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REVIEW ARTICLE

# Phytotherapy in Prostate Health: A Comprehensive Review of Key Plant-Based Antioxidants in the Treatment of Prostatitis and their Mechanisms of Action

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**KEYWORDS**

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**ABSTRACT:** Prostatitis, characterized by inflammation of the prostate gland, is a common condition among men, especially those in middle age, and is associated with painful symptoms and urinary complications. While bacterial infections are the primary cause, non-infectious factors can also contribute to the disease. Treatment of prostatitis typically involves the administration of anti-inflammatory drugs, analgesics, and antibiotics, which may be associated with adverse effects. This study aims to identify medicinal plants used in traditional Iranian medicine for the treatment of prostatitis. In this review, keywords such as "medicinal plants," "prostate," "bladder infection," "traditional medicine," and "Iran" were used to search for relevant articles. The databases used for this search included Google Scholar, SID, Magiran, PubMed, and Scopus. Articles related to ethnobotany were selected for the literature review. Plants such as green tea, flaxseed, pumpkin, turmeric, pomegranate, tomato, licorice, nettle, apple, red clover, horsetail, carrot, beetroot, turnip, artichoke, cabbage, tribulus, red pepper, soybean, onion, garlic, strawberry, raspberry, and blackberry are among the most important medicinal plants effective in the treatment of benign prostatic hyperplasia. The results of this review suggest that the use of medicinal plants is a low-risk and effective approach to the treatment of prostatitis.

## INTRODUCTION

In societies with inadequate health infrastructure, both chronic and acute diseases, infectious and non-infectious, can cause significant crises, leading to pain, suffering, and economic burdens on healthcare systems [1-6]. These conditions also result in long-term physical and psychological distress for patients [7-12]. The prostate, a small gland below the bladder, plays a key role in male reproduction by producing semen and protecting sperm [13-14]. As men age, the prostate may enlarge, causing urinary issues if neglected [14]. Prostatitis, an inflammation of the prostate, affects men aged 30-50 and, though not cancerous, can cause pain and discomfort [15-17]. It is

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often caused by bacterial infections but can also result from stress or autoimmune diseases [17]. Symptoms include painful urination, difficulty urinating, and groin or pelvic pain [17-18]. Diagnosis is made through urine tests, clinical exams, and ultrasound [19].

Phytotherapy, the scientific use of medicinal plants, blends traditional knowledge with modern research to offer natural, less harmful treatments [20]. It plays a key role in developing new drugs [20]. While antibiotics, anti-inflammatory drugs, and analgesics are commonly used to treat prostatitis, they often have side effects [20-21]. In many regions, herbal medicines are more affordable and accessible than chemical drugs, offering a safer alternative with fewer side effects [25-32]. Traditional medicine often relies on natural remedies and lifestyle changes to manage prostatitis and prostatic hyperplasia, improving symptoms and quality of life [33]. However, patients should consult a physician before starting any treatment to ensure safety and effectiveness. This review aims to evaluate medicinal plants used in traditional Iranian medicine for prostatitis, exploring how their antioxidants reduce inflammation and support prostate health.

## MATERIALS AND METHODS

In this review study, the keywords "medicinal plants", "prostate", "traditional medicine", and "Iran" were used to locate relevant articles. The databases selected for the search included Google Scholar, SID, Magiran, PubMed, and Scopus. Initially, a comprehensive search without time restrictions was conducted to identify all relevant articles.

### *Search Strategy*

Keywords were combined in the search process and results were limited to articles written in Persian and English. Studies investigating the effects of medicinal plants on the prostate in the context of traditional Iranian medicine were selected as the primary focus for review.

### *Inclusion Criteria*

The articles selected for this study included those that were fully published, studies that examined the effects of medicinal plants on the prostate as documented in traditional medical sources, and articles that specifically examined the effects of medicinal plants in the context of Iran.

### *Exclusion Criteria*

Articles published only as abstracts, studies on the effects of medicinal plants conducted in other countries, and research not related to the prostate were excluded from the study.

## RESULTS

In Iranian traditional medicine, medicinal plants such as green tea, flaxseed, pumpkin, turmeric, pomegranate, tomato, licorice, nettle, apple, red clover, horsetail, carrot, beetroot, turnip, artichoke, cabbage, tribulus, red pepper, soybean, onion, garlic, strawberry, raspberry, and blackberry are considered among the most important for treating benign prostate hyperplasia. Additional findings on medicinal plants effective against prostatitis are presented in Table 1.

**Table 1.** Medicinal plants effective against prostatitis.

| Name | Persian Name | Scientific Name | Family | Active Ingredients | Plant type | Mechanism of action [34-40] |
|---|---|---|---|---|---|---|
| **Green tea** | Chaye Sabz | *Camellia sinensis* | Theaceae | Catechins, Caffeine | Perennial plant | Antioxidant and anti-inflammatory effects |
| **Flaxseed** | Katan | *Linum usitatissimum* | Linaceae | Omega−3 fatty acids Lignans, | Annual plant | Mitigate inflammation and enhance prostate health |
| **Pumpkin** | Kadoo Tanbbal | *Cucurbita pepo* | Cucurbitaceae | β-Carotene, Zinc, Omega−3 fatty acids | Annual plant | Mitigate inflammation and enhance prostate health |
| **Turmeric** | Zardchoobeh | *Curcuma longa* | Zingiberaceae | Curcumin | Perennial plant | Antioxidant and anti-inflammatory effects |
| **Pomegranate** | Anar | *Punica granatum* | Punicaceae | Antioxidants, Oligomericacids | Perennial plant | Antioxidant and anti-inflammatory effects |
| **Tomato** | Gojeh frangi | *Solanum lycopersicum* | Solanaceae | Lycopene, Vitamin C | Annual plant | Antioxidant effects and protection of prostate cells |
| **Licorice** | Shirin baysn | *Glycyrrhiza glabra* | Fabaceae | Glycyrrhizin, Flavonoids | Perennial plant | Anti-inflammatory effects |
| **Nettle** | Gazaneh | *Urtica dioica* | Urticaceae | Flavonoids, Vitamins | Perennial plant | Reducing inflammation and improving prostatitis symptoms |
| **Apple** | Sib | *Malus domestica* | Rosaceae | Fiber, Vitamin C | Perennial plant | Antioxidant effects |
| **Red clover** | Shabdareh ghermez | *Trifolium pratense* | Fabaceae | Isoflavones | Perennial plant | Hormonal effects and reduction of inflammation |
| **Horsetail** | Dome asb | *Equisetum arvense* | Equisetaceae | Silicone, Flavonoids | Perennial plant | Anti-inflammatory effects |
| **Carrot** | Havij | *Daucus carota* | Apiaceae | β-Carotene | Annual plant | Antioxidant effects and protection of prostate cells |
| **Beetroot** | Choghondar | *Beta vulgaris* | Amaranthaceae | Nitrite, Antioxidants | Biennial plant | Antioxidant and anti-inflammatory effects |
| **Turnip** | Shslgham | *Brassica rapa* | Brassicaceae | Vitamin C, Fiber | Biennial plant | Anti-inflammatory effects |
| **Artichoke** | Kangar farangi | *Cynara scolymus* | Asteraceae | Synarin, Vitamins | Perennial plant | Antioxidant and anti-inflammatory effects |
| **Cabbage** | Kalam | *Brassica oleracea* | Brassicaceae | Vitamin K, Vitamin C | Biennial plant | Antioxidant and anti-inflammatory effects |
| **Tribulus** | Kharkhasak | *Tribulus terrestris* | Zygophyllaceae | Plant steroids | Annual plant | Increasing testosterone levels and improving prostate function |
| **Red pepper** | Felfele ghermez | *Capsicum annuum* | Solanaceae | Capsaicin | Annual plant | Reduction of inflammation |
| **Soybean** | Soya | *Glycine max* | Fabaceae | Isoflavones | Annual plant | Hormonal effects and prostate health improvement |
| **Onion** | Piaz | *Allium cepa* | Alliaceae | Allicin, Flavonoids | Annual plant | Antioxidant effects |
| **Garlic** | Sir | *Allium sativum* | Alliaceae | Cillin ، Allicin | Perennial plant | Antioxidant and anti-inflammatory effects |
| **Strawberry** | Toot farangi | *Fragaria ananassa* | Rosaceae | Antioxidants, Vitamin C | Perennial plant | Antioxidant effects |
| **Raspberry** | Tameshk | *Rubus idaeus* | Rosaceae | Antioxidants, Vitamin C | Perennial plant | Antioxidant effects |
| **Blackberry** | Toot siah | *Rubus fruticosus* | Rosaceae | Antioxidants, Vitamin C | Perennial plant | Antioxidant effects and protection of prostate cells |

The Rosaceae family contains the highest proportion of anti-prostate medicinal plants with 23.5%. The inclusion of four plants from this family underscores its importance in pharmaceutical sciences and medical applications. Notable examples, such as strawberries and raspberries, exhibit antioxidant and anti-inflammatory properties. The Fabaceae family, represented by three plants, is known for its nutritional and medicinal value, contributing to improved nutritional status and disease treatment. Families such as Theaceae, Zingiberaceae, and Equisetaceae, each represented by a single plant, may have fewer resources compared to other families. This does not diminish their importance, however, as each plant may have unique properties. Many of the plants listed exhibit anti-inflammatory and antioxidant effects, highlighting the critical role of herbs in managing inflammation and oxidative damage, thereby improving prostate health and reducing the risk of chronic disease. Several herbs, including flaxseed, pumpkin, and red clover, are particularly effective in reducing inflammation and promoting prostate health. The table includes a variety of perennial, annual, and biennial plants, demonstrating that plants with different growing seasons can have similar beneficial effects on different areas of health, particularly the prostate.

## DISCUSSION

Prostatitis is a common inflammatory condition in men that can result from both infectious and non-infectious causes. It causes pain, swelling, and urinary problems, and significantly reduces the quality of life of those affected [41]. Standard treatments include non-steroidal anti-inflammatory drugs (NSAIDs), antibiotics, and other specialized medications. In recent years, however, there has been growing interest in the use of medicinal plants and natural antioxidants as low-risk and effective alternatives for treating prostatitis [42].

Given the numerous side effects associated with conventional prostatitis medications, many individuals now prefer natural and herbal products [43]. The therapeutic benefits of various medicinal plants have been validated in numerous diseases and cancers [43]. A key strategy in the prevention and treatment of prostatitis is to reduce inflammation and oxidative stress, which can damage prostate tissue. Plant antioxidants, known for their anti-inflammatory properties and ability to neutralize free radicals, play a critical role in mitigating this damage. By reducing inflammation and preventing cellular destruction, these compounds help maintain prostate tissue health and alleviate disease symptoms, thereby positively influencing the treatment process [44].

Plant antioxidants use several mechanisms to reduce inflammation and oxidative stress in prostatitis [45-47]. These compounds inhibit inflammatory pathways such as NF-κB and COX-2 and reduce the production of inflammatory cytokines [48]. They prevent oxidative damage by neutralizing free radicals and reducing reactive oxygen species (ROS) [49]. They also help control chronic inflammation and infection by boosting the immune system [50]. Some, such as phytoestrogens, benefit prostate health by regulating sex hormones [51, 52]. The active compounds in plants are responsible for their medicinal effects. These compounds, such as alkaloids, flavonoids, and polyphenols, work through various mechanisms to influence the body's systems. Identifying and using these substances in both traditional and modern medicine helps in providing natural and less harmful treatments for diseases [53-56].

## CONCLUSIONS

Phytotherapy using herbal antioxidants is an effective and low-risk strategy for controlling and preventing prostatitis. These compounds contribute to prostate health by reducing inflammation and oxidative stress, enhancing immune system function, and regulating hormonal pathways.

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## ETHICAL CONSIDERATION

This study was performed in line with the principles of the Declaration of Helsinki.

### *Conflict of interests*

The authors have no competing interests to declare that are relevant to the content of this article.

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### *Consent to participate*

Informed consent was obtained from all individual participants included in the study.

## REFERENCES

1. Darvishi M., 2016. Antibiotic resistance pattern of uropathogenic methicillin-resistant staphylococcus aureus isolated from immunosuppressive patients with pyelonephritis. Journal of Pure and Applied Microbiology. 1, 10(4), 2663-7.
2. Nazer M.R., Abbaszadeh S., Anbari K., Shams M., 2019. A review of the most important medicinal herbs affecting giardiasis. Journal of Herbmed Pharmacology. 25, 8(2), 78-84.
3. Forootan M., Tabatabaeefar M., Mosaffa N., Ashkalak HR., Darvishi M., 2018. Investigating esophageal stent-placement outcomes in patients with inoperable non-cervical esophageal cancer. Journal of Cancer. 9(1), 213.
4. Mahmoudvand H., Badparva E., Khalaf AK., Niazi M., Khatami M., Nazer MR., 2020. Prevalence and associated risk factors of intestinal helminthic infections in children from Lorestan province, Western Iran. Parasite epidemiology and control. 1, 9, 00136.
5. Mousavi S.E., Najafi M., Aslani A., Fazlollahi A., Yekta Z., Sadri M., Nejadghaderi S.A., 2024. A population-based study on incidence trends of kidney and renal pelvis cancers in the United States over 2000–2020. Scientific Reports. 17, 14(1), 11294.
6. Raoofi R., Nazer MR., Pournia Y., 2012. Seroepidemiology of hepatitis E virus in Western Iran. Brazilian Journal of Infectious Diseases. 16, 302-3.
7. Darvishi M., Ziari K., Mohebi H., Alizadeh K., 2019. Association between iron deficiency anemia and Helicobacter pylori infection among children under six years in Iran, 3.
8. Nayeri R.K., Sadri M., Shahrokh H., Abolhasani M., Zolfi E., Kandevani N.Y., Kashi A.H., 2020. Small Cell Carcinoma of Bladder; Still A Diagnostic and Therapeutic Challenge: Seven Years of Experience and Follow-up in A Referral Center. Urology Journal. 23, 17(4), 363-9.
9. Darvishi M., Nazer M.R., Shahali H., Nouri M., 2022. Association of thyroid dysfunction and COVID-19: A systematic review and meta-analysis. Frontiers in Endocrinology. 28, 13, 947594.
10. Salarvand S., Nazer MR., Shokri S., Bazhvan S., Pournia Y., 2012. Brucellosis-induced avascular necrosis of the hip in a middle-aged person. Iranian Journal of Public Health. 41(12), 86.
11. Darvishi M., Nazer M.R., Alipour M.R., 2017. Investigating the end of patients suffering from diabetic foot hospitalized in Be'sat hospital of IRIAF from 2009 to 2014. Biomedical Research-India. 1, 28, 4630-3.
12. Darvishi M., Tosan F., Nakhaei P., Manjili DA., Kharkouei SA., Alizadeh A., Ilkhani S., Khalafi F., Zadeh FA., Shafagh SG. 2023. Recent progress in cancer immunotherapy: Overview of current status and challenges. Pathology-Research and Practice. 1, 241, 154241.
13. Kumar V.L., Majumder P.K., 1995. Prostate gland: structure, functions and regulation. International urology and nephrology. 27, 231-43.
14. Huggins C., 1945. The physiology of the prostate gland. Physiological Reviews. 1, 25(2), 281-95.
15. Domingue Sr. G.J., Hellstrom W.J., 1998. Prostatitis. Clinical Microbiology Reviews. 1, 11(4), 604-13.
16. Krieger J.N., Lee S.W., Jeon J., Cheah P.Y., Liong M.L., Riley D.E., 2008. Epidemiology of prostatitis. International Journal of Antimicrobial Agents. 1, 31, 85-90.
17. Ramakrishnan K., Salinas R.C., 2010. Prostatitis: acute and chronic. Primary Care: Clinics in Office Practice. 1, 37(3), 547-63.

18. Sharp V.J., Takacs E.B., Powell C.R., 2010. Prostatitis: diagnosis and treatment. American family physician. 15, 82(4), 397-406.

19. Nickel J.C., 2003. Classification and diagnosis of prostatitis: a gold standard? Andrologia. 35(3), 160-7.

20. Benelli A., Hossain H., Pilatz A., Weidner W., 2017. Prostatitis and its management. European Urology Supplements. 1, 16(4), 132-7.

21. Strauss A.C., Dimitrakov J.D., 2010. New treatments for chronic prostatitis/chronic pelvic pain syndrome. Nature Reviews Urology. 7(3), 127-35.

22. Shahsavari S., 2024. A brief review of the medicinal effects of Scrophularia striata. Journal of Biochemicals and Phytomedicine. 3(1), 18-20. doi: 10.34172/jbp.2024.6.

23. Ranjbari A., Nazer M., 2024. A Review of Medicinal Plants Effective on Wound Healing in the Western Part of Iran Based on Ethnobotanical Documents. Plant Biotechnology Persa. 6 (1), 88-92.

24. Pirhadi M., Altememy D., 2024. Determination of methanol and ethanol levels in herbal distillates (mint, burdock, spring orange, chicory, thyme, chives, and horseradish) at supply level of Ahvaz using gas chromatography. Journal of Biochemicals and Phytomedicine. 3(1), 36-40. doi: 10.34172/jbp.2024.8.

25. Mussavi M., Asadollahi K., Janbaz F., Mansoori E., Abbasi N., 2014. The evaluation of red reflex sensitivity and specificity test among neonates in different conditions. Iranian Journal of Pediatrics, 24(6), 697.

26. Manouchehrı A., Shakıb P., Bıglaryan F., Nazer M., Darvıshı M., 2021. The most important medicinal plants affecting bee stings: A systematic review study. Uludağ Arıcılık Dergisi. 21(1), 91-103.

27. Nazarbaghi S., Eftekhari Z., 2024. Herbal remedies for migraine headaches based on knowledge and ethnobotanical studies of the northern border of Iran. Plant Biotechnology Persa. 6(2), 8-14.

28. Baharvand Ahmadi B., Khajoei Nejad F., Papi S., Eftekhari Z., 2023. Phytotherapy for heart tonic: An ethnobotanical study in Dehloran City, Ilam Province, Western Iran. *Caspian Journal of Environmental Sciences*. 1-5. doi: 10.22124/cjes.2023.6192

29. Akbary P., 2024. Determination of antioxidant and phytochemical properties of premix extract of brown macroalgae Padinaaustralis, Sargassum licifolium and Stoechospermum marginatum from Chabahar coast, Southeastern Iran. *Aquatic Animals Nutrition*. 10(1), 27-41. doi: 10.22124/janb.2024.26283.1229

30. Gholamine B., Malviya J., Rudiansyah M., Abid MK., Alawadi A.H., Adeli O.A., Jalalvand M., Papi S., 2024. Herbal therapy in diabetes mellitus: A review. Advancements in Life Sciences. 6,11(1), 40-8.

31. Chen J.X., Hu L.S., 2006. Traditional Chinese medicine for the treatment of chronic prostatitis in China: a systematic review and meta-analysis. Journal of Alternative & Complementary Medicine. 1,12(8), 763-9.

32. Golchinpour H., Momeni A., Meshkatalsadat M.H., 2024. Assessment of Antibacterial, Antioxidant, and Catalytic Activity of Zinc Oxide Nanoparticles Biosynthesized by Pistacia Vera Soft Waste Peel Extract. Journal of Chemical Health Risks. 3(3), 537.

33. Naderi N., Mohammadgholi A., Asghari Moghaddam N., 2024. Biosynthesis of Copper Oxide-Silver Nanoparticles from Ephedra Intermedia Extract and Study of Anticancer Effects in HepG2 Cell Line: Apoptosis-Related Genes Analysis and Nitric Oxide Level Investigations. International Journal of Molecular and Cellular Medicine. 13 (3), 303-324.

34. Zargari A., 1992. Medicinal Plants. Tehran: Tehran University Press; 1.

35. Mozaffarian V., 1996. A Dictionary of Iranian Plant Names. Tehran: Farhang Moaser Publishers; 245.

36. Nadkarni KM., 1992 Indian Materia Medica. Bombay: Popular Prakashan; 200.

37. Aghili Alavi Shirazi M.H., 2008. Makhzan al-Advia (The Storehouse of Medicaments). Tehran: Research Institute for Islamic and Complementary Medicine; 2008.

38. Rashed-Mohassel M.H., 2005. Iranian Traditional Medicine (ITM) and Its History. Tehran: Iran University of Medical Sciences; 2005.

39. Avicenna., 1987. The Canon of Medicine. Beirut: Alaalami Library Press; 1987.

40. Ahvazi A.R., 20006. Kamil al-Sina'ah al-Tibbiya (The Complete Book of the Medical Art). Tehran: Institute of Medical History, Islamic Medicine and Complementary

Medicine; 2006

41. Magri V., Boltri M., Cai T., Colombo R., Cuzzocrea S., De Visschere P., Giuberti R., Granatieri CM., Latino MA., Larganà G., Leli C., 2018. Multidisciplinary approach to prostatitis. Archivio Italiano di Urologia e Andrologia. 90(4), 227-48.

42. Shoskes DA., 2002. Phytotherapy and other alternative forms of care for the patient with prostatitis. Current Urology Reports. 3(4), 330-4.

43. Shoskes D.A., Manickam K., 2003. Herbal and complementary medicine in chronic prostatitis. World Journal of Urology. 21, 109-13.

44. Herati A.S., Moldwin R.M., 2013. Alternative therapies in the management of chronic prostatitis/chronic pelvic pain syndrome. World journal of urology. 31, 761-6.

45. Yarnell E., Abascal K., 2005. Natural approaches to treating chronic prostatitis and chronic pelvic pain syndromes. Alternative & Complementary Therapies. 1, 11(5), 246-51.

46. Dashdondov O., Wazir J., Sukhbaatar G., Mikrani R., Dorjsuren B., Aktar N., Zhou X., 2021. Herbal nutraceutical treatment of chronic prostatitis–chronic pelvic pain syndrome: a literature review. International Urology and Nephrology. 53(8), 1515-28.

47. Xiong Y., Qiu X., Shi W., Yu H., Zhang X., 2017. Anti-inflammatory and antioxidant effect of modified Bazhengsan in a rat model of chronic bacterial prostatitis. Journal of Ethnopharmacology. 23, 198, 73-80.

48. Lee S., Shin S., Kim H., Han S., Kim K., Kwon J., Kwak JH., Lee CK., Ha NJ., Yim D., Kim K., 2011. Anti-inflammatory function of arctiin by inhibiting COX-2 expression via NF-κB pathways. Journal of Inflammation. 8, 1-9.

49. Paulis G., 2018. Inflammatory mechanisms and oxidative stress in prostatitis: the possible role of antioxidant therapy. Research and reports in urology. 17, 75-87.

50. Thattet U.M., Dahanukar S.A., 1989. Immunotherapeutic modification of experimental infections by Indian medicinal plants. Phytotherapy Research. 3(2), 43-9.

51. Dalais F.S., Meliala A., Wattanapenpaiboon N., Frydenberg M., Suter DA., Thomson WK., Wahlqvist ML., 2004. Effects of a diet rich in phytoestrogens on prostate-specific antigen and sex hormones in men diagnosed with prostate cancer. Urology. 1, 64(3), 510-5.

52. Magee P.J., Rowland IR., 2004. Phyto-oestrogens, their mechanism of action: current evidence for a role in breast and prostate cancer. British Journal of Nutrition. 91(4), 513-31.

53. Nazer M.R., Abbaszadeh S., Anbari K., Shams M., 2019. A review of the most important medicinal herbs affecting giardiasis. Journal of Herbmed Pharmacology. 25, 8(2), 78-84.

54. Dokhani N., Nazer M., Skokri S., Darvishi M., 2022. Determination and evaluating the antioxidant properties of ziziphus nummularia (burm. F.) wight & arn., crataegus pontica K. Koch and scrophularia striata boiss. Egyptian Journal of Veterinary Sciences. 1,53(3), 423-9.

55. Manouchehrı A., Shakıb P., Bıglaryan F., Nazer M., Darvıshı M., 2021. The most important medicinal plants affecting bee stings: A systematic review study. Uludağ Arıcılık Dergisi. 21(1), 91-103.