



TODAY'S QUESTION: Do Cranberry Products Prevent UTIs?

Background:

Urinary tract infections (UTIs) are common clinical problem that often recurs, leading to the institution of preventive measures. Antimicrobial prophylaxis is highly effective but risks adverse effects and induction of resistance. These considerations and widespread increases in antimicrobial resistance have intensified interest in alternative means of preventing UTIs, such as cranberry products. Cranberry (a proanthocyanidin) disrupts the adhesion of E. coli to the epithelium and therefore may prevent infections.

Importance:

Palliative care providers often care for patients experiencing recurrent UTIs. Although current literature suggests the clinical benefits of antibiotics are unclear in patients at the end of life, infections can dramatically decrease a patient's QoL and may hasten death. It is important for palliative care providers to be aware of the literature regarding these agents.

The Literature:

- [Arch Intern Med. 2012 Jul 9;172\(13\):988-96.](#)
Cranberry-containing products for prevention of urinary tract infections in susceptible populations: a systematic review and meta-analysis of randomized controlled trials.
 - **Methods:** MEDLINE, EMBASE, and the Cochrane Central Register of Controlled Trials were systemically searched from inception to November 2011 for randomized controlled trials that compared prevention of UTIs in users of cranberry-containing products vs placebo
 - **Results:** Thirteen trials, including 1616 subjects, were identified for qualitative synthesis from 414 potentially relevant references; 10 of these trials, including a total of 1494 subjects, were further analyzed in quantitative synthesis
 - The random-effects pooled risk ratio (RR) for cranberry users vs nonusers was 0.62 (95% CI, 0.49-0.80), with a moderate degree of heterogeneity (I(2) = 43%) after the exclusion of 1 outlier study

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- On subgroup analysis, cranberry-containing products seemed to be more effective in several subgroups, including women with recurrent UTIs (RR, 0.53; 95% CI, 0.33-0.83) (I(2) = 0%), female populations (RR, 0.49; 95% CI, 0.34-0.73) (I(2) = 34%), children (RR, 0.33; 95% CI, 0.16-0.69) (I(2) = 0%), cranberry juice drinkers (RR, 0.47; 95% CI, 0.30-0.72) (I(2) = 2%), and subjects using cranberry-containing products more than twice daily (RR, 0.58; 95% CI, 0.40-0.84) (I(2) = 18%).
- **Conclusion:** “Our findings indicate that cranberry-containing products are associated with protective effect against UTIs. However, this result should be interpreted in the context of substantial heterogeneity across trials.”
- **Discussion:** Of note these results were similar to a [2008 Cochrane Review](#) which concluded: “There is some evidence that cranberry juice may decrease the number of symptomatic UTIs over a 12 month period, particularly for women with recurrent UTIs. It's effectiveness for other groups is less certain. “However a [2012 Cochrane Review](#) (an update to this review) found: “The addition of 14 further studies suggests that cranberry juice is less effective than previously indicated. Although some of small studies demonstrated a small benefit for women with recurrent UTIs, there were no statistically significant differences when the results of a much larger study were included.”

- [Adv Nutr. 2016 May 16;7\(3\):498-506.](#)

Cranberries and Urinary Tract Infections: How Can the Same Evidence Lead to Conflicting Advice?

- **Commentary:** This article explores the methodological differences that contributed to these disparate findings
- Despite similar research questions, the meta-analyses varied in the studies that were included, as well as the data that were extracted. In the 2 most comprehensive systematic reviews, heterogeneity was handled differently, leading to an I(2) of 65% in one and 43% in the other
- Most notably, the populations influencing the conclusions varied. In one analysis, populations with pathological/physiological conditions contributed 75.6% of the total weight to the summary risk estimate (RR: 0.86; 95% CI: 0.71, 1.04); another weighted the evidence relatively equally across UTI populations (RR: 0.62; 95% CI: 0.49, 0.80); and a third included only women with recurrent UTIs (RR: 0.53; 95% CI: 0.33, 0.83). Because women with recurrent UTIs are the group to whom most recommendations regarding cranberry consumption is directed, inclusion of other groups in the efficacy assessment could influence clinical practice quality. Therefore, conclusions on cranberry and UTIs should consider differences in results across various populations studied when interpreting results from meta-analyses.

So... What does this all mean Jenn?

- It appears that there are mixed interpretations regarding the evidence for cranberry products and the prevention of UTIs

- Overall, I would not suggest routine use of these agents. Although there are plausible biological mechanisms for such an effect, clinical studies to date have not definitively demonstrated efficacy in prevention of recurrent simple cystitis. However, for women with recurrent UTI who are already using cranberry or who are interested in trying cranberry products and can tolerate it, there is likely little harmful effect (other than an increase in calorie and glucose intake with juice). There may also be an increased likelihood of gastrointestinal side effects such as heartburn with cranberry juice, as suggested by some studies

Geriatric Considerations:

- Take a look above, this PCP Phast Phact is focused on older adults

Stay tuned for future PCP Phast Phacts on herbal supplements!

CLINICAL PEARL:

Based on current evidence, I would not suggest routine use of cranberry products for the prevention of UTIs.