

Find out how to access preview-only content

World Journal of Urology

February 2014, Volume 32, Issue 1, pp 79-84

d-mannose powder for prophylaxis of recurrent urinary tract infections in women: a randomized clinical trial

Abstract

Purpose

To test whether d-mannose powder is effective for recurrent urinary tract infection (UTI) prevention.

Materials and methods

After initial antibiotic treatment of acute cystitis, 308 women with history of recurrent UTI and no other significant comorbidities were randomly allocated to three groups. The first group ($n = 103$) received prophylaxis with 2 g of d-mannose powder in 200 ml of water daily for 6 months, the second ($n = 103$) received 50 mg Nitrofurantoin daily, and the third ($n = 102$) did not receive prophylaxis.

Results

Overall 98 patients (31.8 %) had recurrent UTI: 15 (14.6) in the d-mannose group, 21 (20.4) in Nitrofurantoin group, and 62 (60.8) in no prophylaxis group, with the rate significantly higher in no prophylaxis group compared to active groups ($P < 0.001$). Patients in d-mannose group and Nitrofurantoin group had a significantly lower risk of recurrent UTI episode during prophylactic therapy compared to patients in no prophylaxis group (RR 0.239 and 0.335, $P < 0.0001$). In active groups, 17.9 % of patients reported side effects but they were mild and did not require stopping the prophylaxis. Patients in d-mannose group had a significantly lower risk of side effects compared to patients in Nitrofurantoin group (RR 0.276, $P < 0.0001$), but the clinical importance of this finding is low because Nitrofurantoin was well tolerated.

Conclusions

In our study, d-mannose powder had significantly reduced the risk of recurrent UTI which was no different than in Nitrofurantoin group. More studies will be needed to validate the results of this study, but initial findings show that d-mannose may be useful for UTI prevention.



3 Citations 12 Shares

Within this Article

1. Introduction
2. Patients and methods
3. Results
4. Discussion
5. Conclusion
6. References
7. References

Related Content



References (23)

1. Foxman B, Brown P (2003) Epidemiology of urinary tract infections: transmission and risk factors, incidence, and costs. *Infect Dis Clin North Am* 17:227–241 CrossRef
2. Ikäheimo R, Siitonen A, Heiskanen T, Kärkkäinen U, Kuosmanen P, Lipponen P, Mäkelä PH (1996) Recurrence of urinary tract infection in a primary care setting: analysis of a 1-year follow-up of 179 women. *Clin Infect Dis* 22:91–99 CrossRef
3. Griebing TL (2005) Urologic diseases in America project: trends in resource use for urinary tract infections in women. *J Urol* 173:1281–1287 CrossRef
4. Nickel JC (2005) Practical management of recurrent urinary tract infections in premenopausal women. *Rev Urol* 7:11–17
5. Albert X, Huertas I, Pereiró II, Sanfèlix J, Gosalbes V, Perrota C (2004) Antibiotics for preventing recurrent urinary tract infection in non-pregnant women. *Cochrane Database Syst Rev* 3:CD001209
6. Gupta K, Stamm WE (1999) Pathogenesis and management of recurrent urinary tract infections in women. *World J Urol* 17:415–420 CrossRef
7. Schito GC, Naber KG, Botto H, Palou J, Mazzei T, Gualco L, Marchese A (2009) The ARESC study: an international survey on the antimicrobial resistance of pathogens involved in uncomplicated urinary tract infections. *Int J Antimicrob Agents* 34:407–413 CrossRef
8. Zhanel GG, Hisanaga TL, Laing NM, DeCorby MR, Nichol KA, Palatnik LP, Johnson J, Noreddin A, Harding GK, Nicolle LE, Hoban DJ (2005) Antibiotic resistance in outpatient urinary isolates: final results from the North American urinary tract infection Collaborative Alliance (NAUTICA). *Int J Antimicrob Agents* 26:380–388 CrossRef
9. Schaeffer AJ, Amundsen SK, Jones JM (1980) Effect of carbohydrates on adherence of *Escherichia coli* to human urinary tract epithelial cells. *Infect Immun* 30:531–537
10. Schaeffer AJ, Chmiel JS, Duncan JL, Falkowski WS (1984) Mannose-sensitive adherence of *Escherichia coli* to epithelial cells from women with recurrent urinary tract infections. *J Urol* 131:906–910
11. Bouckaert J, Berglund J, Schembri M, De Genst E, Cools L, Wuhler M, Hung CS, Pinkner J, Slättegård R, Zavialov A, Choudhury D, Langermann S, Hultgren SJ, Wyns L, Klemm P, Oscarson S, Knight SD, De Greve H (2005) Receptor binding studies disclose a novel class of high-affinity inhibitors of the *Escherichia coli* FimH adhesin. *Mol Microbiol* 55:441–455 CrossRef
12. Michaels EK, Chmiel JS, Plotkin BJ, Schaeffer AJ (1983) Effect of d-mannose and d-glucose on *Escherichia coli* bacteriuria in rats. *Urol Res* 11:97–102 CrossRef
13. Gouin SG, Wellens A, Bouckaert J, Kovensky J (2009) Synthetic multimeric heptyl mannosides as potent antiadhesives of uropathogenic *Escherichia coli*. *Chem Med Chem* 4:749–755 CrossRef
14. Barbosa-Cesnik C, Brown MB, Buxton M, Zhang L, DeBusscher J, Foxman B (2011) Cranberry juice fails to prevent recurrent urinary tract infection: results from a randomized placebo-controlled trial. *Clin Infect Dis* 52:23–30 CrossRef
15. Kontiokari T, Sundqvist K, Nuutinen M, Pokka T, Koskela M, Uhari M (2001) Randomised trial of cranberry-lingonberry juice and Lactobacillus GG drink for the prevention of urinary tract infections in women. *BMJ* 322:1571 CrossRef
16. Semins MJ, Shore AD, Makary MA, Weiner J, Matlaga BR (2012) The impact of obesity on urinary tract infection risk. *Urology* 79:266–269 CrossRef
17. Saliba W, Barnett-Griness O, Rennert G (2012) The association between obesity and urinary tract infection. *Eur J Intern Med* 24:127–131 CrossRef
18. Milo G, Katchman EA, Paul M, Christiaens T, Baerheim A, Leibovici L (2005) Duration of antibacterial treatment for uncomplicated urinary tract infection in women. *Cochrane Database Syst Rev* 18:CD004682
19. Schmiemann G, Gágyor I, Hummers-Pradier E, Bleidorn J (2012) Resistance profiles of urinary tract infections in general

practice—an observational study. *BMC Urol* 12:33 CrossRef

20. Brumfitt W, Hamilton-Miller JM (1998) Efficacy and safety profile of long-term nitrofurantoin in urinary infections: 18 years' experience. *J Antimicrob Chemother* 42:363–371 CrossRef
21. Guay DR (2009) Cranberry and urinary tract infections. *Drugs* 69:775–807 CrossRef
22. Gupta K, Chou MY, Howell A, Wobbe C, Grady R, Stapleton AE (2007) Cranberry products inhibit adherence of p-fimbriated *Escherichia coli* to primary cultured bladder and vaginal epithelial cells. *J Urol* 177:2357–2360 CrossRef
23. Jepson RG, Williams G, Craig JC (2012) Cranberries for preventing urinary tract infections. *Cochrane Database Syst Rev* 10:CD001321

About this Article

Title

d-mannose powder for prophylaxis of recurrent urinary tract infections in women: a randomized clinical trial

Journal

World Journal of Urology

Volume 32, Issue 1 , pp 79-84

Cover Date

2014-02-01

DOI

10.1007/s00345-013-1091-6

Print ISSN

0724-4983

Online ISSN

1433-8726

Publisher

Springer Berlin Heidelberg

Additional Links

- Register for Journal Updates
- Editorial Board
- About This Journal
- Manuscript Submission

Topics

- Urology/Andrology
- Nephrology
- Oncology

Keywords

- Urinary tract infection
- Recurrent
- Cystitis
- d-mannose
- Prophylaxis

Industry Sectors

- Biotechnology
- Health & Hospitals
- Pharma

Authors

- Bojana Kranjčec ⁽¹⁾
- Dino Papeš ⁽²⁾
- Silvio Altarac ⁽³⁾

Author Affiliations

- 1. Department of Medical Biochemistry, Zabok General Hospital, Zabok, Croatia
- 2. Department of Pediatric Surgery and Urology, Clinical Hospital Center Zagreb, Zagreb, Croatia
- 3. Department of Surgery and Urology, Zabok General Hospital, 49210, Zabok, Croatia

Continue reading...

To view the rest of this content please follow the download PDF link above.

Over 8.5 million scientific documents at your fingertips
© Springer, Part of Springer Science+Business Media