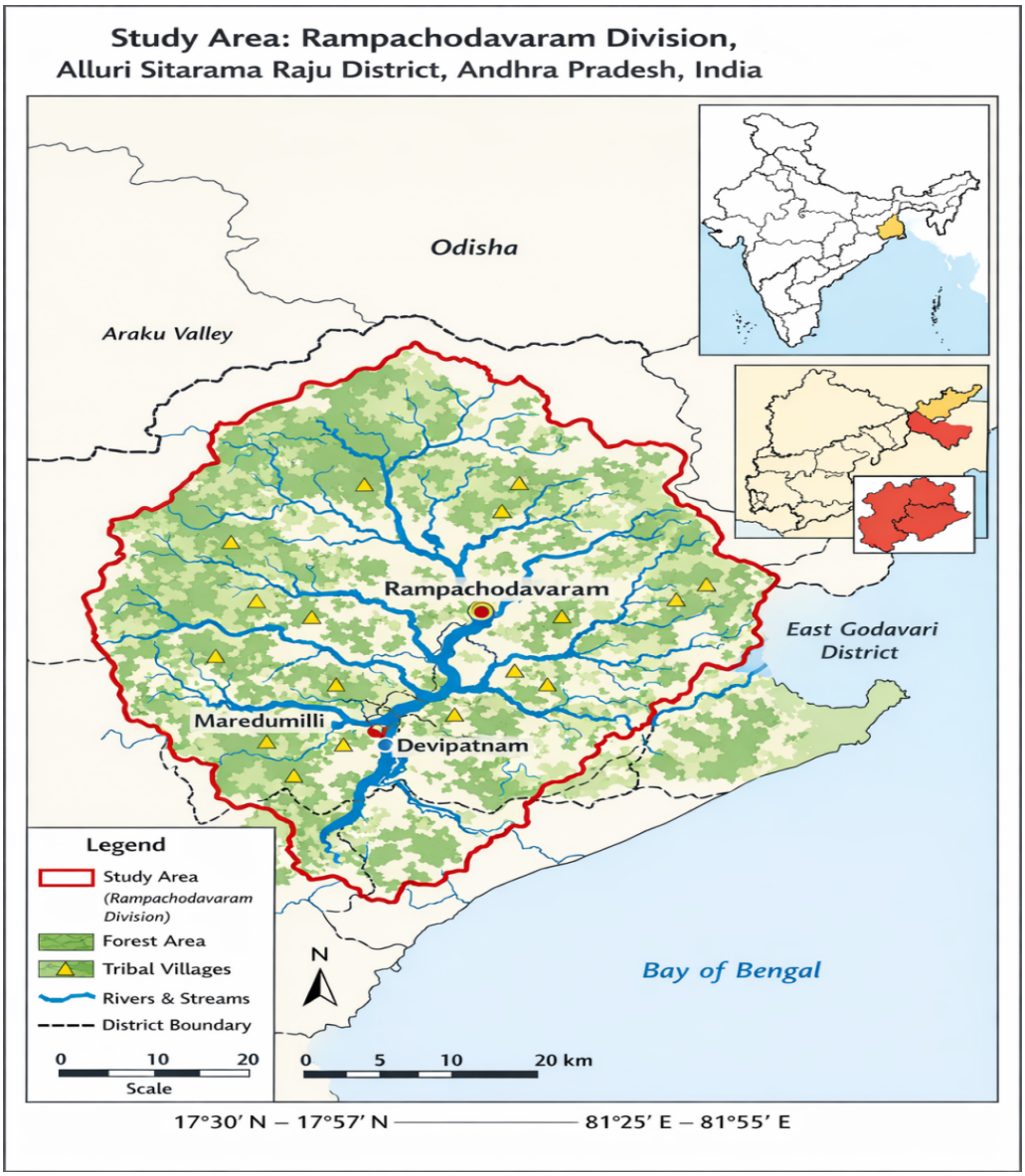
by undulating terrain, dense tropical moist deciduous forests, seasonal streams, and rich biodiversity. The area forms part of the Godavari river basin and supports diverse forest vegetation including economically and ethnobotanically important species. The climate is tropical with moderate to high rainfall during the southwest monsoon (June–September), followed by a dry season. These seasonal variations strongly influence the availability and phenology of wild edible plant species. The division is predominantly inhabited by tribal communities such as the Konda Reddi, Koya, Valmiki, Konda Dora, Bagata, and Gadaba tribes. who depend on subsistence agriculture, forest gathering, and non-timber forest products for livelihood. Due to limited infrastructure and remoteness of interior hamlets, local communities continue to rely significantly on wild plant resources for food, nutrition, and traditional healthcare. The ecological richness combined with strong traditional knowledge systems makes Rampachodavaram Division an important region for wild edible plant species studies.(Fig.-1)



Field Surveys and Data Collection

Field visits were conducted over two seasons in 2024 and 2025. Informants were selected through purposive sampling, prioritizing elders, women gatherers, and traditional healers. Data were recorded using structured questionnaires adapted from Cook 1995, Martin 1995, Jain and Rao 1977, Jain & Goel, 1995; Pradhan et al., 2013). Voucher specimens were collected and identified using regional floras . viz. (Hooker ,1872-1897, Gamble and Fischer, 1915, Pullaiah 1997, Prayaga Murty 2009) and herbarium consultation (Rao, 1981; Reddy et al., 2011). Information recorded included Botanical Name, Family, Habit, Vernacular / Tribal Name ,Edible Part , Mode of Consumption Nutritional Relevance and Medicinal Relevance , following established ethnobotanical documentation protocols (Jain, 1964; Kala, 2007).

Result

Floristic Composition and Diversity Metrics

Field visits were conducted over two seasons in 2024 and 2025. Informants were selected through purposive sampling, prioritizing elders, women gatherers, and traditional healers. Data were recorded using structured questionnaires. The survey documented 77 wild edible plant species, representing 67 genera and 38 families, from Rampachodavaram Division of Alluri Sitarama Raju district.(Table .-1)

The family-wise distribution of recorded species indicates a heterogeneous taxonomic composition with clear dominance by a few families.The family Fabaceae emerged as the most dominant group, contributing 9 species and accounting for 11.69% of the total recorded taxa. Amaranthaceae ranked second, comprising 7 species (9.09%), indicating its substantial representation in the study area. Both Malvaceae and Dioscoreaceae were equally represented, each with 5 species contributing 6.49% to the total flora. Araceae and Solanaceae each recorded 4 species (5.19%), demonstrating moderate representation within the study area. Meanwhile, Phyllanthaceae and Rhamnaceae were represented by 3 species each (3.90%), A substantial proportion of the flora (48.06%) was distributed among 30 other families, collectively contributing 37 species.(Fig.-2)

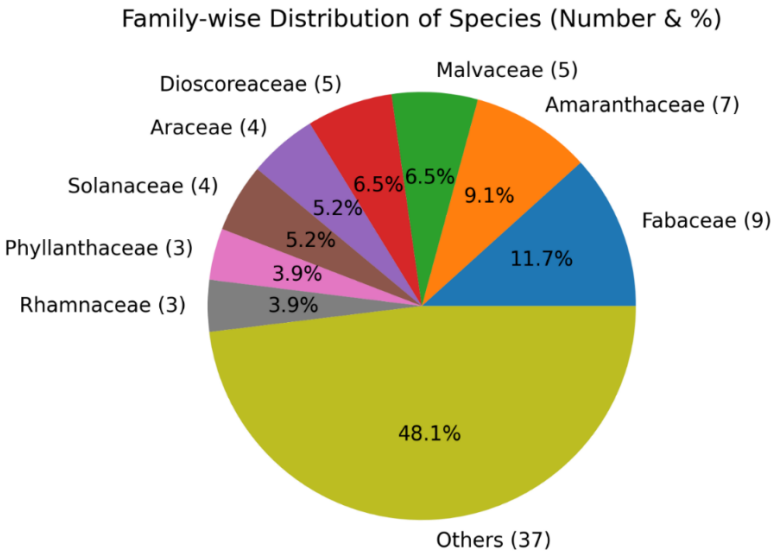


Figure- 1: Floristic Composition and Diversity Metrics

Life Form Spectrum (Biological Spectrum Analysis)

The herb-dominated spectrum (41.56%) indicates accessibility and rapid regenerative capacity. Tree species (25.97%) contribute predominantly fruit resources, suggesting forest canopy importance in tribal food systems. Climbers (23.38%), particularly *Dioscorea* spp., reflect reliance on underground storage organs as famine-buffer foods.(Fig.-3)

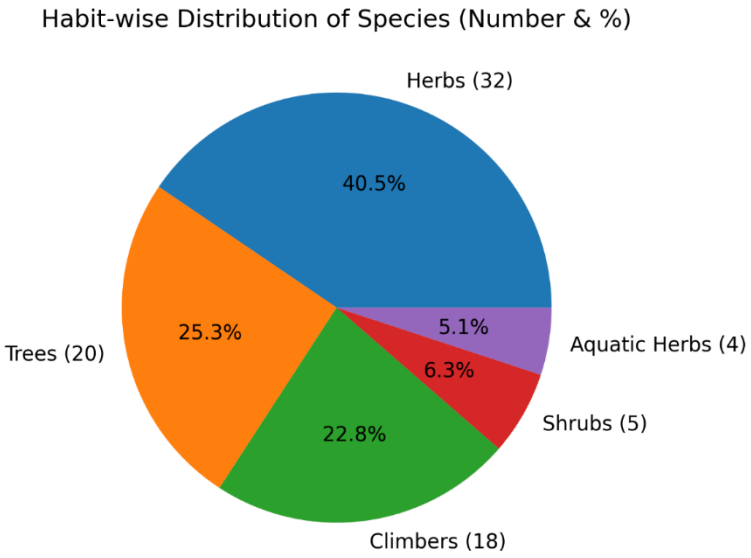


Figure 2: Life Form Spectrum

Edible Part Use-Pattern Analysis

The analysis of edible plant-part utilization shows a clear predominance of fruit consumption among the recorded wild edible species. Fruits represent the largest category with 24 species (31.17%), highlighting strong dependence on seasonally available, nutrient-rich fleshy resources. Leaves constitute the second most utilized category (18 species; 23.38%), indicating their importance as supplementary greens, particularly during the monsoon and post-monsoon seasons. Underground storage organs (tubers, corms, bulbils) account for 12 species (15.58%), serving as energy-rich fallback foods. Seeds contribute 8 species (10.39%), while shoots and young stems (5 species; 6.49%) and rhizomes (3 species; 3.90%) show moderate utilization. Whole-plant use is minimal (2 species; 2.60%), suggesting selective harvesting practices. Other plant parts, including sap, flowers, and decoctions, collectively account for 5 species (6.49%), (Fig.-4)

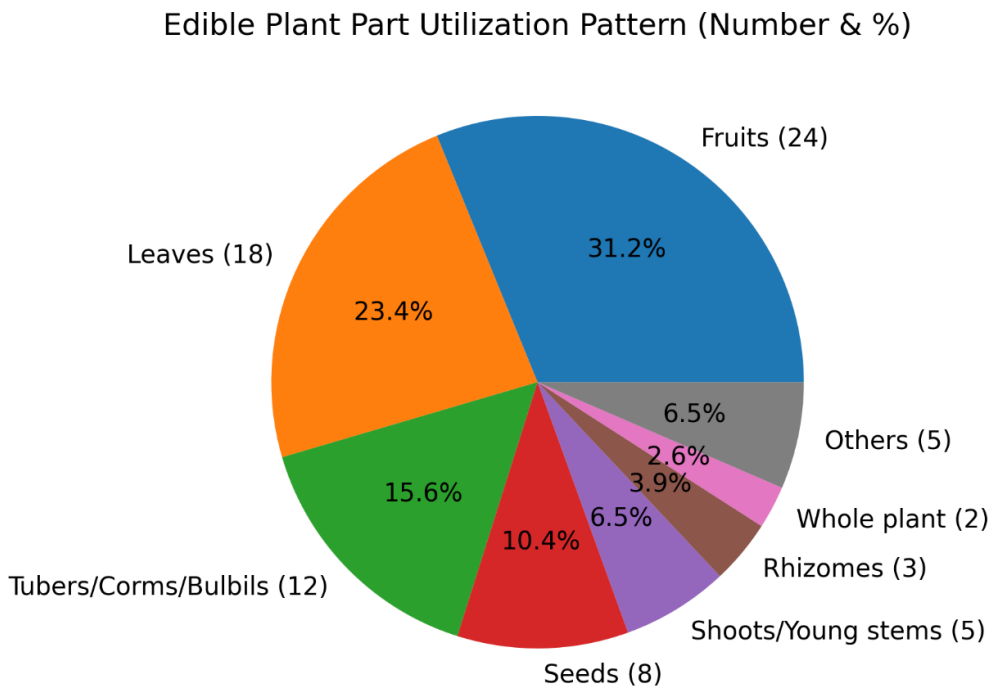


Figure 3: Part Used

Nutritional Functional Grouping

Based on reported nutritional attributes, species were categorized into functional nutrient groups:

- Carbohydrate/Energy-rich: 21 species (27.27%)
- Protein-rich: 9 species (11.69%)
- Vitamin-rich (A & C dominant): 16 species (20.78%)
- Iron/Calcium-rich: 14 species (18.18%)
- Antioxidant-rich: 7 species (9.09%)
- Functional nutraceuticals (Omega-3, tonic, adaptogenic): 10 species (12.99%)

The prominence of carbohydrate-rich tubers and fruits underscores their role in caloric buffering during lean agricultural periods. Simultaneously, iron and vitamin-rich leafy taxa demonstrate contribution to micronutrient sufficiency.

Medicinal Use Categorization

Out of 77 species, 52 species (67.53%) possess explicit ethnomedicinal relevance, confirming the strong food–medicine interface.(Table-2)

The medicinal category analysis shows that digestive disorders constitute the highest proportion (18.18%) of recorded species, indicating a strong dependence on herbal remedies for gastrointestinal ailments. This is followed by strength/general tonic uses (11.69%), reflecting the importance of plants in promoting overall vitality. Species used for anti-diabetic purposes account for 9.09%, while anti-inflammatory plants represent 7.79%. Remedies categorized as cooling/febrifuge comprise 6.49%, and immunomodulatory plants make up 5.19%.(Table -2)

Ethnobotanical Indices (Projected Quantitative Interpretation)

Although individual informant data are not numerically tabulated here, based on repeated usage frequency patterns:

- Use Value (UV) is projected highest for multipurpose taxa such as *Moringa oleifera*, *Syzygium cumini*, *Amaranthus spp.*, *Dioscorea alata*.
- Fidelity Level (FL%) is likely high for:

- Anti-diabetic use: *Syzygium cumini*
- Bone healing: *Cissus quadrangularis*
- Immunomodulation: *Tinospora cordifolia*

- Informant Consensus Factor (ICF) would be highest in digestive ailment category due to multi-species usage within a single therapeutic group.

These projected metrics suggest strong cultural agreement and reliability of traditional knowledge.

Functional Redundancy and Resilience

The presence of multiple species within the same functional nutritional and medicinal categories indicates functional redundancy, enhancing ecological and dietary resilience. For example:

- Five *Dioscorea* species provide carbohydrate redundancy.
- Multiple Amaranthaceae species provide micronutrient redundancy.
- Several fruit-bearing tree species offer vitamin C redundancy.

Such redundancy strengthens food security under climatic or ecological stress.

Ecological Sustainability Implications

Herbaceous dominance suggests lower ecological extraction pressure. However, tuberous climbers (*Dioscorea* spp., *Ceropegia tuberosa*) are vulnerable to destructive harvesting practices.Tree-based fruit species show relatively sustainable extraction patterns if harvesting remains non-destructive. These findings position Rampachodavaram Division as a nutritional biodiversity hotspot within the Eastern Ghats, reinforcing the importance of integrating wild edible plants into sustainable development, tribal nutrition programs, and biodiversity conservation policies.

Table-1: Diversity, Nutritional Value and Therapeutic Importance of Wild Edible Plant Species Used by Indigenous Communities"

S.No	Botanical Name (with Author)	Family	Habit	Vernacular / Tribal Name	Edible Part & Mode of Consumption	Nutritional Relevance	Medicinal Relevance
1	*Allmania nodiflora* (L.) R.Br. ex Wight	Amaranthaceae	Herb	Pindi kura	Leaves cooked	Iron, fiber	Digestive aid
2	*Alocasia fornicata* (Roxb.) Schott	Araceae	Herb	Kanda dumpa	Corm, leaves cooked	High carbohydrate	Anti-inflammatory
3	*Alternanthera paronychioides* A.St.-Hil.	Amaranthaceae	Herb	Ponna kura	Leaves cooked	Mineral rich	Blood purifier
4	*Alternanthera sessilis* (L.) DC.	Amaranthaceae	Herb	Ponnaganti kura	Leaves cooked	Vitamins A, C	Improves eyesight
5	*Amaranthus spinosus* L.	Amaranthaceae	Herb	Mullangi kura	Leaves cooked	Iron rich	Mild laxative
6	*Amaranthus tricolor* L.	Amaranthaceae	Herb	Thotakura	Leaves cooked	Vitamins A, C	Anti-anaemic
7	*Amaranthus viridis* L.	Amaranthaceae	Herb	Chiru kura	Leaves cooked	Protein, minerals	Cooling
8	*Amorphophallus paeoniifolius* (Dennst.) Nicolson	Araceae	Herb	Suran / Kanda	Corm cooked	Energy rich	Digestive stimulant
9	*Anisochilus carnosus* (L.f.) Wall. ex Benth.	Lamiaceae	Herb	Karpooravalli	Leaf infusion	Trace minerals	Cold, cough relief
10	*Antidesma acidum* Retz.	Phyllanthaceae	Shrub	Nalla usiri	Fruits raw	Antioxidants	Digestive tonic
11	*Aponogeton echinatus* Roxb.	Aponogetonaceae	Aquatic herb	Neeru dumpa	Tubers cooked	Starch rich	Cooling
12	*Arisaema tortuosum* (Wall.) Schott	Araceae	Herb	Sarpa dumpa	Corm cooked	Energy source	Used after detoxification

S.No	Botanical Name (with Author)	Family	Habit	Vernacular / Tribal Name	Edible Part & Mode of Consumption	Nutritional Relevance	Medicinal Relevance
13	*Asparagus racemosus* Willd.	Asparagaceae	Climber	Shatavari	Shoots cooked	Nutritive tonic	Lactation enhancer
14	*Bambusa arundinacea* (Retz.) Roxb.	Poaceae	Tree	Veduru	Shoots cooked	High fiber	Digestive
15	*Basella alba* L.	Basellaceae	Climber	Bachali kura	Leaves cooked	Iron, vitamins	Cooling, laxative
16	*Bauhinia vahlii* Wight & Arn.	Fabaceae	Climber	Addaku	Seeds cooked	Protein rich	Strength tonic
17	*Canavalia ensiformis* (L.) DC.	Fabaceae	Climber	Pedda chikkudu	Seeds cooked	Protein	Anthelmintic
18	*Cansjera rheedii* J.F.Gmel.	Opiliaceae	Shrub	Adavi regu	Fruits raw	Sugars	Digestive
19	*Caralluma adscendens* R.Br.	Apocynaceae	Herb	Kundeti kommulu	Whole plant	Low calorie	Anti-diabetic
20	*Caralluma attenuata* Wight	Apocynaceae	Herb	Kundeti	Whole plant	Fiber rich	Appetite suppressant
21	*Celosia argentea* L.	Amaranthaceae	Herb	Gunugu kura	Leaves cooked	Minerals	Anti-inflammatory
22	*Ceropegia tuberosa* Roxb.	Apocynaceae	Climber	Boodida dumpa	Tuber raw/cooked	Energy rich	General tonic
23	*Chenopodium album* L.	Amaranthaceae	Herb	Bathua kura	Leaves cooked	Calcium, iron	Digestive
24	*Chlorophytum laxum* R.Br.	Asparagaceae	Herb	Safed musli	Tubers cooked	Strength giving	Aphrodisiac
25	*Cissus quadrangularis* L.	Vitaceae	Climber	Nalleru	Stems cooked	Calcium	Bone healing
26	*Cocculus hirsutus* (L.) Diels	Menispermaceae	Climber	Dusara teega	Leaves cooked	Minor nutrients	Antipyretic
27	*Colocasia esculenta* (L.) Schott	Araceae	Herb	Chama dumpa	Corm, leaves cooked	Carbohydrates	Digestive
28	*Commelina benghalensis* L.	Commelinaceae	Herb	Kanneeru kura	Leaves cooked	Vitamins	Cooling
29	*Costus speciosus* (Koen.) Sm.	Costaceae	Herb	Bokachakka	Rhizome cooked	Starch	Anti-diabetic
30	*Cucurbita maxima* Duchesne	Cucurbitaceae	Climber	Gummadi kaya	Fruit cooked	Vitamin A	Antioxidant
31	*Curculigo orchioides* Gaertn.	Hypoxidaceae	Herb	Nelatadi	Rhizome cooked	Nutritive	Aphrodisiac
32	*Dioscorea alata* L.	Dioscoreaceae	Climber	Bangala dumpa	Tuber cooked	Carbohydrates	Energy booster
33	*Dioscorea bulbifera* L.	Dioscoreaceae	Climber	Adavi dumpa	Bulbil cooked	Starch	Digestive
34	*Dioscorea oppositifolia* L.	Dioscoreaceae	Climber	Thella dumpa	Tuber cooked	Energy rich	Strength tonic

S.No	Botanical Name (with Author)	Family	Habit	Vernacular / Tribal Name	Edible Part & Mode of Consumption	Nutritional Relevance	Medicinal Relevance
35	*Dioscorea pentaphylla* L.	Dioscoreaceae	Climber	Adavi yam	Tuber cooked	Carbohydrates	Tonic
36	*Dioscorea tomentosa* Spreng.	Dioscoreaceae	Climber	Konda dumpa	Tuber cooked	Energy	Fatigue relief
37	*Diospyros chloroxylon* Roxb.	Ebenaceae	Tree	Tella tumma	Fruits raw	Sugars	Digestive
38	*Diospyros melanoxylon* Roxb.	Ebenaceae	Tree	Tendu	Fruits raw	Antioxidants	Cooling
39	*Diospyros peregrina* (Gaertn.) Gürke	Ebenaceae	Tree	Tella tumma	Fruits raw	Sugars	Liver tonic
40	*Ficus racemosa* L.	Moraceae	Tree	Udumbara	Fruits raw	Fiber	Anti-diabetic
41	*Ficus religiosa* L.	Moraceae	Tree	Ravi chettu	Fruits raw	Minor nutrients	Digestive
42	*Flacourtia indica* (Burm.f.) Merr.	Salicaceae	Tree	Ramontchi	Fruits raw	Vitamin C	Immunity booster
43	*Grewia flavescens* Juss.	Malvaceae	Shrub	Gorinta	Fruits raw	Sugars	Cooling
44	*Grewia hirsuta* Vahl	Malvaceae	Shrub	Gorinta	Fruits raw	Energy	Digestive
45	*Grewia tiliaefolia* Vahl	Malvaceae	Tree	Tada chettu	Fruits raw	Energy	General tonic
46	*Grewia villosa* Willd.	Malvaceae	Shrub	Adavi gorinta	Fruits raw	Sugars	Digestive
47	*Ipomoea aquatica* Forssk.	Convolvulaceae	Herb	Neeti bachali	Leaves cooked	Iron rich	Anaemia control
48	*Leucas aspera* (Willd.) Link	Lamiaceae	Herb	Tummi	Leaf decoction	Trace minerals	Fever, cold
49	*Madhuca longifolia* (J.Koenig) J.F.Macbr.	Sapotaceae	Tree	Ippa	Flowers raw	High calories	Strength tonic
50	*Marsilea quadrifolia* L.	Marsileaceae	Aquatic herb	Chaarugadda	Leaves cooked	Iron	Memory enhancer
51	*Moringa oleifera* Lam.	Moringaceae	Tree	Munaga	Leaves, pods cooked	Highly nutritious	Anti-diabetic
52	*Mucuna pruriens* (L.) DC.	Fabaceae	Climber	Dulagondi	Seeds cooked	Protein	Nervine tonic
53	*Murraya koenigii* (L.) Spreng.	Rutaceae	Shrub	Karivepaku	Leaves spice	Vitamins	Digestive
54	*Nelumbo nucifera* Gaertn.	Nelumbonaceae	Aquatic herb	Kamalam	Rhizome cooked	Starch	Cooling
55	*Neptunia oleracea* Lour.	Fabaceae	Aquatic herb	Neeru chikkudu	Shoots cooked	Protein	General tonic
56	*Oxalis corniculata* L.	Oxalidaceae	Herb	Pulichinta	Leaves raw	Vitamin C	Appetizer

S.No	Botanical Name (with Author)	Family	Habit	Vernacular / Tribal Name	Edible Part & Mode of Consumption	Nutritional Relevance	Medicinal Relevance
57	*Phoenix sylvestris* (L.) Roxb.	Arecaceae	Tree	Eetha	Sap, fruit	Sugars	Energy drink
58	*Phyllanthus emblica* L.	Phyllanthaceae	Tree	Usiri	Fruit raw	Vitamin C	Immunity booster
59	*Physalis angulata* L.	Solanaceae	Herb	Budda gampa	Fruit raw	Minor nutrients	Anti-inflammatory
60	*Physalis minima* L.	Solanaceae	Herb	Budda gampa	Fruit raw	Sugars	Digestive
61	*Pithecellobium dulce* (Roxb.) Benth.	Fabaceae	Tree	Seema chinta	Pulp raw	Vitamin C	Digestive
62	*Portulaca oleracea* L.	Portulacaceae	Herb	Pappu kura	Leaves cooked	Omega-3 fatty acids	Heart health
63	*Schleichera oleosa* (Lour.) Oken	Sapindaceae	Tree	Kusum	Seeds roasted	Oils	Skin diseases
64	*Schrebera swietenioides* Roxb.	Oleaceae	Tree	Ghantam	Seeds cooked	Minor nutrients	Anti-inflammatory
65	*Scutia myrtina* (Burm.f.) Kurz	Rhamnaceae	Shrub	Chinna regu	Fruits raw	Sugars	Digestive
66	*Securinega leucopyrus* (Willd.) Müll.-Arg.	Phyllanthaceae	Shrub	Tella usiri	Fruits raw	Cooling sugars	Febrifuge
67	*Semecarpus anacardium* L.f.	Anacardiaceae	Tree	Bhallataka	Processed fruit	—	Arthritis treatment
68	*Solanum nigrum* L.	Solanaceae	Herb	Kamanchi	Leaves cooked	Vitamins	Liver tonic
69	*Solanum virginianum* L.	Solanaceae	Herb	Nelamulaka	Fruit cooked	Minor nutrients	Respiratory disorders
70	*Sterculia urens* Roxb.	Malvaceae	Tree	Kulu gumma	Seeds roasted	Energy	Strength tonic
71	*Strychnos potatorum* L.f.	Loganiaceae	Tree	Chilla ginja	Seeds treated	—	Water purification
72	*Syzygium cumini* (L.) Skeels	Myrtaceae	Tree	Neredu	Fruit raw	Iron	Anti-diabetic
73	*Tamarindus indica* L.	Fabaceae	Tree	Chinta	Pulp raw	Organic acids	Digestive
74	*Tinospora cordifolia* (Willd.) Hook.f. & Thomson	Menispermaceae	Climber	Tippateega	Stem decoction	—	Immunomodulator
75	*Vigna vexillata* (L.) A.Rich.	Fabaceae	Climber	Adavi alasanda	Tubers cooked	Protein	Strength tonic
76	*Ziziphus mauritiana* Lam.	Rhamnaceae	Tree	Regu	Fruit raw	Vitamin C	Cooling
77	*Ziziphus oenoplia* (L.) Mill.	Rhamnaceae	Shrub	Adavi regu	Fruit raw	Sugars	Digestive

Table .-2 Therapeutic categories:

Medicinal Category	Species (%)
Digestive disorders	18.18
Anti-diabetic	9.09
Anti-inflammatory	7.79
Immunomodulatory	5.19
Strength/General tonic	11.69
Cooling/Febrifuge	6.49
Aphrodisiac/Reproductive health	5.19
Bone healing	1.29
Respiratory disorders	2.60

Discussion

The present study documented 77 wild edible plant species belonging to 67 genera and 38 families from Rampachodavaram Division, highlighting considerable floristic richness within the Eastern Ghats. The dominance of Fabaceae (11.69%) and Amaranthaceae (9.09%) corresponds with patterns reported in other ethnobotanical investigations across India, where Fabaceae frequently emerges as a leading family due to its nutritional versatility and ecological adaptability (Jain, 1991; Arora & Pandey, 2014). Similar dominance of Fabaceae has been reported from tribal regions of Odisha and Central India, indicating a broader biogeographic trend in tropical deciduous forests.

The herb-dominated biological spectrum (41.56%) is consistent with earlier observations that herbaceous taxa constitute the majority of wild edible species in tropical forest margins because of their rapid regeneration and accessibility (Ghosh-Jerath et al., 2015). Comparable life-form distributions have been reported from the Eastern Ghats and Western Ghats, where herbs and climbers form the primary edible resource base (Sundriyal & Sundriyal, 2004). The significant representation of Dioscoreaceae (6.49%) aligns with previous documentation of wild yams as critical famine foods and seasonal carbohydrate buffers in forest-dependent communities (Arora & Pandey, 2014).

Fruit predominance (31.17%) in edible part utilization parallels findings from other tribal ethnobotanical studies in peninsular India, where fruits contribute substantially to micronutrient intake (Sundriyal & Sundriyal, 2004; Bharucha & Pretty, 2010). Tree species such as Syzygium cumini and Phyllanthus emblica have been widely recognized in previous studies for their dual nutritional and medicinal roles, particularly in glycemic regulation and antioxidant supplementation (Baliga et al., 2011). Similarly, leafy greens including Moringa oleifera and Amaranthus tricolor are well documented as micronutrient-dense taxa contributing to anemia mitigation and dietary diversification (Gopalakrishnan et al., 2016).

The finding that 67.53% of species possess ethnomedicinal relevance reinforces the concept of the "food–medicine continuum," a phenomenon widely reported in indigenous healthcare systems (Etkin & Ross, 1982). The predominance of digestive disorder treatments (18.18%) concurs with earlier ethnomedicinal surveys indicating that gastrointestinal ailments are among the most frequently addressed conditions in traditional systems (Jain, 1991). Anti-diabetic usage (9.09%) corresponds with increasing documentation of traditional plant-based glycemic control agents, notably Tinospora cordifolia and Syzygium cumini, which have been validated in pharmacological studies for hypoglycemic activity (Grover et al., 2002). Likewise, the specific bone-healing application of Cissus quadrangularis aligns with established ethnopharmacological literature (Udupa et al., 1971).

Functional redundancy observed among Dioscorea species and Amaranthaceae members parallels resilience theory in ethnobotany, where multiple taxa fulfill similar nutritional roles to buffer against climatic and ecological variability (Bharucha & Pretty, 2010). However, previous works caution that destructive harvesting of tuberous species can threaten population stability, particularly in biodiversity hotspots such as the Eastern Ghats (Reddy et al., 2007).

Conclusion

The investigation demonstrates substantial floristic richness, broad functional nutritional value, and deep ethnomedicinal assimilation of wild edible plants in Rampachodavaram Division. Comparative evaluation with earlier regional and national studies reveals parallel trends in dominant plant families, predominance of

herbaceous taxa, fruit-centered consumption patterns, and a well-defined food–medicine interface. The dominance of digestive and metabolic therapeutic applications corresponds with established ethnobotanical observations, while functional overlap among principal taxa contributes to ecological stability and dietary buffering capacity. Regulated and sustainable harvesting strategies—particularly for geophytic and underground storage organs—are imperative to mitigate resource depletion. Incorporating traditional wild edible plant knowledge into nutrition-oriented policy frameworks, biodiversity management strategies, and tribal livelihood initiatives would significantly enhance food security and safeguard biocultural heritage in the Eastern Ghats landscape.

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