Quantitative ethnobotanical evaluation of medicinal flora utilized for Digestive system disorders in Parvathipuram Manyam District, Eastern Ghats, India

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Research

Abstract

Background: Digestive disorders are increasingly prevalent due to lifestyle and environmental changes. Tribal communities in India, particularly in remote forest regions, continue to depend on traditional medicinal plants to manage these ailments. However, much of this indigenous knowledge remains undocumented and is at risk of being lost. The current study aims to record and analyze the therapeutic plants traditionally employed by tribal groups in Parvathipuram Manyam District, Eastern Ghats, for the treatment of digestive system disorders.

Methods: Ethnobotanical surveys were conducted between 2020 and 2023 across 37 forested tribal regions. A total of 44 traditional healers from the Savara, Jatapu, Konda Dora, and Gadaba communities were interviewed using semi-structured questionnaires. Data were collected on plant species, local names, parts used, preparation methods, and routes of administration. Plant specimens were botanically verified and analyzed using Use Value (UV), Informant Consensus Factor (ICF), and Fidelity Level (FL) indices.

Results: A total of 116 medicinal plants were recorded belonging to 55 families, with Fabaceae being the most dominant. Leaves (30.53%) and roots (19.85%) were the most frequently used parts, prepared primarily as pastes (34.35%) or juices (23.66%). Constipation (13.74%), dysentery (12.97%), and hemorrhoids (12.97%) were the most frequently treated ailments. Several species, including *Aristolochia indica* and *Asparagus racemosus*, showed 100% FL, while ICF values ranged from 0.956 to 1.0.

Conclusion: The study underscores the therapeutic significance of traditional medicinal plants in digestive health and highlights the urgent need for conservation, sustainable use, and scientific validation of indigenous knowledge.

Keywords: Ethnobotany; Medicinal plants; Digestive system disorders; Parvathipuram Manyam District; Tribal medicine; Eastern Ghats flora.

Background

The digestive system is central to human health, interacting closely with the nervous, endocrine, and immune networks. Disorders of this system—such as stomachache, dysentery, diarrhea, indigestion, constipation, ulcers, and gastro esophageal reflux disease (GERD)—can affect overall physiological balance and well-being (Tangjitman *et al.* 2015; WHO 2014). Globally, digestive ailments are highly prevalent, contributing significantly to morbidity and mortality; however, they often receive limited attention in public health strategies, particularly in developing countries

Herbal medicine has long served as a culturally rooted, accessible approach for managing gastrointestinal disorders. Plant-based remedies can restore intestinal linings, stimulate digestive secretions, regulate bowel movements, detoxify the gastrointestinal tract, and alleviate discomforts such as bloating and cramps (Cheema & Singh, 2021). Ethnomedical traditions worldwide emphasize the importance of medicinal plants for digestive care, and nearly one-third of documented medicinal species are used specifically for gastrointestinal disorders among indigenous populations (Prasad *et al.* 2013). In tribal communities, this knowledge is predominantly transmitted orally, making it vulnerable to erosion due to modernization, declining forest dependence, and reduced interest among younger generations.

Recent studies highlight the diversity of medicinal plants used for digestive disorders across South and Southeast Asia. Harun et al. (2025) documented 73 species in the Sahiwal District of Pakistan, while Bhardwaj et al. (2025) reviewed ethnomedicinal plants used by tribal communities in Arunachal Pradesh, India. In northern Thailand, Tangjitman et al. (2015) recorded 36 species employed by the Karen people for gastrointestinal complaints. These findings underscore the global relevance of plant-based remedies in traditional digestive healthcare systems.

In India, tribal and rural communities continue to rely on medicinal plants as a primary treatment for gastrointestinal ailments. In the Eastern Ghats of Andhra Pradesh, forest-dependent populations use traditional knowledge to treat stomachache, diarrhea, indigestion, and ulcers. Saheb et al. (2012) reported 29 species used by the Nallamallais tribes for gastrointestinal disorders, while Naidu and Reddi (2017) documented 31 species employed in Srikakulam district.

The Parvathipuram Manyam District, located in the Northern Eastern Ghats, is notable for its ecological diversity, altitudinal gradients, and rich flora. The district is home to tribal communities—including Gadaba, Savara, Konda Dora, Jatapu, and Konda Reddy—who maintain extensive ethnomedicinal knowledge. Despite the region's ethnobotanical richness, it remains under-documented compared to other Eastern Ghats areas such as Srikakulam, Visakhapatnam, and Chittoor. Few studies have provided general ethnobotanical accounts, and none have specifically focused on plants used for digestive disorders using quantitative indices.

Addressing this gap, the present study documents medicinal plants used by tribal communities in Parvathipuram Manyam District for digestive disorders and evaluates their ethnomedicinal significance using Use Value (UV), Informant Consensus Factor (ICF), and Fidelity Level (FL). This work contributes to the preservation of traditional knowledge and supports the conservation of medicinal resources in the region.

Materials and Methods

Study area

The Parvathipuram Manyam District in Andhra Pradesh, India, which is located on the state's northern coastal plains between latitudes 17°15′ and 19°15′ N and longitudes 83°01′ and 83°45′ E, is where the current study was conducted. The district shares borders with the state of Odisha to the northwest, Visakhapatnam District to the southwest, Vizianagaram District to the south, and Srikakulam District to the east (The study area map is shown in Figure 1). According to the administrative structure in place at the time of establishment, it is separated for administrative purposes into two revenue divisions, Parvathipuram and Palakonda. The district's soils are generally loamy and red, with a medium fertility level. Throughout the year, the area has significant humidity, with summer temperatures rising to about 35°C and winter temperatures between 11 and 18°C. The southwest monsoon accounts for nearly 79% of the annual rainfall, occurring between June and October, and the hilly areas remain cooler with higher rainfall than the plains. Forests cover a total area of 107,721.38 hectares, representing 38.9% of the district's total geographical area.

Parvathipuram Manyam District covers an area of approximately 3659 km² and is administratively organized into 15 revenue mandals and 956 villages, the majority of which are rural. Among these villages, a small number remain uninhabited. The major tribal populations are concentrated in the mandals of Kurupam, G.L. Puram, Parvathipuram, Komarada, Pachipenta,

Salur, Makkuva, Bhamini, Seethampeta, and parts of Jiyyammavalasa. For most tribal households in these regions, the primary source of livelihood is the collection and sale of non-timber forest products, including tamarind, turmeric, mushrooms, and various seasonal fruits.

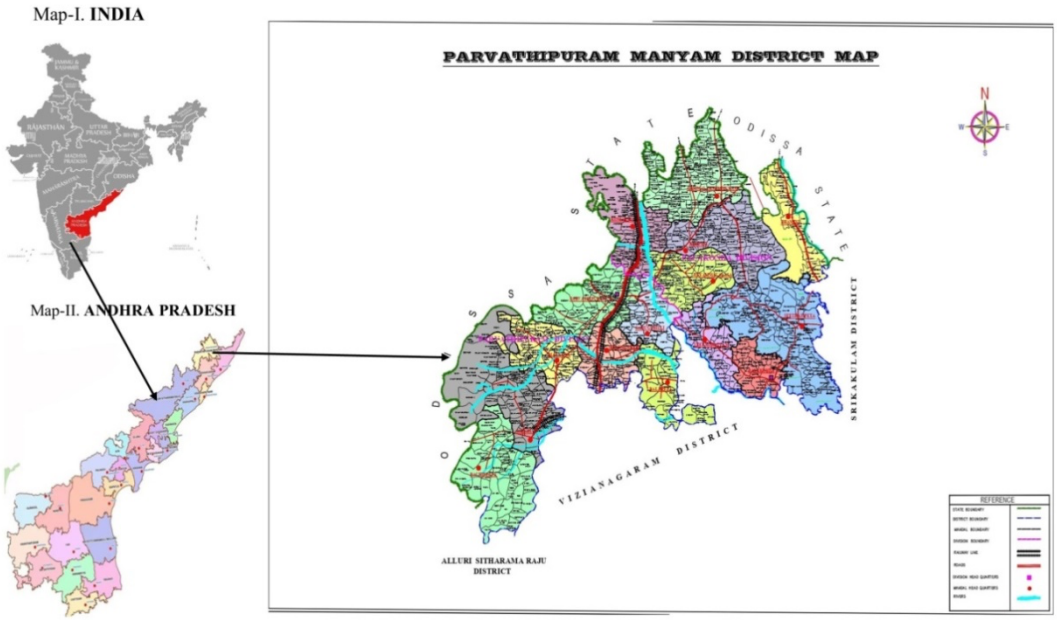

Figure 1. Map showing the study area

Participants / Informants

Informants were selected using purposive and snowball sampling, targeting individuals recognized for their knowledge of traditional ethnomedicinal practices. Selection criteria included age (≥25 years), experience in traditional healing, and local recognition as knowledge holders. The participants comprised traditional healers (Vaidyas), elderly tribal members, priests, and farmers. Demographic information—including age, gender, education, occupation, and tribal affiliation—was collected using semi-structured questionnaires. The study included 44 informants (32 males and 12 females), aged 25-75 years. Prior informed consent was obtained from all participants, and data collection adhered to ethical standards outlined in the International Society of Ethnobiology (ISE, 2006) Code of Ethics. The sample size was considered adequate, as ethnobotanical studies indicate that a relatively small, purposively selected group of knowledgeable participants can reliably represent traditional medicinal knowledge.

Data Collection

Ethnomedicinal surveys were conducted between 2020 and 2023, covering monsoon, pre-monsoon, and post-monsoon seasons across 37 forested tribal pockets in Parvathipuram Manyam District. Field visits across ten mandals were guided by a systematic route plan developed in collaboration with local authorities and community representatives. Data on medicinal plant use—including local and scientific names, plant parts used, preparation methods, dosages, routes of administration, and associated cultural practices—were collected through structured interviews with informants recognized for their traditional healing knowledge among the Savara, Jatapu, Konda Dora, and Gadaba tribes. Notes, audio recordings, and photographs were archived to ensure accuracy.

A pre-tested questionnaire in Telugu was used to standardize data collection. Plant specimens were identified using standard regional floras (Gamble & Fischer 1915-1936; Pullaiah 2018) and verified against the World Checklist of Vascular Plants (Royal Botanic Gardens, Kew). Voucher specimens for each enumerated taxon have been deposited in the Andhra University Herbarium (AUBH) for permanent reference and future verification.

Analysis of Data

Three well-established quantitative indices—Use Value (UV), Informant Consensus Factor (ICF), and Fidelity Level (FL)—were used to examine the ethnobotanical data collected from participants during the field surveys. These indices provide information about the community's cultural relevance, level of agreement, and detail regarding plant usage.

Use Value (UV)

Use Value (UV) was used to determine the relative importance of plant species based on the number of reported uses (Trotter & Logan, 1986). It was calculated using the formula:

$$UV = \frac{\sum U}{n}$$

Where n is the number of informants that referenced a species, and U is the total number of use citations for that species. A UV close to **1** implies that the plant is commonly used and culturally significant in the study region, whereas values near **0** suggest limited recognition or use. It's important to note that UV does not distinguish between single-use and multi-use species.

Fidelity Level (FL)

Fidelity Level (FL) was calculated to determine the percentage of informants who cited a specific plant for treating a particular ailment, reflecting the cultural preference for that species in treating that condition (Friedman *et al.* 1986). The formula is:

$$FL(\%) = \frac{Ni}{Nt} X\ 100$$

Where:

$\mathbf{N_i}$ is the number of respondents, who mentioned the use of a plant for the same primary ailment,

$\mathbf{N_t}$ is the total number of informants who reported any use for that species.

Higher FL percentages reflect a strong association between the plant and the treatment of a specific ailment, making such species prime candidates for further scientific validation and conservation strategies.

Informant Consensus Factor (ICF)

The Informant Consensus Factor (ICF) was applied to evaluate the degree of agreement among informants regarding the use of plants for specific disease categories (Trotter and Logan, 1986). It is calculated as:

$$ICF = \frac{(Nur - Nt)}{(Nur - 1)}$$

Where:

$\mathbf{N_{ur}}$ represents the number of individual use-reports for a particular ailment category,

$\mathbf{N_t}$ is the number of species cited for that category.

An ICF approaching **1** indicates a high level of consensus among informants, suggesting a few key species are predominantly used for a specific condition. Lower ICF values reflect greater variability in plant selection for treating the ailment.

Results

The results of the study are presented under key thematic categories, including informant characteristics, medicinal plant diversity, usage patterns, and quantitative ethnobotanical indices.

Informant Profile

A total of 44 informants representing the major tribal groups of Parvathipuram Manyam District participated in the study (Table 1). The participants included 32 males and 12 females, with the majority being elderly (28 participants over 50 years). Among the informants, 12 were literate, while most were engaged in shifting agriculture or agricultural labor. Professionally, the group comprised 13 traditional healers, 7 priests, 20 elderly community members, and 4 farmers.

Diversity of Plant Species Used for Digestive Disorders

The survey documented 131 digestive ailments managed through 116 plant species belonging to 107 genera and 55 families. The family Fabaceae contributed the highest number of taxa (13 species), followed by Meliaceae (9 species) and Asteraceae (8 species). Lamiaceae and Euphorbiaceae each accounted for six species, while Amaranthaceae**,** Apocynaceae, and Rubiaceae were represented by five species each. Other frequently cited families included Cucurbitaceae with four species, and Convolvulaceae and Zingiberaceae, each with three species. Five families—Annonaceae, Asparagaceae, Ebenaceae,

Phyllanthaceae**,** and Rutaceae— were represented by two species each, while the remaining 42 families were represented by a single species each (Fig. 2).

Table 1. Gender and Age Distribution of Informants

Age Group (years)	Male	Female	Total
<40	3	1	4
40-50	9	3	12
>50	20	8	28
Total	32	12	44

This distribution reflects both the floristic diversity of the region and the selective emphasis placed on certain families in traditional treatments for digestive disorders.

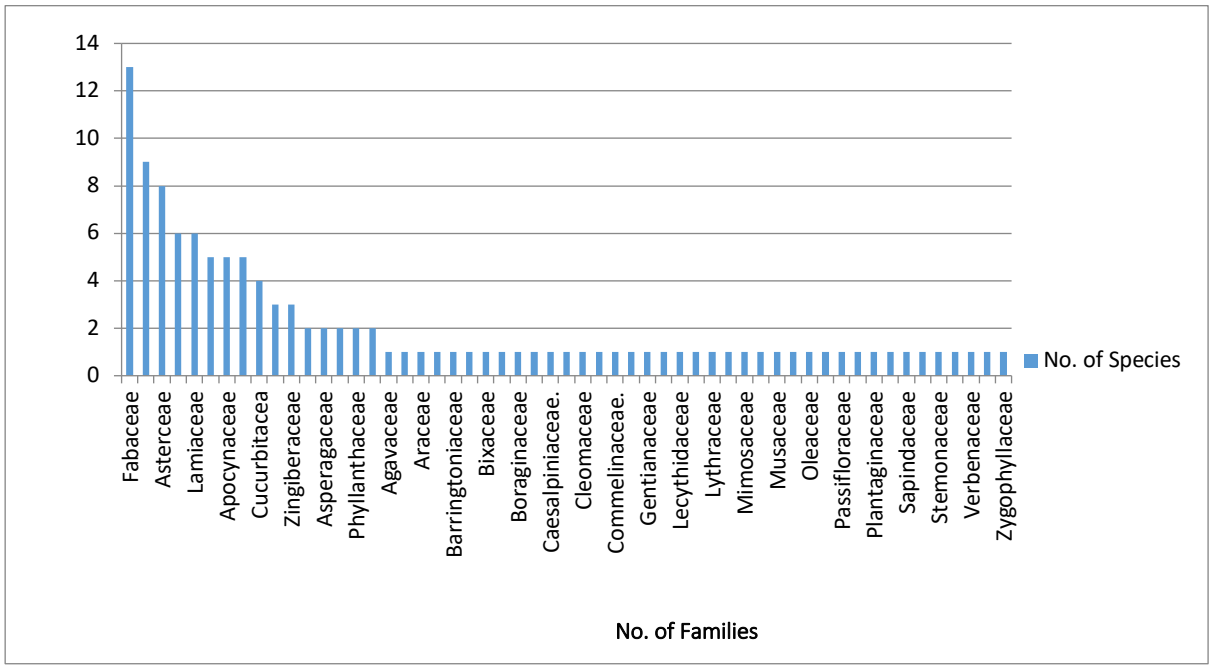

Figure-2. Family-wise Distribution of Medicinal Plants Used in Digestive Disorder Treatments

Plant Parts Used

The findings indicated that different parts of medicinal plants were employed for healing purposes, with leaves emerging as the most frequently utilized, cited in 40 instances, representing 30.53% of the total usage reports. This was followed by roots with 26 reports (19.85%)**,** and fruits with 15 reports (11.45%)**,** indicating a strong reliance on vegetative and reproductive structures. The whole plant was used in 12 cases (9.16%)**,** and stem bark in 10 cases (7.63%)**.** Other parts such as rhizomes (4.58%), seeds (3.05%), root bark (3.82%), and stems (2.29%) also contributed to the therapeutic applications. Less frequently used parts included flowers, tubers, combined leaves and stems, and glandular hairs, each comprising between 0.76% and 1.53% of the total usage reports (Fig. 3).

The prevalence of leaves and roots indicates a preference for easily collected plant parts, perhaps as a result of their high concentration of bioactive compounds and ease of collection.

Methods of Preparation

With respect to preparation techniques, paste was the most frequently used form, accounting for approximately 40% of all remedies. This was followed by juice preparations (25-30%), decoctions (20-25%), and powders (10-12%). Less common methods included curry preparation, extracts, sap, and gum. Overall, these preparation techniques emphasize simplicity, relying largely on water-based extraction or manual processing.

Routes of Administration

The analysis of preparation methods used for ethnomedicinal applications revealed that paste was the most commonly employed method, accounting for 45 usage reports (34.35%). This was followed by juice, which constituted 31 reports (23.66%), and decoction, with 25 reports (19.08%). Other preparation forms included powder (12.97%), extracts (5.34%), and curry (3.81%), while gum was the least used, with only one report (0.76%) (Fig. 3). These findings highlight the preference for simple and effective preparation methods that maximize the therapeutic potential of medicinal plants within the studied communities.

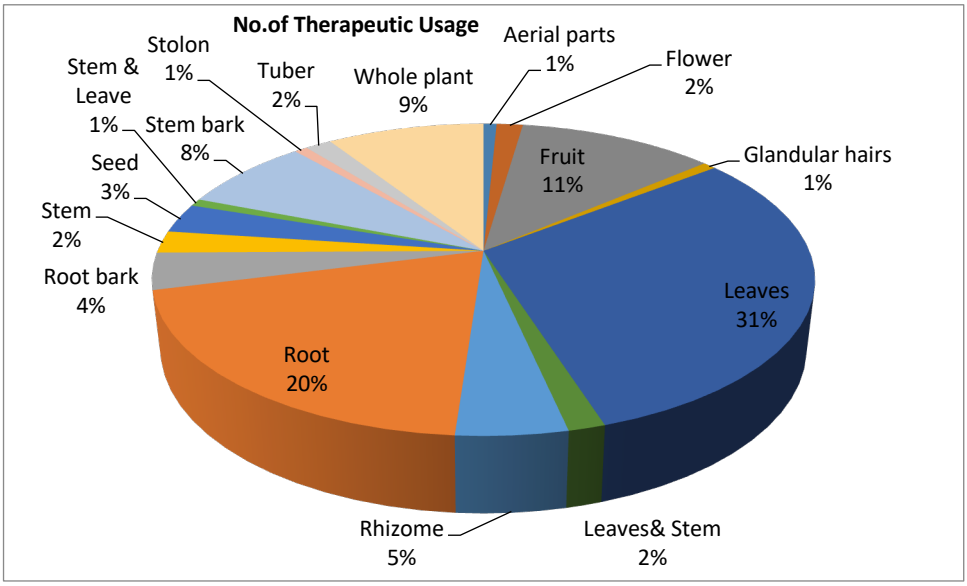

Figure-3. Plant Parts Used in Therapeutic Applications for Digestive Ailments

Medicinal Plant Utilization in Treating Digestive Ailments

A total of 116 medicinal plant species were recorded as being used by local tribal communities for the treatment of various digestive system disorders. A comprehensive list of these species, including their vernacular names, family affiliations, and specific therapeutic applications, is presented in Table 2. Among the recorded ailments, constipation (19 species; 14.50%) was the most frequently treated condition, followed by dysentery (17 species; 12.98%) and hemorrhoids (16 species; 12.21%), highlighting a predominant reliance on plant-based remedies for maintaining bowel regulation and intestinal health.

Other major ailments managed through herbal preparations included gastric disorders (14 species; 10.69%), abdominal pain (13 species; 9.92%), and diarrhea (10 species; 7.63%). Conditions such as general digestive health maintenance, dyspepsia, and peptic ulcers were each treated with five species (3.82%), whereas intestinal ulcers and irritable bowel syndrome were managed using four species each (3.05%). Less frequently reported ailments included heartburn (3 species; 2.29%), anal fistula, appetite stimulation, biliousness, and indigestion, each treated with two species (1.53%). Rare disorders, including anal abscess, anal fissure, anorectal fistula, colic, colorectal disease, hematemesis, hematochezia, and rectal hemorrhage, were treated with one species each (0.76%). These findings underscore the heavy reliance on medicinal flora by tribal healers for gastrointestinal therapy and demonstrate the depth of traditional ethnomedicinal knowledge within their primary healthcare systems.

Quantitative Indices

Use Value (UV) Analysis

The UV analysis of the medicinal plants employed in treating digestive system disorders in Parvathipuram Manyam District indicates a predominance of species with low UV scores, reflecting specialized but widely dispersed ethnobotanical knowledge. Among the 116 plant species recorded, most showed a UV of 0.0227, indicating a single documented use, while a few species had slightly higher values of 0.0454, corresponding to two use citations (Table 2). This distribution highlights a broad yet focused utilization of plant resources, where many species are recognized for specific ailments rather than general use.

Table 2. Ethnomedicinal plants used by the indigenous people of Parvathipuram manyam district with their Botanical name, Local name, Voucher number, Family, Part used, Method of preparation, Mode of Administration, Dosage, Ailment treated, Use value and Fidelity level.

Voucher No.	Botanical Name	Family	Local Name	Part Used	Method of Preparation	Mode of Adm.	Dosage	Ailment Treated	UV (U/44)	FL (%)
13/03/2022-8	*Agave americana* L.	Agavaceae	**kittalamatta**	Lf	Paste	Oral	50 g tablet/day × 3 days	Hemorrhoids	0.0227	72.73
11/12/2022-33	*Amaranthus spinosus* L.	Amaranthaceae	**mullathotakura**	Rt.	Juice	Oral	1 tsp. × 2/day	Abdominal pain	0.0455	51.06
11/12/2022-33	*Amaranthus spinosus* L.	Amaranthaceae	**mullathotakura**	Rt.	Decoction	Oral	2 tsp. rt. Pwd. + *Punica granatum* seeds, 1 glass × 3/day	Diarrhea	0.0455	48.94
13/03/2022-9	*Amaranthus viridis* L.	Amaranthaceae	**chilaka thotakura**	Lf, Tn sh	Cooked	Oral	Consumed as vegetable with castor oil	Constipation	0.0227	100
02/04/2023-46	*Celosia argentea* L.	Amaranthaceae	**gulumi kura**	Wp/Lf	Juice	Oral	2 spoons/day × 5 days	Dysentery	0.0455	38.46
02/04/2023-46	*Celosia argentea* L.	Amaranthaceae	**gulumi kura**	Lf	Fresh	Oral	Consumed as vegetable	Constipation	0.0455	61.53
12/11/2023-65	*Digera muricata* (L.) Mart.	Amaranthaceae	**chenchelakura**	Lf	Curry	Oral	3 spoon × 3 days	Gastric disorders	0.0227	100
11/12/2022-36	*Ouret lanata* (L) Kuntze.	Amaranthaceae	**pindikura**	Wp	Decoction	Oral	2 spoons × 3 days	Diarrhea	0.0227	100
13/03/2022-12	*Buchanania lanzan* Spreng.	Anacardiaceae	**jaru mamidi**	Fr	Fresh	Oral	Fruits consumed	Constipation	0.0227	100
09/07/2023-52	*Annona squamosa* L.	Annonaceae	**sita phalam**	Fr	Fresh	Oral	Fruits consumed	Heartburn	0.0227	100
02/04/2023-49	*Polyalthea suberosa* (Roxb.) Thwaites	Annonaceae	**chilaka dudduga**	Rt	Paste	Extl.	Applied topically	Anal fistula	0.0227	100
12/11/2023-62	*Cynanchum viminale* L.	Apocynaceae	**konda pala**	Stbk	Powder	Oral	As needed	Gastric disorders	0.0227	100
09/10/2022-23	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae	**sugandhapala**	Rt	Powder + Ajwain	Oral	2 spoons before meals	Digestive health	0.0227	100
11/12/2022-31	*Pergularia daemia* (Forssk.) Chiov.	Apocynaceae	**dushtapu tega**	Rt	Decocion	Oral	1 spoon	Abdominal pain	0.0227	100
02/04/2023-48	*Plumeria rubra* L.	Apocynaceae	**nuruvarahalu**	Rt bk	Paste	Oral	1 g. on empty stomach	Peptic ulcer	0.0227	100

04/02/2024-88	*Rauvolfia tetraphylla* L.	Apocynaceae	**jogigirida**	Rt	Paste	Oral	1 spoon	Abdominal pain	0.0227	100
09/03/2024-115	*Colocasia esculenta* (L.) Schott	Araceae	**sarikanda**	Lf + Pt	Curry	Oral	As food	Constipation	0.0227	100
09/07/2023-54	*Aristolochia indica* L.	Aristolochiaceae	**nalliswari**	Rt	Paste	Oral	2 tsp. × 3 days (empty stomach)	Abdominal pain	0.0227	100
09/07/2023-55	*Asparagus racemosus*Willd.	Asparagaceae	**pilli tegalu**	Lf	Paste	Oral	1 spoon + goat milk	Hemorrhoids	0.0227	100
03/09/2023-69	*Dracaena trifasciata* (Prain) Mabb.	Asparagaceae	**chittalakittali**	Wp	Paste	Extl.	As needed	Hemorrhoids	0.0455	69.56
03/09/2023-69	*Dracaena trifasciata* (Prain) Mabb.	Asparagaceae	**chittalakittali**	Rh	Decoction	Oral	500 ml.	Peptic ulcers	0.0455	30.43
05/02/2023-28	*Acmella paniculata* (Wall ex DC.) R.K. Jansen	Asteraceae	**chitti puvvu**	Lf	Decoction	Oral	2 tsp. /day × 3 days	Diarrhea	0.0227	40.91
09/10/2022-16	*Ageratum conyzoides L.*	Asteraceae	**kampurodda**	Lf	Decoction	Oral	1 tbsp./day × 7 days	Hemorrhoids	0.0455	41.82
09/10/2022-16	*Ageratum conyzoides L.*	Asteraceae	**kampurodda**	Wp	Extract	Oral	2 tsp. + 0.5 tsp. honey × 3 days	Gastric issues	0.0455	58.18
09/03/2024-108	*Chromolaena odorata* (L.) R.M. King & H.Rob.	Asteraceae	**kampu rodda**	Rt	Paste	Oral	2 spoons on empty stomach	Gastritis	0.0227	100
12/11/2023-61	*Cyanthillium albicans* (DC.) H. Rob.	Asteraceae	**garitiki**	Lf	Decoction	Oral	2 spoons after evening meal	Constipation	0.0227	100
05/02/2023-30	*Eclipta prostrata* (L.) L.	Asteraceae	**guntakalagara**	Rt	Decoction	Oral	2 spoons	Gastric disorders	0.0227	100
09/10/2022-19	*Elephantopus scaber* L.	Asteraceae	**bokkudu mokka**	Rt + Lf	Decoction	Oral	3 spoons	Abdominal pain	0.0227	100
09/10/2022-20	*Emilia sonchifolia* (L.) DC.	Asteraceae	**sudhiramudi**	Rt	Decoction	Oral	2 spoons.	Diarrhea	0.0227	100
09/03/2024-99	*Sphaeranthus indicus* L.	Asteraceae	**bodasaram**	Lf	Juice	Oral	1 sp. juice + ajwain pwdr before meals for 1 week	Indigestion	0.0227	100
09/07/2023-60	*Barringtonia acutangula (*L.) Gaertn.	Barringtoniaceae	**kanapa karra**	St bk + Rt/Lf	Paste	Oral	5 g. /day	Hemorrhoids	0.0455	55.41
09/07/2023-60	*Barringtonia acutangula (*L.) Gaertn.	Barringtoniaceae	**kanapa karra**	Lf	Juice	Oral	2 spoon/day × 3 days	Diarrhea	0.0455	44.59

11/12/2022-35	*Oroxylum indicum* (L.) Kurz	Bignoniaceae	**pampini chettu**	Sd	Powder	Oral	1 spoon × 3 days	Gastric disorders	0.0227	100
05/06/2022-6	*Bixa orellana* L.	Bixaceae	**sindhura kaya**	Rt bk	Powder	Oral	1 spoon + water	Appetite stimulant	0.0227	100
13/03/2022-11	*Bombax ceiba* L.	Bombacaceae	**boorja puvvu**	Bk	Decoction	Oral	1 spoon/day × 7 days	Dysentery	0.0227	100
03/09/2023-70	*Coldenia procumbens* L.	Boraginaceae	**bukkinaku**	Lf	Juice + honey	Oral	1 spoon	Gastric disorders	0.0455	42.85
03/09/2023-70	*Coldenia procumbens* L.	Boraginaceae	**bukkinaku**	Wp	Decoction	Oral	2 drops × 2 days	Constipation (children)	0.0455	57.14
05/02/2023-29	*Ananas comosus* (L.) Merr.	Bromeliaceae	**yerupanasa**	Fr. Ep.	Juice	Oral	Half glass	Digestive health	0.0227	100
09/07/2023-57	*Bauhinia racemosa* Lam.	Caesalpiniaceae	**bodantamkura**	Tn lf	Cooked	Oral	Used as vegetable × 3 days	Irritable bowel syndrome	0.0227	100
09/03/2024-105	*Carica papaya* L.	Caricaceae	**boppasi**	Fr	Fresh	Oral	Fruits consumed	Constipation	0.0227	100
09/03/2024-112	*Cleome chelidonii* L.f.	Cleomaceae	**rathanalu**	Rt	Extract+ 0.5 tsp jeera pdr.	Oral	2 spoons daily × 3 weeks	Intestinal ulcers	0.0227	100
03/09/2023-72	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	**tanichettu**	Fr	Powder	Oral	1 sp.+ jaggery daily	Constipation	0.0227	100
09/03/2024-116	*Commelina benghalensis* L.	Commelinaceae	**kunthuroga**	Lf	Curry	Oral	As food	Hemorrhoids	0.0227	100
11/12/2022-26	*Ipomoea hederifolia* L.	Convolvulaceae	**nalla teega**	Lf	Decoction	Oral	2 spoons weekly	Constipation	0.0227	100
11/12/2022-27	*Ipomoea pes-tigridis* L.	Convolvulaceae	**mekamaduga**	Rt	Paste	Oral	50 mg on empty stomach	Constipation	0.0227	100
05/06/2022-1	*Xenostegia tridentata* (L.) D.F. Austin & Staples	Convolvulaceae	**sunchu teega**	Rt	Juice	Oral	1 spoon × 5 days	Hematemesis	0.0227	100
09/03/2024-113	*Coccinia grandis* (L.) Voigt	Cucurbitaceae	**kaki dhonda**	Tbr	Juice	Oral	1 spoon daily until relief	Abdominal pain	0.0227	100
03/09/2023-71	*Momordica charantia* L.	Cucurbitaceae	**kakara**	Fr	Juice	Oral	2 spoons × 5 days	Digestive health	0.0455	43.07
03/09/2023-71	*Momordica charantia* L.	Cucurbitaceae	**kakara**	Sd	Powder	Oral	1 spoon before meals	Dyspepsia	0.0455	56.92

09/10/2022-18	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae	**angakara**	Tbr	Paste + curd	Oral	2 spoons	Intestinal diseases	0.0455	42.85
09/10/2022-18	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae	**angakara**	Lf	Curry with wild hen	Oral	One bowel	Hemorrhoids	0.0455	57.14
03/09/2023-74	*Trichosanthus cucumerina* L.	Cucurbitaceae	**abudha padhu**	Lf &St	Paste	Oral	1 g paste once daily × 3 days	Biliousness	0.0227	100
02/04/2023-40	*Cyperus rotundus* L.	Cyperaceae	**thunga**	Lf	Paste	Oral	1 g daily	Hemorrhoids	0.0455	75.51
02/04/2023-40	*Cyperus rotundus* L.	Cyperaceae	**thunga**	Tbr	Powder + honey	Oral	1 spoon × 3 days	Dyspepsia	0.0455	24.48
12/11/2023-66	*Diospyros ferrea* (Willd.) Bakh.	Ebenaceae	**pisiniki chettu**	Lf	decoction + barley powder	Oral	2 spoons	Diarrhea	0.0227	100
12/11/2023-67	*Diospyros melanoxylon* Roxb.	Ebenaceae	**beedi aku**	Ft	Raw fruit	Oral	5 g.	Hematochezia	0.0227	100
05/06/2022-3	*Acalypha indica* L.	Euphorbiaceae	**muripindi**	Lf	Paste	Oral	2 tsp.	Constipation	0.0227	100
09/07/2023-53	*Antidesma ghaesembilla* Gaertn.	Euphorbiaceae	**pulleru**	St bk	Decoction	Oral	3 spoons × 2/day × 2 days	Dysentery	0.0227	100
09/03/2024-109	*Chrozophora rottleri* (Geiseler) Spreng.	Euphorbiaceae	**antumokka**	Rt	Decoction	Oral	1 spoon on empty stomach	Abdominal pain	0.0227	100
09/10/2022-25	*Homonia riparia* Lour.	Euphorbiaceae	**adaviganneru**	Rt	Powder+ sugar candy	Oral	2 spoons daily × 1 week	Dysentery	0.0227	100
02/04/2023-43	*Mallotus philippensis* (Lam.) Mull.Arg.	Euphorbiaceae	**sindura chettu**	Fr	Juice	Oral	2 spoons once	Constipation	0.0227	100
02/04/2023-44	*Manihot esculenta* Crantz.	Euphorbiaceae	**karrapendlam**	Lf	Paste + curd	Oral	1 spoon on empty stomach	Constipation	0.0227	100
09/10/2022-17	*Alysicarpus monilifer* (L.) DC.	Fabaceae	**amera**	Wp/Lf	Decoction	Oral	1 glass/day × 3 days	Peptic ulcer	0.0455	52.38
09/10/2022-17	*Alysicarpus monilifer* (L.) DC.	Fabaceae	**amera**	Wp./Lf	Extract	Oral	1 tsp. + sugar candy × 3 days	Diarrhea	0.0455	47.62
13/03/2022-13	*Butea monosperma* (Lam.) Kuntze	Fabaceae	**moduga chettu**	Tn lf	Paste	Oral	1 spoon at bed time × 2 weeks	Hemorrhoids	0.0227	100
13/03/2022-14	*Butea superba* Roxb. ex Willd.	Fabaceae	**moduga theega**	St bk	Paste	Oral	1 spoon on empty stomach × 1 week	Hemorrhoids	0.0227	100

09/03/2024-101	*Cajanus scarabaeoides* (Linn.) Thouars	Fabaceae	**adavi ulavalu**	Wp	Decoction	Oral	2 spoons on empty stomach	Gastric disorders	0.0227	100
09/03/2024-106	*Cassia fistula* L.	Fabaceae	**rella chettu**	Fr pulp + Lf	Paste	Oral	2 spoons after meal	Constipation	0.0227	100
12/11/2023-64	*Dalbergia lanceolaria* L.f.	Fabaceae	**patsari chettu**	Lf	Decoction	Oral	1 spoon early morning	Gastric disorders	0.0227	100
09/10/2022-22	*Grona triflora* (L.) H. Ohashi & K. Ohashi	Fabaceae	**munta mandu**	Rt + St	Powder	Oral	1 spoon to children	Dysentery	0.0227	100
02/04/2023-50	*Pongamia pinnata* (L.) Pierre	Fabaceae	**kagu chettu**	St bk	Paste	Extl.	Applied externally	Anal fissure	0.0227	100
04/02/2024-87	*Pterocarpus marsupium* Roxb.	Fabaceae	**yegisa**	st	gum + jaggery	Oral	1 spoon daily × 3 days	Dysentery	0.0227	100
04/02/2024-94	*Senna auriculata* (L.) Roxb.	Fabaceae	**nelathengadu**	Rtbk	Paste	Oral	1 sp. paste + curd for 3 days	Dysentery	0.0227	100
09/03/2024-95	*Senna obtusifolia* (L.) H.S. Irwin & Barneby	Fabaceae	**thuntem mokka**	Lf	Juice	Oral	2 sp. juice twice daily for 3 days	Defecation problems	0.0227	100
10/08/2024-84	*Tamarindus indica* L.	Fabaceae	**chinta chettu**	Fr	Paste	Oral	2 sp. pulp + 0.5 sp. papaya leaf paste	Constipation	0.0227	100
04/02/2024-86	*Teprosia villosa* (L.) Pers.	Fabaceae	**chukkavempali**	Sd	Powder	Oral	50 mg. for 5 days	Dyspepsia	0.0227	100
09/03/2024-102	*Canscora alata* (Roth) Wall.	Gentianaceae	**akshintam pulu**	Rt	Paste	Ext.	1 spoon on empty stomach	Abdominal pain	0.0227	100
05/06/2022-4	*Anisomeles indica* (L.) Kuntze	Lamiaceae	**cinnaranabheri**	Lf	Extract	Oral	2 tsp. × 2/day with barley water × 3 days	Irritable bowel syndrome	0.0227	100
09/03/2024-114	*Coleus strobilifer* (Roxb.) A.J. Paton	Lamiaceae	**ritchu rodda**	Lf	Decoction	Oral	1 spoon at night × 3 days	Constipation	0.0227	100
02/04/2023-42	*Leucas biflora* (Vahl) Sm.	Lamiaceae	**seemathummi**	Lf	Juice	Oral	1 spoon daily × 3 days	Abdominal pain	0.0227	100
11/12/2022-34	*Ocimum basilicum* L.	Lamiaceae	**bhutulasi**	Sd	Powder + *betle* leaf paste	Oral	1.5 spoon	Gastric disorders	0.0227	100
04/02/2024-89	*Rotheca serrata* (L.) Steane & Mabb.	Lamiaceae	**banala chettu**	Lf	Juice	Oral	2 spoons × 15 days	Hemorrhoids	0.0227	100

10/08/2024-78	*Vitex pinnata* L.	Lamiaceae	**busi chettu**	Rt	Decoction	Oral	1 spoon before meals	Gastric disorders	0.0227	100
09/03/2024-107	*Cassytha filiformis* L.	Lauraceae	**sitamma savaram**	Wp	Paste	Extl	2 g.+ Water	Anal fistula	0.0227	100
09/03/2024-104	*Careya arborea* Roxb.	Lecythidaceae	**kumbi chettu**	St bk + Basil sd	Filtrate	Oral	2 spoons /day × 3 days + sugar candy	Diarrhea	0.0227	100
09/07/2023-51	*Hugonia mystax* L.	Linaceae	**peesangi**	Lf + Rt	Paste	Oral	2 spoons twice daily × 3 days	Dysentery	0.0455	32.55
09/07/2023-51	*Hugonia mystax* L.	Linaceae	**peesangi**	St bk	Paste	Oral	1 tablet/day	Intestinal ulcers	0.0455	67.44
10/08/2024-79	*Woodfordia fruticosa* (L.) Kurz	Lythraceae	**jeguru**	Fw	Powder	Oral	1 spoon × 5 days	Dysentery	0.0227	100
09/10/2022-15	*Byttneria herbacea* Roxb.	Malvaceae	**garuku mokka**	Rt	Decoction	Oral	2 spoons× 2day	Gastric disorders	0.0227	100
02/04/2023-45	*Melochia corchorifolia* L.	Malvaceae	**ganugu pindikura**	Lf	Juice + rice water	Oral	Daily × 5 days	Dysentery	0.0227	100
02/04/2023-39	*Pentapetes phoenicea* L.	Malvaceae	**mankena puvvu**	Ft	Decocion	Oral	3 spoons after night meal	Constipation	0.0227	100
09/03/2024-96	*Sida cordifolia* L.	Malvaceae	**tella antisa**	Rt	Paste	Ext.	Applied externally on affected area	Anorectal fistula	0.0227	100
09/03/2024-97	*Sida rhombifolia* L.	Malvaceae	**gubathada**	Lf	Paste	Oral	2 sp. paste + jaggery orally	Abdominal pain	0.0227	100
03/09/2023-75	*Triumfetta pilosa* Roth.	Malvaceae	**teegabenda**	St & Lf	Paste	Oral	1 mg with hot water × 10 days	Heartburn	0.0227	100
03/09/2023-76	*Triumfetta rhomboidea* Jacq.	Malvaceae	**chiru sitrika**	Rt	Juice	Oral	1 spoon	Constipation	0.0227	100
03/09/2023-77	*Urena lobata* L.	Malvaceae	**anturasam**	Rt	Decoction	Oral	1 spoon twice daily	Colic	0.0227	100
09/03/2024-110	*Cipadessa baccifera* (Roxb. ex Roth) Miq.	Meliaceae	**randabilli**	Rt	Powder	Oral	1 spoon for 2 days	Appetite stimulant	0.0227	100
09/03/2024-111	*Cissampleos pareira* L.	Menispermaceae	**pateru tivva**	Rt bk	Powder	Oral	1 spoon daily × 5 days	Peptic ulcer	0.0227	100
04/02/2024-93	*Senegalia chundra* (Roxb. ex Rottler) Maslin	Mimosaceae	**chundra**	Lf	Paste	Oral	1 sp. paste + banana twice daily for 3 days	Dysentery	0.0227	100

09/10/2022-21	*Ficus hispida* L.f.	Moraceae	**kukkabodda**	Rt Bk	Powder	Oral	2 spoons with warm water	Intestinal ulcers	0.0227	100
09/03/2024-100	*Musa balbisiana* Colla	Musaceae	**konda arati**	Rh	Decoction	Oral	2 spoons × 3 days	Dysentery	0.0455	42.85
09/03/2024-100	*Musa balbisiana* Colla	Musaceae	**konda arati**	Lf	Paste	Oral	1 tsp. daily	Hemorrhoids	0.0455	57.14
13/03/2022-10	*Boerhavia erecta* L.	Nyctaginaceae	**alivikura**	Rt	Powder	Oral	1 spoon + water × 5 days	Digestive health	0.0227	100
12/11/2023-68	*Nyctanthes arbor-tristis* L.	Oleaceae	**parijatham**	Lf	Extract + jaggery	Oral	1 spoon	Abdominal pain	0.0227	100
02/04/2023-37	*Oxalis corniculata* L.	Oxalidaceae	**pamu kannu**	Wp	Paste	Oral	2 spoons	Dyspepsia	0.0227	100
02/04/2023-38	*Passiflora foetida* L.	Passifloraceae	**adavi-motala**	Lf	Decocion	Oral	2 spoons daily	Biliousness	0.0227	100
11/12/2022-32	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae	**nela usiri**	Lf	Paste	Oral	1 spoon daily	Rectal hemorrhage	0.0227	100
10/08/2024-81	*Phyllanthus emblica* L.	Phyllanthaceae	**usiri**	Ft	Juice	Oral	2 spoons on empty stomach × 5 days	Gastric disorders	0.0227	100
02/04/2023-47	*Piper longum* L.	Piperaceae	**borapathri**	Ft	Powder + honey	Oral	1 spoon + 0.5 spoon honey	Indigestion	0.0227	100
04/02/2024-92	*Scoparia dulcis* L.	Plantaginaceae	**dhakshini**	Rt.	Extract	Oral	1 spoon for 3 days	Dysentery	0.0227	100
04/02/2024-90	*Rubus ellipticus* Sm.	Rosaceae	**bonkidi**	Ft	Juice	Oral	2 spoons twice daily for 3 days	Irritable bowel syndrome	0.0227	100
09/03/2024-103	*Canthium coromandelicum* (Burm, f.)	Rubiaceae	**balusu**	Rt bk	Powder	Oral	1 spoon + jeera Pwd. × 3 days	Dysentery	0.0227	100
02/04/2023-41	*Ixora pavetta* Andrews	Rubiaceae	**korivichettu**	Rt	Powder	Oral	10 mg+ Sugar candy	Abdominal pain	0.0227	100
12/11/2023-63	*Mitracarpus hirtus* (L.) DC.	Rubiaceae	**nugudhanti**	Lf	Decoction	Oral	Deco. of 2 leaves daily	Anal abscess	0.0227	100
09/03/2024-98	*Spermacoce pusilla* Wall.	Rubiaceae	**chukka aaku**	Lf	Paste	Ext.	Paste + castor oil applied externally	Hemorrhoids	0.0227	100
04/02/2024-85	*Tarenna asiatica* (L.) Kuntz ex K. Schum.	Rubiaceae	**papidi chettu**	St bk	Paste	Oral	2 spoons × 5 days	Peptic ulcer	0.0227	100
05/06/2022-7	*Aegle marmelos* (L.) Correa	Rutaceae	**maredu**	Fr	Paste	Oral	2 tsp.	Dysentery	0.0227	29.54

05/06/2022-5	*Bergera koenigii* L.	Rutaceae	**karepaku**	Lf	Powder	Oral	1 spoon + 0.5 tsp. coriander & cumin + salt with meals	Digestive health	0.0455	64.7
05/06/2022-5	*Bergera koenigii* L.	Rutaceae	**karepaku**	Lf	Juice	Oral	1 spoon + sugar candy × 2 days	Dysentery	0.0455	35.29
04/02/2024-91	*Schleichera oleosa* (Lour.) Oken	Sapindaceae	**pullakaya**	Ft	Juice	Oral	2 spoons once daily after meals for 3 days	Dyspepsia	0.0227	100
09/07/2023-56	*Bacopa monnieri* (L.) Wettst.	Scrophulariaceae	**sambrani mokka**	Lf	Juice	Oral	2 spoons/day × 3 days	Diarrhea	0.0227	100
10/08/2024-83	*Stemona tuberosa* Lour.	Stemonaceae	**kaniputiga**	Rh	Paste	Ext.	Applied externally for 3 days	Heartburn	0.0227	100
09/10/2022-24	*Holoptelea integrifolia* (Roxb.) Planch.	Ulmaceae	**nemmalinara**	St bk	Powder + buttermilk	Oral	1 spoon	Hemorrhoids	0.0227	100
05/06/2022-6	*Stachytarpheta jamaicensis* (L.) Vahl	Verbenaceae	**neelakondi**	Rt	Paste	Oral	1 sp. paste twice daily for 3 days	Colorectal disease	0.0455	60.46
05/06/2022-6	*Stachytarpheta jamaicensis* (L.) Vahl	Verbenaceae	**neelakondi**	Lf	Juice	Oral	1 sp. juice + barley water for 3 days	Diarrhea in children	0.0455	39.53
10/08/2024-82	*Pigea enneasperma* (L.) P.l. Forst.	Violaceae	**ratna purusa**	Wp	Juice	Oral	0.5 spoon × 3 days	Dysentery (children)	0.0455	72.09
10/08/2024-82	*Pigea enneasperma* (L.) P.l. Forst.	Violaceae	**ratna purusa**	Lf	Decoction	Oral	1 spoon	Irritable Bowel Syndrome	0.0455	27.9
05/06/2022-2	*Zingiber capitatum* Roxb.	Zingiberaceae	**kondaallam**	Rh	Paste + palm jaggery	Oral	1 g. × 2 daily × 3 weeks	Hemorrhoids	0.0227	100
09/07/2023-58	*Zingiber officinalis* Rosce	Zingiberaceae	**allam**	Rh	Powder	Oral	1 spoon before meals	Gastric diseases	0.0227	100
09/07/2023-59	*Zingiber roseum* (Roxb.) Roscoe	Zingiberaceae	**karallam**	Rh	Juice	Oral	2 spoon × 3 days	Abdominal pain	0.0227	100
03/09/2023-73	*Tribulus terrestris* L.	Zygophyllaceae	**palleru**	Lf	Paste	Ext.	Applied externally once daily for 2 weeks	Hemorrhoids	0.0227	100

Note: Lf= Leaf; Fr= Fruit; Rt= Root; Wp= Whole plant; Tnsh= Tender shoot; Fr ep = Fruit epicarp; Bk= Bark; St Bk= Stem bark; Tbr= Tuber; Pt= Petiole; Rh= Rhizome; St= Stem; Ext= External; Sp= Spoon; tsp= Table spoon; g= gram; mg= milligram; mL= milliliter; UV= Use Value; FL= Fidelity Level.

Fidelity Level (FL) Analysis

Fidelity Level (FL) analysis revealed a high degree of plant-use specificity, as this index measures the percentage of informants who associate a particular plant species with the treatment of a specific ailment. Over 70 plant species demonstrated 100% FL, meaning all informants who cited these species used them exclusively for one ailment. Examples include *Acalypha indica* for constipation, *Ananas comosus* for digestive health, *Aristolochia indica* for abdominal pain, and *Cassytha filiformis* for anal fistula. Such high FL values indicate strong traditional consensus and targeted application of these plants. In contrast, some species had lower FL values due to their multipurpose usage across different ailments. For instance, *Ageratum conyzoides* (FL: 58.18% for gastric disorders) and *Momordica charantia* (FL: 56.92% for dyspepsia) were cited for multiple conditions (Table 2). These differences reflect both the specificity and versatility within indigenous healing systems.

Informant Consensus Factor (ICF)

The Informant Consensus Factor (ICF) analysis, which measures the level of agreement among participants regarding plant use for particular health issues, showed a notably strong consensus for treatments associated with issues of the digestive system. The greatest ICF value of 1.0 was observed for 11 ailments, including Anal Abscess, Anal Fissure, Anorectal Fistula, Colic, Hematemesis, Hematochezia, and Rectal Hemorrhage, proving that every informant cited the same kind of plant for each of these conditions.

Notably, commonly reported ailments like *Constipation* (ICF: 0.968, Nur: 534), *Hemorrhoids* (ICF: 0.970, Nur: 543), and *Dysentery* (ICF: 0.956, Nur: 364) also exhibited strong consensus despite involving multiple plant species. Other prevalent conditions such as *Abdominal Pain*, *Diarrhoea*, *Gastric Disorders*, and *Peptic Ulcers* showed ICF values ranging from 0.957 to 0.967, further confirming the reliability and consistency of ethnomedicinal knowledge (Table 3).

These findings emphasize the cultural coherence in plant use for digestive health and point toward potential candidates for pharmacological validation.

Table 3. ICF analysis of medicinal-plant use for digestive system disorders

Ailment	**Nt**	**Nur**	**ICF**
Abdominal Pain	13	308	0.961
Anal Abscess	1	18	1
Anal Fissure	1	37	1
Anal Fistula	2	78	0.987
Anorectal Fistula	1	18	1
Appetite	2	44	0.977
Biliousness	2	37	0.972
Colic	1	12	1
Colorectal Diseases	1	26	1
Constipation	18	534	0.968
Defecation problems	1	33	1
Diarrhea	10	212	0.957
Digestive Health	5	120	0.966
Dysentery	17	364	0.956
Dyspepsia	5	133	0.97
Gastric Disorders	13	361	0.967
Heart burn	3	65	0.969
Hematemesis	1	18	1
Hematochezia	1	6	1
Hemorrhoids	17	543	0.97
Indigestion Problems	2	24	0.957
Intestinal Ulcers	3	68	0.97
Intestinal Diseases	1	27	1
Irritable Bowel Syndrome	4	76	0.96
Peptic Ulcers	5	95	0.957
Rectal Hemorrhage	1	22	1

Note: $\mathbf{N_t}$= Number of species cited for that category; $\mathbf{N_{ur}}$= Number of individual use-reports for a particular ailment category, ICF= Informant Consensus Factor.

Discussion

The present study provides a comprehensive quantitative assessment of medicinal plant use for digestive system disorders among tribal communities of Parvathipuram Manyam District. The diversity of informants—comprising traditional healers, priests, elderly community members, and agriculturists—reflects a broad distribution of ethnomedicinal knowledge. Similar demographic patterns, in which knowledge holders are predominantly elderly males, have been reported in ethnobotanical studies across India, Nepal, and Southeast Asia (Uprety *et al.* 2010; Rokaya *et al.* 2014). The reliance on elderly informants further underscores concern regarding the gradual erosion of orally transmitted traditional practices, as younger generations increasingly shift toward modern healthcare systems (Giday *et al.* 2009).

Diversity and Taxonomic Patterns

The documentation of 116 species across 55 families demonstrates the rich medicinal flora of the Eastern Ghats. Families such as Fabaceae, Meliaceae, Asteraceae, and Lamiaceae were most represented, a trend widely observed in ethnomedicinal literature from the Eastern and Western Ghats (Rahman *et al.* 2021; Prasad *et al.* 2020). The dominance of Fabaceae, in particular, may be attributed to its high species richness in tropical regions and its wide therapeutic applications, especially for gastrointestinal disorders (Kadir *et al.* 2012). The presence of 42 families represented by single species highlights both the floristic heterogeneity of the region and the highly selective use of certain plants for specific digestive ailments.

The substantial number of digestive ailments recorded (131 conditions) aligns with findings from studies in Odisha, Chhattisgarh, and Meghalaya, where gastrointestinal problems are among the most frequently managed health concerns in tribal communities (Behera & Misra, 2020). This suggests that digestive diseases continue to be a major health burden in many rural and forest-dependent populations, necessitating easily accessible plant-based remedies.

Plant Parts and Preparation Methods

Leaves were the most frequently used plant part, followed by roots and fruits. This pattern is consistent with global ethnobotanical trends, where leaves dominate due to their year-round availability, ease of harvesting, and high concentration of secondary metabolites (Heinrich *et al.* 1998). Root-based remedies, though effective, raise sustainability concerns because extraction can threaten long-term plant survival—an issue documented in the Western Ghats and northeastern India (Kala, 2005). The high utilization of leaves in this study therefore represents both ecological practicality and cultural preference.

Preparation methods such as pastes, juices, decoctions, and powders were commonly reported, paralleling practices documented among tribal communities in central and southern India (Harsha *et al.* 2002; Ved *et al.* 2020). These techniques rely on minimal processing, often requiring only water or manual extraction, highlighting the adaptive efficiency of indigenous pharmacopoeias.

Medicinal Use Patterns and Cultural Priorities

The most frequently treated ailments—constipation, dysentery, hemorrhoids, gastritis, abdominal pain, and diarrhea—indicate that digestive disturbances form a core focus of traditional primary healthcare. Similar dominance of gastrointestinal treatments is evident in studies from the Nallamala forests (Saheb *et al.* 2012), Western Ghats (Senthilkumar & Gurumoorthy, 2013), and tribal belts of Odisha (Panda *et al.* 2019). The prominence of these disorders may be linked to dietary habits, water quality, poor sanitation, and strenuous field-based livelihoods typical of many tribal regions.

The rare ailments treated—such as anal abscess, anal fissure, hematemesis, and rectal hemorrhage—are notable because they display ICF = 1.0, showing complete homogeneity in plant selection. High-consensus remedies often reflect long-standing empirical reliability and therefore represent priority candidates for pharmacological investigation (Trotter & Logan, 1986).

Interpretation of Quantitative Indices

The Use Value (UV) results reveal that most species had low UV scores (0.0227-0.0454), indicating that while many plants are used, each species is associated with narrow, ailment-specific applications. Similar low-UV patterns have been reported in ethnobotanical studies from the Himalayas and central India (Uprety *et al.* 2010; Yaseen *et al.* 2015), suggesting that specialization rather than generalization characterizes medicinal plant usage in many indigenous cultures.

The Fidelity Level (FL) analysis showed remarkably high specificity, with over 70 species achieving 100% FL. High-FL values illustrate strong consensus on plant efficacy and cultural trust in particular remedies, consistent with findings in

ethnobotanical research from Ethiopia, Mexico, and the Western Ghats (Giday *et al.* 2009; Andrade-Cetto, 2009; Prasad *et al.* 2020). Species such as *Acalypha indica*, *Ananas comosus*, and *Aristolochia indica* emerge as culturally validated, ailment-specific treatments, warranting pharmacological evaluation.

The Informant Consensus Factor (ICF) values ranged from 0.95 to 1.00 across nearly all digestive ailments, indicating exceptionally strong agreement among informants. High ICF values point to structured traditional knowledge systems where plant selection is guided by shared cultural understanding. Comparable high ICF values have been observed in digestive health studies across indigenous populations in Africa and Asia (Giday *et al.* 2009; Rokaya *et al.* 2014). The high consensus for common ailments such as constipation, hemorrhoids, and dysentery reinforces the robustness of traditional therapeutic strategies in the region.

Cultural and Conservation Implications

The strong reliance on medicinal plants for digestive ailments underscores the irreplaceable role of ethnomedicine in the primary healthcare of tribal populations in Parvathipuram Manyam. However, increasing environmental degradation, deforestation, and reduced transmission of traditional knowledge pose risks to this biocultural heritage—issues echoed in studies across the Eastern Ghats, Western Ghats, and northeastern India (Ved *et al.* 2020; Prakash & Reddy, 2021). Sustainable harvesting practices, community-led conservation programs, and systematic documentation of ethnomedicinal knowledge are urgently needed.

Conclusion

The current investigation highlights the vital role of traditional knowledge of medicine among tribal communities in Parvathipuram Manyam district, particularly in the treatment of digestive problems using a wide range of locally available plant species. The preference for certain plant parts and preparation methods reflects both cultural practices and practical accessibility. High consensus and fidelity values point to well-established, ailment-specific applications, underscoring the reliability and depth of this indigenous knowledge. Although the frequency of use per species was limited, the precision in treatment suggests a focused and experience-based approach to healthcare. These findings emphasize the importance of preserving not only the region's plant biodiversity but also the traditional wisdom that continues to support community health and offers valuable leads for future scientific and pharmacological research.

Declarations

Ethics approval and consent to participate: Prior to data collection, oral informed consent was obtained from all participants. The research was conducted in compliance with the ethical standards prescribed in the Code of Ethics of the International Society of Ethnobiology (ISE, 2008).

Consent for publication: Not applicable.

Availability of data and materials: Not applicable.

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Authors' contributions: J.R.V. designed the study, conducted fieldwork, analyzed data, and drafted the manuscript. P.K.U. verified plant identification. S.S.B. contributed to manuscript revision. R.K.P. revised the Introduction and Methods, reorganized Results, expanded Discussion, integrated comparative ethnobotanical literature, and critically reviewed the manuscript. All authors reviewed and approved the final version.

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