



Advancements in Ethnobotanical Sciences

Bridging Traditional Knowledge and Modern Science

Online ISSN: 0000-0000
Journal homepage: <https://www.jaeps.com>



Ethnobotanical Knowledge of Medicinal Plants Used for Prostatitis in Chardavol County, Western Iran

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Article Info

Article type

Research

Article history

Received: 9 Jan. 2026

Accepted: 19 Mar. 2026

Published: 31 Mar. 2026

DOI

10.34172/jaeps.2026.5

Keywords

Chardavol

Ethnobotany

Indigenous knowledge

Medicinal plants

Prostate disorders

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ABSTRACT

Background and Objective: Prostatitis is a common health concern among men, and medicinal plants have long been used in traditional medicine to alleviate symptoms and manage various prostatitis-related conditions. This study aimed to identify and document medicinal plants traditionally used for the prevention and management of prostatitis in Chardavol County, Ilam Province, western Iran.

Methods: A descriptive cross-sectional ethnobotanical survey was conducted in Chardavol County, Ilam Province, western Iran. Ethnobotanical data were collected through face-to-face, semi-structured interviews with 30 local knowledgeable informants using purposive and snowball sampling. Information on plant identity, botanical family, plant parts used, preparation and administration methods, and reported traditional uses was recorded.

Results: This ethnobotanical survey documented nine plant-use records across seven families traditionally used for prostatitis in Chardavol County. Asteraceae was the most represented family (33.3%, three records). Roots and leaves were the most commonly used plant parts, followed by fruits and aerial parts. Infusion and decoction were the main preparation methods, with infusion being the most frequently reported, used to treat various urinary and prostate-related complaints.

Conclusions: The findings document locally transmitted knowledge concerning the traditional use of medicinal plants for prostatitis conditions in Chardavol County. The repeated use of certain species and the predominance of simple aqueous preparations provide useful leads for future ethnobotanical, phytochemical, and pharmacological research. However, traditional reports should not be interpreted as evidence of clinical efficacy. Further phytochemical, pharmacological, toxicological, and well-designed clinical studies are required to evaluate the efficacy and safety of these plants.

Please cite this paper as: Dalvadi H, Mahmand M. (2026). Ethnobotanical Knowledge of Medicinal Plants Used for Prostatitis in Chardavol County, Western Iran. *Advancements in Ethnobotanical Sciences*, 2(1), 38-45.



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DOI: <https://doi.org/10.34172/jaeps.2026.5>

Introduction

The prostate is an important gland of the male reproductive system and plays a central role in reproductive function and several processes of the male genitourinary tract (Domingue Sr & Hellstrom, 1998). Prostatitis is a common health condition among men and may be associated with urinary and pelvic symptoms that affect quality of life. Depending on the underlying condition, affected individuals may experience urinary frequency, difficulty initiating or maintaining urination, a sensation of incomplete bladder emptying, nocturia, pelvic pain or discomfort, and a consequent reduction in quality of life (Domingue Sr & Hellstrom, 1998). Among these conditions, benign prostatic hyperplasia (BPH) is one of the most common disorders affecting older men. BPH may cause lower urinary tract symptoms (LUTS), thereby imposing a considerable burden on individual well-being and healthcare systems (Borgert et al., 2025). Other prostate disorders, including prostatitis, infections, and other pathological conditions, may also produce overlapping or disease-specific symptoms and require appropriate clinical diagnosis and management (Borgert et al., 2025).

The management of prostate disorders depends largely on the underlying disease and the severity of symptoms and may involve lifestyle modification, pharmacological therapy, or, in selected cases, surgical intervention (Sharp et al., 2010). Although pharmacological treatments for BPH and other prostate conditions can provide effective symptomatic relief, prolonged use of some therapeutic agents may be associated with adverse effects, and treatment responses may vary among patients (Lipsky et al., 2010). These considerations, together with growing interest in natural products and traditional herbal remedies, have encouraged research into plant resources with a documented history of use for prostatitis conditions (Sharp et al., 2010). Medicinal plants contain diverse biologically active constituents, and several species have demonstrated anti-inflammatory, antioxidant, antimicrobial, or cell-growth-modulating activities in experimental and pharmacological studies. Nevertheless, traditional use alone does not constitute sufficient evidence of clinical efficacy or safety.

Ethnobotany examines the relationship between people and plants, with particular emphasis on the knowledge, beliefs, practices, and cultural traditions through which plant resources are identified and plant parts utilized by local communities (Alkhatib and Abdi, 2026). Accumulated over generations through direct experience and oral transmission, this knowledge represents an important source of information for identifying plant species of potential medicinal interest (Fijan, 2025). Beyond documenting and safeguarding traditional knowledge, ethnobotanical investigations can provide a basis for selecting plant species for subsequent phytochemical, pharmacological, and drug-discovery research (Ghazizadeh & Khalili, 2025). In this context, documenting traditional plant-based approaches to common and chronic health conditions, including prostate disorders, may help establish a link between indigenous knowledge and contemporary biomedical research (Saki and Pourrahim, 2025).

Ilam Province, particularly its biologically and culturally diverse areas, offers considerable potential for ethnobotanical research. Chardavol County, located in western Iran, is characterized by diverse vegetation, a rich assemblage of wild and medicinal plant species, and the continued transmission of traditional knowledge within local communities. These characteristics make the region a valuable setting for investigating traditional medicinal plant use. Despite the importance of such knowledge, ethnobotanical information concerning plant-based approaches to specific men's health conditions, including prostatitis disorders, remains insufficiently documented in a systematic manner. Furthermore, ongoing social and cultural changes and the weakening of intergenerational transmission may place some aspects of this traditional knowledge at risk of being lost.

Accordingly, documenting ethnobotanical knowledge concerning medicinal plants used for prostatitis disorders in Chardavol County is important not only for preserving an element of the region's biocultural heritage but also for generating preliminary information to guide future research. The present study therefore aimed to identify and document medicinal plants traditionally used for the prevention and

management of prostatitis disorders in Chardavol County, with particular emphasis on plant identity and family, plant parts utilized, preparation and administration methods, and the therapeutic uses reported by local knowledgeable individuals. The findings are intended to provide a basis for subsequent investigations into the bioactive constituents, mechanisms of action, therapeutic efficacy, and safety of the documented plant species.

Methods

Study Design and Setting

A descriptive cross-sectional ethnobotanical survey was conducted to identify and document medicinal plants traditionally used for prostatitis health conditions. The study was carried out in Chardavol County, Ilam Province, western Iran (Figure 1). The study area was selected because of its floristic diversity and the continued use of medicinal plants within local traditional healthcare practices.

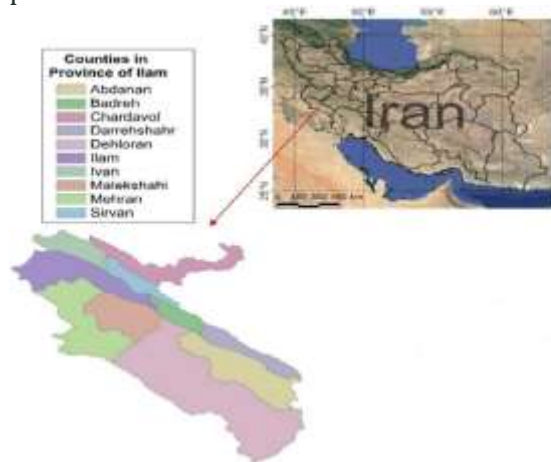


Figure 1: Chardavol County, Ilam Province, western Iran

Study Population, Sampling, and Data Collection

Ethnobotanical data were collected through face-to-face, semi-structured interviews with 30 local knowledgeable informants, including herbalists, traditional medicine practitioners, and traditional healers with experiential knowledge of medicinal plants traditionally used for prostatitis conditions. Purposive sampling was initially employed to identify individuals with relevant ethnobotanical knowledge, followed by snowball sampling to identify additional knowledgeable informants

through recommendations from previously interviewed participants.

Eligible participants were permanent residents of Chardavol County who had practical experience with medicinal plants, were familiar with their traditional uses for prostatitis-related health conditions, and provided informed consent. Individuals who were unable or unwilling to provide relevant information or declined participation were excluded from the study.

A structured questionnaire was used to record the Persian and local names of plants, scientific names, botanical families, plant parts utilized, preparation and administration methods, reported traditional indications, duration and quantity of use when known, and sources of plant material. Sociodemographic and ethnobotanical background information, including sex, age, occupation, educational level, duration of experience with medicinal plants, and history of medicinal-plant use, was also recorded.

Sociodemographic Characteristics of Informants

The sociodemographic characteristics of the 30 informants are presented in Table 1. These characteristics provide contextual information regarding the demographic background and level of ethnobotanical experience of the individuals who contributed traditional knowledge to the study.

Plant Collection and Identification

Whenever feasible, representative specimens of plant species reported by the participants were collected during field investigations and subjected to botanical identification. Scientific names and botanical families were verified using authoritative taxonomic references. Voucher specimens were examined and compared with authenticated reference materials housed at the Herbarium of the Biotechnology and Medicinal Plants Research Center. Plant identification was further verified using Flora of Ilam Province.

Classification of Prostatitis Conditions

Reported traditional uses were categorized according to the health conditions described by the informants. These included prostate enlargement, urinary frequency or difficulty, urinary retention, prostatitis, inflammation or infection as perceived by informants, prostate-region pain or discomfort,

and other prostatitis complaints. These categories were based on local terminology and informant descriptions and were not considered equivalent to clinically confirmed diagnoses unless supported by medical documentation.

Table 1. Sociodemographic characteristics of the informants participating in the ethnobotanical survey (n = 30)

Characteristic	Category	n	%
Sex	Male	22	73.3
	Female	8	26.7
Age (years)	40–49	6	20.0
	50–59	9	30.0
	60–69	10	33.3
	≥70	5	16.7
Occupation	Herbalist	8	26.7
	Traditional healer	10	33.3
	Traditional medicine practitioner	7	23.3
	Other local knowledge holders	5	16.7
Educational level	No formal education	8	26.7
	Primary education	10	33.3
	Secondary education	7	23.3
	Higher education	5	16.7
Years of experience in medicinal-plant use	10–19	7	23.3
	20–29	9	30.0
	30–39	9	30.0
	≥40	5	16.7
History of medicinal-plant use	Yes	30	100.0
	No	0	0.0

Ethical Considerations

Before each interview, the objectives and procedures of the study were explained clearly to the participants, and informed consent was obtained prior to data collection. Participation was voluntary, and participants were informed of their right to withdraw from the study at any time without consequence. Personal information was kept confidential, and the collected ethnobotanical information was used solely for scientific research purposes.

Results

Sociodemographic analysis revealed that the informants were predominantly male and middle-aged to elderly, mostly between 50 and 69 years

old, with traditional healers and herbalists constituting the main occupational groups and limited formal education being common. Their experience in medicinal-plant use varied widely, and all participants reported prior use of medicinal plants, indicating a strong tradition of plant-based knowledge within the community (Table 1).

The ethnobotanical survey conducted in Chardavol County documented the traditional use of medicinal plants for prostatitis disorders. In total, nine plant-use reports representing seven botanical families were recorded. The family Asteraceae was the most frequently represented, accounting for three plant-use reports (33.3%). Considerable variation was observed in the plant parts utilized and the methods of preparation and administration. Decoctions and infusions were the most frequently reported preparation methods, with infusion being the predominant method of administration.

Detailed information on the documented plants, including their scientific and local names, botanical families, plant parts used, methods of preparation and administration, and reported traditional therapeutic applications, is presented in Table 2.

The ethnobotanical data were analysed qualitatively. Based on these data, the distribution of the reported plant families is shown in Figure 2. Among the documented families, Asteraceae was the most frequently represented.

Leaves accounted for the highest percentage of the plant parts used (Figure 3).

Herbal infusions was the predominant method of preparation, accounting for 53% of reported uses, followed closely by decoction at 47%.

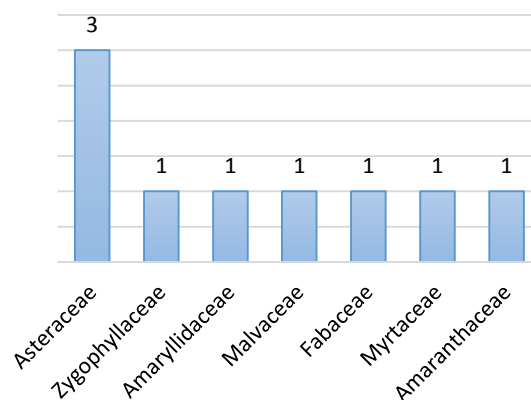


Figure 2: Diversity of plant families

Table 2. Medicinal plants traditionally used for prostatitis disorders according to ethnobotanical knowledge in Chardavol County, western Iran.

Local name	Scientific name	Family	Plant part(s) used	Preparation/administration
Khar-khasak	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Fruits, roots	Decoction, infusion; oral
Ašnāk	<i>Allium ursinum</i> L.	Amaryllidaceae	Leaves, roots	Decoction, infusion; oral
Khatmi	<i>Althaea officinalis</i> L.	Malvaceae	Flowers, leaves	Decoction, infusion; oral
Kasni	<i>Cichorium intybus</i> L.	Asteraceae	Leaves, roots	Infusion; oral
Gon	<i>Astragalus membranaceus</i> Bunge	Fabaceae	Roots	Decoction, infusion; oral
Mikhak	<i>Syzygium aromaticum</i> (L.) Merr. & L.M.Perry	Myrtaceae	Flowers, seeds	Decoction, infusion; oral
Shokar-Tighal	<i>Cichorium endivia</i> L.	Asteraceae	Leaves	Decoction, infusion; oral
Kasni	<i>Cichorium intybus</i> L.	Asteraceae	Roots, leaves	Decoction, infusion; oral
Jaroo-giahi	<i>Salsola kali</i> L.	Amaranthaceae	Aerial parts	Decoction, infusion; oral

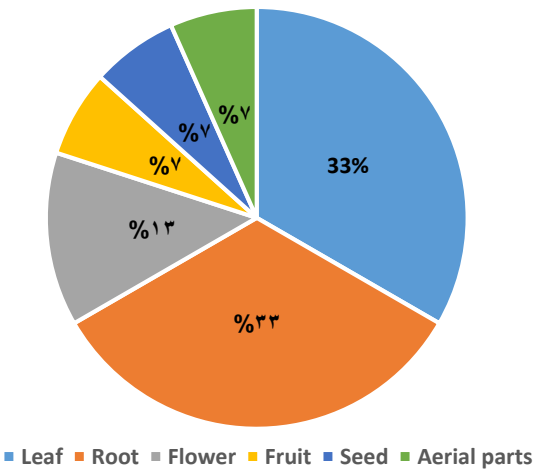


Figure 3. Percentage of plant parts used in this study

Discussion

The present study documented nine medicinal plant-use records representing seven botanical families that were traditionally reported for prostatitis health conditions in Chardavol County, Ilam Province, western Iran. Although the number of reported plant species was relatively limited, the findings demonstrate the persistence of locally transmitted ethnobotanical knowledge concerning prostatitis health problems. The representation of Asteraceae, including *Cichorium* species, may reflect the local availability, accessibility, and cultural familiarity of these plants rather than superior therapeutic efficacy. In ethnobotanical research, the selection and continued use of medicinal plants are influenced by multiple

interacting factors, including ecological availability, accessibility, cultural preferences, perceived effectiveness, and intergenerational transmission of knowledge. Comparison with ethnobotanical studies from other geographical regions indicates that plant composition is strongly influenced by regional ecological and cultural conditions. In Foumban, Cameroon, 40 species belonging to 29 families were reported for prostatitis diseases, whereas 12 species were documented in the Boké region of Guinea (Bah et al., 2024). Such differences should not be interpreted simply as reflecting differences in the richness or sophistication of medicinal-plant knowledge. Tropical African regions differ substantially from the semi-arid and mountainous ecosystems of the Zagros Mountains in western Iran in terms of climate, vegetation, species availability, and patterns of human–plant interaction. Consequently, traditional healers and knowledgeable community members are exposed to and select from different pools of locally available plant resources. Differences in traditional healthcare systems, cultural beliefs, perceptions of illness, and mechanisms of knowledge transmission may further influence the plant species recognised for particular health conditions. Comparisons with neighbouring areas of Ilam Province provide a more ecologically and culturally relevant context. Eight species were reported from Dehloran and 10 species from Abadan for prostatitis conditions, with some similarities in plant families and preparation methods (Abbasi et al., 2024, Seydi et al., 2025). The recurrence of

species such as *Cichorium intybus* and *Tribulus terrestris* across different Iranian ethnobotanical studies may be associated with their geographical availability, accessibility, and established cultural familiarity. However, differences in species composition among geographically close counties indicate that geographical proximity alone does not necessarily result in identical ethnobotanical knowledge. Local vegetation, microclimatic conditions, abundance and accessibility of particular species, cultural traditions, and differences in interactions with herbalists and traditional healers may all contribute to the observed variation.

Preparation practices appeared to show greater similarity across regions than the composition of plant species. Infusions and decoctions were commonly reported in Chardavol and have also been frequently documented in Guinea and other Iranian ethnobotanical studies (Abbasi et al., 2024, Bah et al., 2024, Seydi et al., 2025). The widespread use of water-based preparations may be related to their simplicity, low cost, accessibility, and compatibility with household-level traditional healthcare practices. Nevertheless, the chemical composition and biological activity of such preparations can vary substantially according to the plant part used, solvent-to-plant ratio, extraction temperature, duration, and preparation procedure. Therefore, traditional infusions and decoctions should not be considered chemically or pharmacologically equivalent to standardised pharmaceutical preparations.

The repeated documentation of *Tribulus terrestris* and *Cichorium intybus* in ethnobotanical studies from different regions may identify these species as candidates for further investigation. Their repeated traditional use can provide useful hypotheses for phytochemical, pharmacological, and toxicological research, particularly concerning biological activities potentially relevant to urinary and inflammatory conditions. However, ethnobotanical recurrence should not be interpreted as evidence of therapeutic efficacy. Traditional use should instead be considered a source of research hypotheses that require systematic experimental validation. In particular, appropriately designed preclinical and clinical studies are needed before conclusions can be drawn regarding potential applications in benign

prostatic hyperplasia, prostatitis, lower urinary tract symptoms, or other clinically defined prostate disorders.

Several limitations should be considered when interpreting the present findings. First, the study was restricted to a single county and involved only 30 informants; therefore, the findings cannot be considered representative of the entire population of Ilam Province. Second, the information was based on self-reported traditional knowledge and may have been influenced by recall bias, differences in individual experience, and variation in the interpretation of prostatitis symptoms. Third, the study did not experimentally evaluate the reported preparations or determine their active constituents, efficacy, dosage, toxicity, pharmacokinetic properties, or clinical safety. Furthermore, the reported prostatitis conditions were based primarily on local perceptions and terminology rather than systematically confirmed clinical diagnoses. Consequently, terms such as prostate enlargement, inflammation, urinary difficulty, or urinary frequency should not be assumed to correspond directly to clinically diagnosed benign prostatic hyperplasia, prostatitis, or other specific urological disorders. Despite these limitations, the study provides a valuable record of locally transmitted medicinal-plant knowledge in Chardavol County and identifies plant species that may warrant further phytochemical, pharmacological, toxicological, and, where justified by preclinical evidence, clinical investigation.

Conclusion

Overall, the findings indicate that Chardavol County possesses valuable traditional knowledge concerning the use of medicinal plants for prostatitis disorders. The predominance of Asteraceae, together with the frequent use of leaves and roots and the widespread preparation of infusions and decoctions, characterized the traditional plant-use patterns documented in the study area. Comparisons with studies from Dehloran and Abadan revealed several similarities in traditional herbal knowledge across Ilam Province, whereas comparisons with studies from African regions demonstrated considerable differences in species composition and patterns of

traditional plant use. The ethnobotanical knowledge documented in Chardavol should not be interpreted as evidence of therapeutic efficacy or clinical safety. Rather, it provides a valuable basis for hypothesis generation and the prioritization of medicinal plants for future phytochemical, pharmacological, toxicological, and clinical investigations. In addition, systematic documentation of this knowledge can contribute to the preservation of local biocultural heritage and help mitigate the potential loss of traditional knowledge associated with social change and declining intergenerational transmission.

Declarations Conflict of Interest

The authors declare no conflict of interest.

Acknowledgments

The authors thank the Student Research Committee of Ilam University of Medical Sciences for logistical support.

Consent for Publications

The authors certify that that this work in its final form has been thoroughly reviewed and approved for publication.

Funding Support

The authors did not receive support from any organization for the submitted work.

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Methodology: Mostafa Mahmand
Project administration: Mostafa Mahmand
Resources: Hitesh Dalvadi, Mostafa Mahmand
Software: Mostafa Mahmand
Supervision: Hitesh Dalvadi
Validation: Mostafa Mahmand
Visualization: Hitesh Dalvadi
Writing original draft: Hitesh Dalvadi, Mostafa Mahmand
Writing review & editing: Hitesh Dalvadi, Mostafa Mahmand

Ethical Considerations

Not applicable. This letter does not report new studies involving human participants, animal subjects, or patient data.

AI Use Disclosure

AI was used only for English language editing, grammar correction, and improving clarity and readability. The authors take full responsibility for the scientific content.

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