

Cranberry for preventing urinary tract infection

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Clinical question

Does cranberry juice or extract prevent recurrent urinary tract infections (UTIs)?

Bottom line

Available evidence is generally poor quality and does not support cranberry products for the reduction of UTIs.

Evidence

Two 2012 systematic reviews^{1,2} and 1 RCT,³ all with about 6 months' follow-up.

- Cochrane review: 24 RCTs (13 RCTs with juice or concentrate, 10 with tablets or capsules, and 1 with both) of 4473 mostly female patients.¹
 - Meta-analysis of 13 RCTs found
 - no significant difference in number of patients getting 1 or more UTIs (relative risk [RR]=0.86, 95% CI 0.71 to 1.04); and
 - no difference in recurrent UTI in elderly, catheterized, or pregnant patients, or in children.
 - Studies not included in the meta-analysis: 8 found no benefit; 2 found benefit.
 - The RCTs were at high risk of bias: for example 75% of the RCTs excluded patients from analysis, and 46% lost more than 20% of patients to follow-up.
- Review by Wang et al: 13 RCTs (8 RCTs with juice or concentrate, 4 with tablets or capsules, and 1 with both) in 1616 mostly female patients.²
 - Statistically significant reduction in UTIs (RR=0.62, 95% CI 0.49 to 0.80; NNT=12 to avoid recurrent UTI).
 - Excluded 1 negative-outlier trial, but not the 1 positive-outlier trial from analysis; if the positive outlier was excluded, results were no longer significant.
 - Issues: Poor-quality literature search, poor-quality RCTs (as above), and selective analysis.
- RCT: 176 women with recent UTI³; no difference in rates of UTI between cranberry and placebo groups.

Context

- It has been proposed that the A-type proanthocyanidins in cranberry inhibit adherence of *Escherichia coli* to the urogenital mucosa.^{1,2} This is clinically unproven.
- Cranberry juice or cocktail costs about \$0.45 to \$0.66 and contains 120 to 150 calories per 250 mL.
 - Assuming 2 cups daily and the most positive data,² a 1 in 12 chance of avoiding UTI over 6 months would cost about \$180 and 45 000 calories.
 - The cost for cranberry tablets or capsules is similar; however, even the most positive results² suggests tablets and capsules might be ineffective.

- Cranberry products are likely inferior to antibiotics.
 - An RCT of 221 women with recurrent UTI found significantly more UTIs in 12 months for women taking cranberry capsules versus those taking trimethoprim-sulfamethoxazole (4.0 vs 1.8 UTIs per woman; $P=.02$).⁴

Implementation

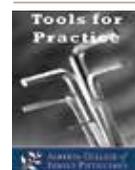
Recurrent UTI is generally defined as 3 or more culture-positive UTIs in 12 months.^{5,6} In adult women with recurrent UTIs, guidelines suggest low-dose prophylactic antibiotics, like trimethoprim-sulfamethoxazole (40 and 200 mg daily) or ciprofloxacin (125 mg daily), generally for 6 to 12 months.^{5,6} The NNT is 2 to 3 to prevent any UTI recurrence in 1 year.^{5,7} Other antibiotic options include a single low-dose of postcoital antibiotics or acute self-treatment with a regular antibiotic dose for 3 days. Although one guideline endorsed cranberry products for UTI prevention,⁵ that was based on older evidence and is not supported by the most recent guideline.⁶ Limited evidence suggests vaginal estrogen in postmenopausal women might be effective, and more research is needed on probiotics and vaccines.^{5,6} Reviews of the options are available free from the Society of Obstetricians and Gynaecologists of Canada⁵ and the Canadian Urological Association.⁶ 🌿

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The opinions expressed in this Tools for Practice article are those of the authors and do not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.

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