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Phytotherapy in Prostatitis: a Review on the Most Important Medicinal Plants Affecting Prostatitis in Iranian Ethnobotanical Documents

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Abstract

Prostatitis can occur at any age, after its enlargement, it puts pressure on the urinary tracts and causes urinary symptoms. Factors influencing the prevalence of prostatitis include age, genetic, diet, cancer, hormonal factors, and environmental factors. A microbial infection often causes prostatitis. In this systematic review, we tried to report the most important herbal medicines that have been mentioned for prostate treatment in Iranian ethnobotanical documents. Some keywords have been used, such as prostate, prostate inflammation, medicinal plants, ethnobotany, identification of medicinal plants. Also some Iranian Databases have been used, such as ISI Web Science, PubMed, Scopus, ISC, SID, and Google Scholar to review articles and resources. Ethnobotanical knowledge has a solution for treating this disease. Based on the results obtained in Iranian ethnobotanical documents, Lamium album L., Origanum vulgare, Silybum marianum (L.) Gaerth., Sorghum halepense (L.) Pers., Polygonum aviculare L., Urtica dioica L., Alhagi persarum

Boiss. & Buhse., Eremurus persicus (Jaub. & Spach) Boiss., Gundelia tournefortii, Myrtus communis L., Tribulus Terrestris L., and Physalis divaricata D. Don are the most important herbal medicines used in Iranian ethnobotanical sources for prostate treatment. Aim of this systematic review, was to report the most important medicinal plants for prostatitis treatment mentioned in Iranian ethnobotanical documents.

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Introduction

Anatomically, the prostate is located in the abdomen, in front of the rectum, and between the penis and the bladder. The prostate is involved in regulating sperm count in men. Sperm are excreted through the urethra through the prostate like urine, through the penis [1]. Diseases that affect this organ include inflammation of the prostate, benign prostatic hyperplasia(BPH), and cancer [2]. Gradual enlargement of this organ can put pressure on the urinary tract and cause signs and symptoms such as Urinary frequency, Urinary agency, Hesitancy, Straining, decreased force of stream, dribbling, nocturia, Dysuria, difficulty urinating, hematuria, etc [3]. Factors influencing the prevalence of this issue include age, genetics, diet, cancer, hormonal factors, and environmental factors [4,5]. Complaints of these symptoms are widespread in men aged between 50 to 70 years [6].

The inflammatory prostate disease has been identified and defined by the National Institutes of Health (NIH) since 1999, affecting half of all men in their lifetime [3]. This disease includes four syndromes: acute bacterial prostatitis, chronic bacterial prostatitis, chronic prostatitis and chronic pelvic pain syndrome (CPPS), and asymptomatic inflammatory prostatitis [7]. One of the most common factors that cause an increase in prostate inflammation is sexually transmitted diseases [8,9]. Usually, 25% of patients refer to urology clinics with symptoms of genitourinary and urinary tract problems. A doctor makes a differential diagnosis of prostatitis based on the person's history, physical examination and increases Prostate-specific antigen (PSA) factor's level in the prostate fluid in the test because, in some cases, the PSA factor indicates cancer or BPH [10-12]. In chronic prostatitis, systemic symptoms are less common, and the pain persists for at least three months. Benign prostatic hyperplasia, chronic pain syndrome, bladder inflammation, erectile dysfunction, urinary tract stones, prostate, and testicular cancer are other observed symptoms [13].

Due to the side effects observed from chemical drugs, people are more inclined to use herbal medicines [14-19]. Herbal medicines are used in various diseases such as diabetes [20], hypertension [21], menstruation [22], gastrointestinal [23], hormonal problems, prostate cancer [14], etc. They have active ingredients such as flavonoids, glucosides, saponins, alkaloids, etc. In some cases, the structure them have been used for the design and marketing of chemical drugs [24]. The herbal medicine effect's therapeutics is due to their active ingredient with antioxidant properties, etc [25-28].

In this systematic review study, we tried to report the most important and most widely used herbal medicines for prostatitis treatment in Iranian ethnobotanical documents.

Materials and Methods

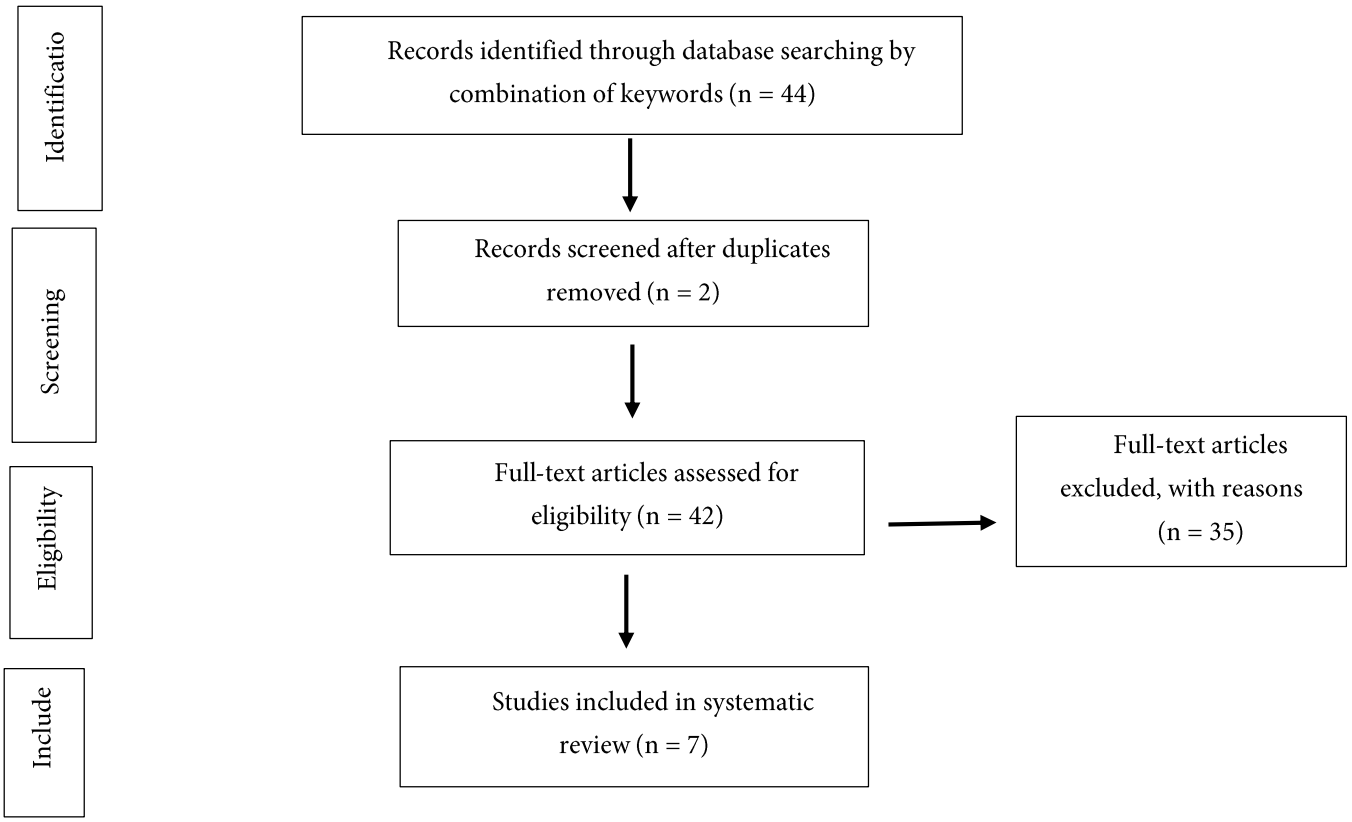
In this systematic review study, available articles in Iranian ethnobotanical sources were used. Keywords have been used such as prostate, prostatitis, herbal medicine, ethnobotany, identification of herbal medicine, and Iran. Databases were used such as ISI Web Science, PubMed, Scopus, ISC, SID, and Google Scholar to review articles and resources. In this study, 44 articles were searched and found. Two of them also lacked full text. Finally, 42 papers were reviewed for this review article. Out of 42 articles, only seven articles contained ethnobotanical information for prostate treatment.

Results

A review of Iranian ethnobotanical sources showed that herbal medicine such as *Lamium album* L., *Origanum vulgare*, *Silybum marianum* (L.) Gaerth., *Sorghum halepense* (L.) Pers., *Polygonum aviculare* L., *Urtica dioica* L., *Alhagi persarum* Boiss. & Buhse., *Eremurus persicus* (Jaub. & Spach) Boiss., *Gundelia tournefortii*, *Myrtus communis* L., *Tribulus Terrestris* L., and *Physalis divaricata* D. Don are the most important herbal medicine used in Iranian ethnobotanical sources to treat prostate. The list of plants, families, organs used, and the province in question is given in Table 1. The flowchart of the search strategy and the criteria for entering and leaving the articles are specified in Figure 1.

Table 1. Medicinal plants affecting prostitis and additional information about the organ used, Persian name, region used

Figure 1. The criteria and the number of entry and exit articles



Scientific names	Family	Persian name	Organ used	Region used	Bioactive compounds	Chemical formula
Lamium album L.	Labiatae	Gazaneh sefid	Flowering branch	Arasbaran [19]	6,10,14-trimethyl-2-pentadecanone	$C_{18}H_{36}O$
Origanum vulgare	Labiatae	Marzanjoush	Flowering branch	Arasbaran [19]	Hypericin	$C_{30}H_{16}O_8$
Silybum marianum (L.) Gaerth.	Asteraceae	Kharmaryam	Seed	Bushehr [20]	Silymarin	$C_{25}H_{22}O_{10}$
Sorghum halepense (L.) Pers.	Poaceae	Sorghom	Seed	Behbahan [21]	p-Cimene	$C_{10}H_{14}$
Polygonum aviculare L.	Polygonaceae	Alafe haftband	Aerial organs	Behbahan [21]	Liquiritin	$C_{21}H_{22}O_9$
Urtica dioica L.	Urticaceae	Gazaneh dopayeh	Aerial organs	Behbahan [21]	Hydroxycinnamic acid	$C_9H_8O_3$
Alhagi persarum Boiss. & Buhse.	Fabaceae	Dava	Root, Flower	Zanjan [22]	Quercetin	$C_{15}H_{10}O_7$
Eremurus persicus (Jaub. &Spach) Boiss.	Xanthorrhoeaceae	Cherish	Root, Flower	East of Khuzistan [23]	Limonene	$C_{10}H_{16}$
Gundelia tournefortii	Asteraceae	Kangar	Leaf	Fasa [24]	Threonine	$C_4H_9NO_3$
Myrtus communis L.	Myrtaceae	Mord	Leaf	Fasa [24]	1,8-cineole	$C_{10}H_{18}O$
Tribulus terrestris L.	Zygophyllaceae	Kharkhasak	Fruit	Fasa [24]	Quercetin	$C_{15}H_{10}O7$
Physalis divaricata D. Don	Solanaceae	Arosak poshtepardeh	Aerial organs	Kazeroun [25]	Physalin A	$C_{28}H_{30}O_{10}$

Discussion

Today, natural products from living microorganisms, including plants and secondary metabolites, are used as one of the most widely used sources of prevention and treatment in the prostate.

Chemical drugs used for prostatitis treatment: Antibiotics, antivirals, antifungals for infection, [9,29] NSAIDs for reducing pain and inflammation, and alpha-blockers for reducing the obstructive symptoms of the urinary bladder [3o]. Lifestyle changes are one of the critical, influential factors in preventing and controlling this disease [31].

Due to the side effects observed from chemical drugs, people are more inclined to use herbal medicines. For example, alpha-blocker drugs show many side effects such as dizziness, headache, weakness, tachycardia, palpitations, hypotension.

The herbs used in prostatitis are diverse, and it is predicted that their active ingredients affect this

disease with a mechanism like chemical drug's mechanisms.

Pygeum africanum, *Serenoa repens*, and *Cucurbita pepo* are showed anti-adrenergic properties similar to alpha-blockers. They are acted on androgen receptors in humans to prevent the growth prostate [32].

Origanum Vulgare L. is probably effective in this disease with its anti-inflammatory and antibacterial properties [33].

Silybum marianum with antioxidant and anti-inflammatory properties can efface prostate cancer cells [34].

Urtica dioica is one of the well-known plants in prostate problems, used with antioxidant and anti-inflammatory properties in cases such as the treatment of benign prostatic hyperplasia (BPH) and the elimination of prostate cancer cells. It inhibits the 5-alpha reductase to prevent the conversion of testosterone to dihydrotestosterone. This action is caused to reduce dihydrotestosterone in the blood and subsequently in the prostate tissue [35,36].

Polyextract of *Orthosiphon stamineus*, *Arctostaphylos uva-ursi*, *Polygonum aviculare*, *Calendula officinalis*, and *Glycyrrhiza uralensis* extracts are contained flavonoids (quercetin, rutin, luteolin-7-glycoside, myricetin), phenolic carboxylic acids (Gallic and chlorogenic), and arbutin. It affects chronic prostatitis with anti-inflammatory properties and causes normalization of prostate functioning and the FSH level in laboratory animals [37].

Authors' contribution

All authors contributed equally to the manuscript.

Conflicts of interest

The authors declared no competing interests.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication, etc.) have been completely observed by the author.

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