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Short communication

The use of medicinal plants in the treatment of urinary tract infections: A survey on consumers' attitudes

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Introduction

The urinary system plays a vital role in maintaining physiological homeostasis but is also highly susceptible to infections due to its continuous exposure to external pathogens (Pietropaolo et al., 2023). Urinary tract infections (UTIs) are among the most common infectious diseases worldwide and are classified as upper (pyelonephritis, ureteritis) or lower (cystitis, urethritis, prostatitis) urinary tract infections (Dudzik et al., 2025). Although conventional antibiotics are generally effective, the growing prevalence of antimicrobial resistance, recurrent infections, and treatment-related adverse effects has increased interest in alternative therapeutic approaches (Mancuso et al., 2023). Medicinal plants represent a promising source of novel agents because they contain bioactive compounds such as polyphenols, flavonoids, tannins, alkaloids, and terpenoids with antimicrobial, anti-inflammatory, antioxidant, and diuretic activities (Das, 2020). Their favorable safety profile, lower cost, and broad pharmacological potential make herbal products attractive candidates for the prevention and management of UTIs.

Materials and methods

The survey was conducted in the period of April to June, 2025 in Novi Sad, Serbia, on a sample of 286 respondents (25 - 65 years old). A specifically designed questionnaire consisting of 26 questions was developed for the purposes of this research and included both multiple-choice and open-ended response formats. The initial section of the questionnaire comprised general demographic questions related to gender, age, and level of education. Subsequent questions focused on urinary tract infections, including previous history of UTIs, frequency of occurrence, diagnosis of complicated urinary tract infections, and prior use of herbal preparations in the management of urinary disorders, etc.

Results and discussion

The respondents reported the use of several medicinal plants in the management of urinary tract infections and related urinary disorders. The most commonly utilized herbal species included American cranberry (*Vaccinium macrocarpon*); bearberry (*Arctostaphylos uva-ursi*), pomegranate (*Punica granatum*), mainly utilized as peel bark; common juniper (*Juniperus communis*); green tea (*Camellia sinensis*), thyme (*Thymus vulgaris*), oregano (*Origanum vulgare*), rosemary (*Rosmarinus officinalis*), stinging nettle (*Urtica dioica*), parsley *(Petroselinum crispum*), and silver birch (*Betula*

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pendula). Furthermore, respondents reported the use of saw palmetto (*Serenoa repens*); licorice (*Glycyrrhiza glabra*); horsetail (*Equisetum arvense*) aerial parts, and restharrow (Ononis spinosa L.). A questionnaire-based survey revealed that the majority of respondents were females (90%), aged between 26 and 35 years (34%), and highly educated (47.5%). A substantial proportion of participants (79.5%) reported urinary tract infections (UTIs) at least once during their lifetime, with recurrent episodes occurring occasionally (1–2 times annually) in 94.34% of cases. Complicated urinary tract infections were diagnosed in 84.28% of respondents. The findings demonstrated a widespread use of herbal preparations in the management of UTIs (61.01% of the respondents). Among the medicinal plants, cranberry (Vaccinium macrocarpon) was identified as the most frequently utilized medicinal plant (72%), while herbal teas represented the predominant pharmaceutical form applied (76.1%). Notably, 59.75% of respondents used herbal preparations for cystitis following a pharmacist's recommendation, and 69.47% considered the information received regarding the proper administration of herbal products was adequate. In addition, pharmacies were identified as the primary source of herbal preparations by 74.21% of participants. The survey further indicated that 69.81% of respondents expressed moderate confidence in the quality of herbal medicinal products, whereas 52.2% considered the prices of these products on the Serbian market to be affordable. Knowledge regarding the appropriate use of medicinal plants was variable among participants. Approximately two-thirds of respondents (76.1%) were aware that bearberry (*Arctostaphylos uva-ursi*) preparations should be administered only for a limited duration, while 42.14% recognized the importance of urine alkalization during concomitant phytotherapeutic treatment. A high level of interest in further education regarding the natural prevention and management of UTIs was observed, with 90.57% of respondents expressing a desire for additional information. However, only 39.58% stated that they had received comprehensive counseling regarding the correct use of herbal preparations and their potential risks. Importantly, 92.45% of participants believed that medicinal plants exert beneficial effects in the treatment of urinary tract infections. Combined administration of herbal preparations and antibiotics was reported by 52.2% of respondents, while 54.72% indicated that phytopreparations use contributed to a reduced need for antibiotic therapy. The safety profile of herbal preparations was perceived as highly favorable, as 98.74% of respondents reported no allergic reactions or adverse effects during their use. Pharmacist consultation was sought by 52.83% of participants, and a majority (95.6%) emphasized that pharmacists should play a more prominent role in patient education and counseling regarding phytotherapy. Finally, 89.31% of respondents stated that they would recommend medicinal plants for the management of urinary tract infections based on their personal positive experiences.

Conclusion

The analysis of herbal products intended for the management of urinary tract infections demonstrated that these formulations are commercially available in various pharmaceutical forms, including tablets, capsules, syrups, oral drops, and herbal teas. The most frequently identified herbal ingredients were oregano (*Origanum vulgare*), European cranberry (*Vaccinium vitis-idaea*), American cranberry (*Vaccinium macrocarpon*), and bearberry (*Arctostaphylos uva-ursi*). Among the analyzed products, dietary supplements formulated as tablets and capsules represented the predominant dosage forms available on the market.

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