Ethnobotanical Studies of Indigenous Plants Used for Gastrointestinal Ailments in Bansur Block, Rajasthan

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Abstract

Gastrointestinal ailments are common in rural India, where reliance on medicinal plants remains strong. This study documents traditional remedies in Bansur block, Kotputli-Behror district, Rajasthan, through surveys in eight villages with eight key informants, including healers and elders. Fifty-two plant species were recorded for treating gastrointestinal disorders. Data on local names, plant parts, and preparation methods were collected, with voucher specimens identified using standard floras. Quantitative indices (RFC, UV, ICF) highlighted cultural importance. Results emphasize conservation needs and the relevance of traditional knowledge for sustainable healthcare.

Keywords

Ethnobotany; Indigenous knowledge; Medicinal plants; Gastrointestinal disorders; Rajasthan; Bansur block

1. Introduction

India has a rich tradition of medicinal plant use, particularly in rural and tribal communities where modern healthcare access remains limited **(Vandebroek, I., 2013).** Ethnobotany, which studies the relationship between people and plants, plays a vital role in documenting and preserving this indigenous knowledge. In many parts of Rajasthan, folk healers and local

communities still rely on traditional remedies to cure common ailments such as diarrhea, dysentery, constipation, stomach ulcers, and indigestion.

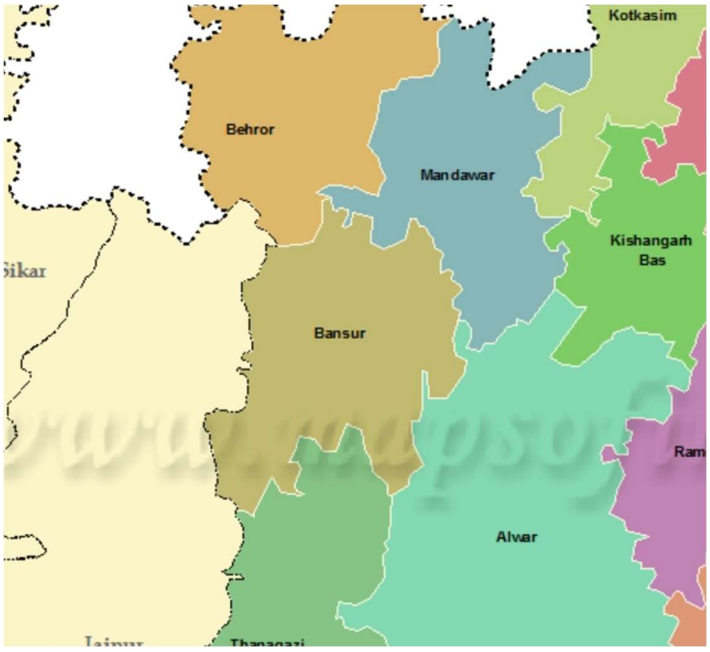
The gastrointestinal system is highly vulnerable to infections and disorders, influenced by diet, water quality, and environmental factors (Holtmann, 2018). Although allopathic medicines exist, they are often inaccessible in rural areas and may cause side effects. Hence, traditional plant-based treatments remain a cornerstone of healthcare.

Previous ethnobotanical studies in Rajasthan **(Choudhary ,2008)** have highlighted the use of plant species across districts such as Alwar **(Jain et al, 2009)**, Nagaur **(Singh,2019)** and Barmer **(Khan et al., 2022)**. However, **Bansur block of Kotputli-Behror district** remains understudied despite its diverse flora and rich traditional knowledge system. The present study attempts to bridge this gap by documenting the medicinal plants used for gastrointestinal ailments in this block and assessing their cultural significance through quantitative ethnobotanical indices.

2. Materials and Methods

2.1 Study Area

The study was conducted in Bansur block, Kotputli-Behror district, Rajasthan(**27.6851° N, 76.3545° E**). The region lies in the semi-arid zone of northeastern Rajasthan, characterized by sandy loam soil, low rainfall, and high dependency on rainfed agriculture. Villages are interspersed with scrub vegetation and cultivated lands. The local population largely comprises agrarian communities with deep reliance on plant resources for healthcare.



2.2 Informants

A total of **8 informants** were selected using purposive sampling, including traditional healers (Some locally known as ***vaidyas***) and elderly community members recognized for their knowledge of medicinal plants. Both male and female informants were included to capture a wider perspective. Prior informed consent was obtained from all participants following ethical guidelines.

2.3 Data Collection

Data were collected through **semi-structured interviews (Siliva, 2014), guided field walks, and participant observation**. The following information was recorded for each plant species:

- Botanical name
- Local name
- Family
- Plant part(s) used
- Preparation method (e.g., decoction, paste, powder)
- Specific gastrointestinal ailment treated

S. No.	Scientific Name	Family	Local Name	Part Used	Preparation	Ailment Treated
1	*Boerhavia diffusa*	Menispermaceae	Saati , Punarnava	Whole Plant	Decoction, Paste, Powder	Constipation & Bowel Irregularities
2	*Phyllanthus niruri*	Phyllanthaceae	Bhumi aavala	Leaf	Chewing/ Raw	Liver & Associated Ailments, Ulcer
3	*Glycyrrhiza glabra*	Fabaceae	Mulethi	Root	Powder	Indigestion, Acidity
4	*Lepidium didymum*	Brassicaceae	Jangli ajwain	Seeds	Raw	Stomachache, Bloating, Indigestion,
5	*Curcuma amada*	Zingiberaceae	Amiya Haldi	Roots	Powder with Milk	Anti-inflammatory, bloating, acidity
6	*Zingiber officinale Roscoe*	Zingiberaceae	Saunth, adarak	Roots	Powder, Juice	Stomachache
7	*Cuminum cyminum*	Apiaceae	Jeera	Seeds	Raw/Powder	Reducing Bloating and Gas
8	*Trigonella foenum-graecum*	Leguminosae	Methi	Seeds, leafs	Powder/ Paste	Stomachache, Indigestion
9	*Asparagus racemosus*	Asparagaceae	Shatavari	Roots	Powder	Ulcers, Cooling Effect
10	*Shorea robusta*	Dipterocarpaceae	Salar	Gond	Mix with water	Improve Digestion
11	*Aristolochia indica*	Aristolochiaceae	Ishar mool	Roots	Powder	Indigestion, Bloating

12	*Tephrosia purpurea*	Fabaceae	Jhojharu ,Sarpunkha	Aerial part, Pods	Powder, Chewing of Pods	dyspepsia, diarrhea, dysentery, and flatulence.
13	*Baliospermum montanum*	Euphorbiaceae	Nagdanti	All Plant	Decoction, Powder, Paste, with Ghee	constipation and intestinal worms
14	*Cucumis callosus*	Cucurbitaceae	Kachri	Fruit	Powder or	Improve Digestion
15	*Leptadenia reticulata*	Asclepiadaceae	Jeevanti	Leaves	Powder	Liver
16	*Sida rhombifolia L.*	Malvaceae	Mahabala	Aerial Part	Powder	Provide energy and Improve Digestion
17	*Abutilon indicum*	Malvaceae	Atibala	Aerial Part	Powder	Soothing Ulcer
18	*Euphorbia hirta*	Euphorbiaceae	Badi dudi	Aerial Part	Paste or Powder	Piles
19	*Euphorbia thymifolia L.*	Euphorbiaceae	Chhoti dudi	Aerial Part	Powder or Paste	Stomach ache and Pechis
20	*Leucas aspera*	Lamiaceae	Dargal	Aerial Part	Powder	Intestine worms
21	*Solanum nigrum*	Solanaceae	Makoy	Aerial part with root of *Boerhavia*	Paste with water	Inflammation of Elementary canal
22	*Physalis peruviana*	Solanaceae	Chirpotan	Fruits or leaves	Chewing or powder	Kidney
23	*Citrus limon*	Rutaceae	Neembu	All parts	Juice and Powder	Stimulting Digestive Enzyme

24	*Ficus religiosa*	Moraceae	Peepal	Bark and Deeka mali plant Powder	**Decoction**	Stomach ache
25	*Gardenia resinifera*	Rubiaceae	Deeka malee	Aerial parts	Decoction	Stomachache
26	*Martynia annua*	Pedaliaceae	Kaagnasha	Aerial parts	Decoction	Stomach worms
27	*Achyranthes aspera*	Amaranthaceae	Lath jeera , ulta kanta, chirchita	Leaves and kanta	With Milk and Kheer	Reduce appetite and Reduce stomach ache
28	*Clitoria ternatea*	Fabaceae	Pasar gatheli	Leaves and Stems	Powder	Help in Digestion
29	*Tridax procumbens*	Asteraceae	Rookhdi	Aerial Part	Paste with water	Ulcer
30	*Euphorbia neriifolia*	Euphorbiaceae	Sanjhi	Leaves	Decoction	Severe Diarrhea
31	*Tribulus terrestris*	Zygophyllaceae	Gokhru	Leaves, stems and Fruits	Powder, Paste, Laddu	Cooling
32	*Tinospora cordifolia*	Menispermaceae	Giloy	Stem and leaves	Decoction	Cooling
33	*Phyllanthus emblica*	Phyllanthaceae	Aawala	Fruits and leaves	Chewing and Powder of leaves and Fruits	Stimulating digestive enzymes, acidity, constipation, and bloating
34	*Bryophyllum pinnatum*	Crassulaceae	Patthar chatta	Leaves	Paste and powder	Reduce Acid Secretion and

						help in Ulcer
35	*Cynodon dactylon*	Poaceae	Doob	Leaves	Paste with water	Cooling
36	*Prunus persica*	Rosaceae	Aadu	Leaves	Paste with water	Stomach worms
37	*Azadirachta indica*	Meliaceae	Neem	Leaves and Buds	Decoction, paste and – Chewing	Stomach worms
38	*Brassica nigra*	Brassicaceae	Raai	NA	NA	NA
39	*Dalbergia sissoo*	Fabaceae	Sheesham	Leaves	Chewing or powder	Cooling Effect
40	*Brassica oleracea*	Cruciferaceae	Pahad gobhi	Flower	Cooking	Heavy fiber and Good Bowl Moment
41	*Tectona grandis*	Lamiaceae	Teekar Gond	Gond katira	water soaked	constipation, acidity
42	*Punica granatum*	Punicaceae	Anar	Fruit	Fruit Peel powder	Diarrhea
43	*Aegle marmelos*	Rutaceae	Beel patra	Fruits and Giri	Paste or Powder	Cooling Effect or Constipation
44	*Acacia nilotica*	Mimosaceae	Babul	Pods and Leaves	Powder	Treating diarrhea, stomach pain, and inflammation
45	*Acacia ferruginea*	Mimosaceae	Safed Khair	Bark	Liquid Extract	Reduce Swelling and

						Pain
46	*Acacia leucophloea*	Mimosaceae	Rounch	Bark	Powder	Diarrhea, dysentery, and vomiting
47	*Argemone mexicana*	Papaveraceae	Pili Kateli	Seeds	Oil extraction	Low doses for Constipation
48	*Naringi crenulata*	Rutaceae	Banasa Kaith	Roots	Decoction	Nausea, vomiting, diarrhea
49	*Ocimum bacillacum*	Lamiaceae	Manbawchi	Leaves	Paste with water	Worms and piles.
50	*Prosobis julifera*	Mimosaceae	Vilayati babul	branches, stems and bark	Power and paste	Bladder infection, measles or fever. The leaves can be used for are diarrhoea
51	*Syzygium cumini L.*	Myrtaceae	Jamun	Leafs and Fruits	Powder, paste and chewing	constipation
52	*Sida acuta Burm.f*	Malvaceae	Kristi	Leaves	Powder and paste	Gastric diseases, vermifuge stomachabe, gonorrhoea, abortifacient, antiemetic, anthelmintic, tonics

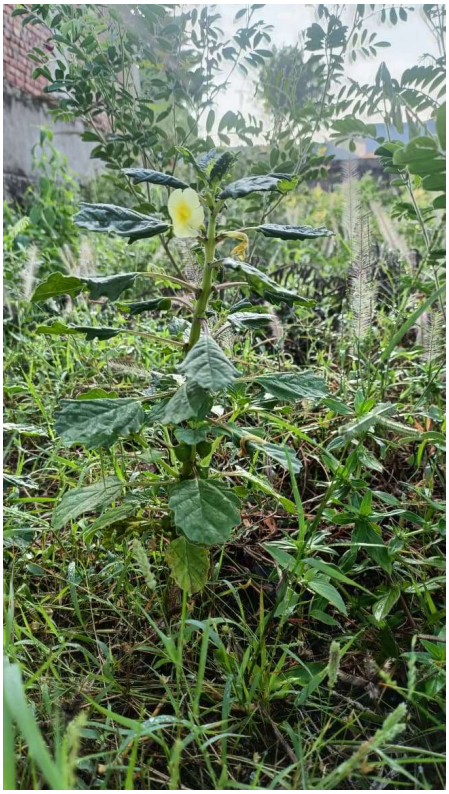


Figure 1 *Tribulus terrestris* (Gokhru)

Figure 2 *Tephrosia purpurea* (Jhojharu)

2.4 Plant Identification

Collected plant specimens were compared with published floras **(Sharma, 2011)** and authenticated by Botanist Mr. Vinod Bhana, (Department of Botany, Bansur PG College Bansur, Kotputli-Behror Rajasthan). Voucher specimens were deposited in the Department of Botany Bansur PG College Bansur for future reference.

2.5 Quantitative Analysis

To evaluate the importance of each species, three quantitative ethnobotanical indices were applied:

- **Relative Frequency of Citation (RFC):** Indicates local importance based on the proportion of informants mentioning a species.
- **Use Value (UV):** Reflects the diversity of uses for each species.

- **Informant Consensus Factor (ICF):** Assesses the degree of agreement among informants for specific ailment categories. **(Faruque et al., 2018)**

3. Results

3.1 Documented Plant Species

A total of **52 plant species** belonging to ***30*** *families* were documented for their use in the treatment of gastrointestinal ailments in Bansur block. These plants were employed against conditions such as diarrhea, dysentery, constipation, stomach pain, gastritis, and indigestion.

The most frequently used families were **Fabaceae and Euphorbiaceae**, reflecting their dominance in local flora and cultural knowledge.

3.2 Plant Parts Used

Among the documented plants, leaves were the most commonly utilized part, followed by roots, seeds, bark, and fruits. This trend reflects easy accessibility and sustainability, as leaf harvesting generally causes less harm to plants compared to root or bark extraction.

3.3 Quantitative Indices

Application of ethnobotanical indices revealed the relative importance of species:

- **Relative Frequency of Citation (RFC):** Plants *Tribulus terrestris* (0.75), *Tephrosia purpurea* (0.625) and *Phyllanthus emblica* (0.625) showed the highest RFC values, indicating wide acknowledgment among informants.
- **Use Value (UV):** Species such as *Tephrosia purpurea* (0.875), *Tribulus terrestris* (0.875) and *Phyllanthus emblica* (0.75) had high UV due to multiple gastrointestinal applications.
- **Informant Consensus Factor (ICF):** High ICF values were observed for Cooling (0.64), Stimulating Digestive Enzyme (0.60) and Inflammation (0.50) categories, suggesting strong cultural agreement on effective plant remedies.

Scientific Name	**Local Name**	**FC (No. of informants)**	**UR (Use reports)**	**Use Value (UV)**	**Relative Frequency of Citation (RFC)**
Boerhavia diffusa	Saati , Punarnava	3	4	0.5	0.375
Phyllanthus niruri	Bhumi aavala	3	3	0.375	0.375
Glycyrrhiza glabra	Mulethi	2	3	0.375	0.25
Lepidium didymum	Jangli ajwain	1	1	0.125	0.125
Curcuma amada	Amiya Haldi	2	2	0.25	0.25
Zingiber officinale Roscoe	Saunth, adarak	1	1	0.125	0.125
Cuminum cyminum	Jeera	1	2	0.25	0.125
Trigonella foenum-graecum	Methi	4	5	0.625	0.5
Asparagus racemosus	Shatavari	1	2	0.25	0.125
Shorea robusta	Salar	1	1	0.125	0.125
Aristolochia indica	Ishar mool	1	2	0.25	0.125
Tephrosia purpurea	Jhojharu ,Sarpunkha	5	7	0.875	0.625
Baliospermum montanum	Nagdanti	1	2	0.25	0.125
Cucumis callosus	Kachri	2	2	0.25	0.25
Leptadenia reticulata	Jeevanti	1	1	0.125	0.125
Sida rhombifolia L.	Mahabala	1	1	0.125	0.125

Abutilon indicum	Atibala	1	1	0.125	0.125
Euphorbia hirta	Badi dudi	3	3	0.375	0.375
Euphorbia thymifolia L.	Chhoti dudi	2	2	0.25	0.25
To be Indentifieng	Dargal	2	2	0.25	0.25
Solanum nigrum	Makoy	2	2	0.25	0.25
Physalis peruviana	Chirpotan	2	2	0.25	0.25
Citrus limon	Neembu	4	4	0.5	0.5
Ficus religiosa	Peepal	1	1	0.125	0.125
Gardenia resinifera	Deeka malee	1	1	0.125	0.125
Martynia annua	Kaagnasha	1	1	0.125	0.125
Achyranthes aspera	Lath jeera , ulta kanta, chirchita	4	4	0.5	0.5
Clitoria ternatea	Pasar gatheli	1	1	0.125	0.125
Tridax procumbens	Rookhdi	4	4	0.5	0.5
Euphorbia neriifolia	Sanjhi	1	1	0.125	0.125
Tribulus terrestris	Gokhru	6	7	0.875	0.75
Tinospora cordifolia	Giloy	2	2	0.25	0.25
Phyllanthus emblica	Aawala	5	6	0.75	0.625
Bryophyllum pinnatum	Patthar chatta	2	2	0.25	0.25
Cynodon dactylon	Doob	1	2	0.25	0.125
Prunus persica	Aadu	1	1	0.125	0.125
Azadirachta indica	Neem	4	5	0.625	0.5

Dalbergia sissoo	Sheesham	2	2	0.25	0.25
Brassica oleracea	Pahad gobhi	1	1	0.125	0.125
Tectona grandis	Teekar Gond	1	2	0.25	0.125
Punica granatum	Anar	1	1	0.125	0.125
Aegle marmelos	Beel patra	1	2	0.25	0.125
Acacia nilotica	Babul	1	3	0.375	0.125
Acacia ferruginea	Safed Khair	2	2	0.25	0.25
Acacia leucophloea	Rounch	1	1	0.125	0.125
Argemone mexicana	Pili Kateli	1	1	0.125	0.125
Naringi crenulata	Banasa Kaith	1	1	0.125	0.125
Ocimum bacillacum	Manbawchi	1	2	0.25	0.125
Prosobis julifera	Vilayati babul	1	1	0.125	0.125
Syzygium cumini L.	Jamun	1	2	0.25	0.125
Sida acuta Burm.f	Kristi	2	2	0.25	0.25

4. Discussion

The present study demonstrates that rural communities in Bansur block possess rich traditional knowledge of medicinal plants, particularly for gastrointestinal ailments. The dominance of leaves as the most frequently used plant part aligns with findings from other ethnobotanical studies in Rajasthan and across India, emphasizing their accessibility and ease of preparation.

The high RFC and UV values for *Tribulus terrestris* (Gokhru), *Tephrosia purpurea* (Jhojharu) underline their central role in traditional medicine. Both species are also well-documented in pharmacological studies, with established antimicrobial, anti-inflammatory, and antidiarrheal

properties. This convergence between local knowledge and scientific validation enhances the credibility of folk practices.

The high ICF values for Cooling and stimulating digestive enzymes reflect a shared cultural consensus, suggesting that these remedies are tested and trusted across generations. Such findings not only highlight the reliability of indigenous medicine but also provide leads for bioprospecting and further pharmacological studies.

However, unsustainable harvesting practices, especially involving roots and bark, may pose a threat to plant populations. Conservation measures and awareness programs are therefore necessary to ensure the sustainable use of medicinal resources.

5. Conclusion

This ethnobotanical investigation highlights the continuing significance of medicinal plants in rural healthcare systems of Bansur block, Rajasthan. A total of 52 species were recorded, with several key plants showing high cultural and therapeutic value. Quantitative indices confirmed the strong cultural consensus on certain remedies, which are also supported by pharmacological evidence.

The high consensus on *Tribulus terrestris* and *Tephrosia purpurea* suggests strong potential for future pharmacological research and sustainable community-based cultivation

The study not only enriches ethnobotanical databases but also provides a foundation for future pharmacological validation, conservation planning, and sustainable utilization of medicinal plants. Documentation of such traditional knowledge is crucial, as it is rapidly declining due to modernization and loss of cultural heritage.

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