Cranberries for prevention of UTIs

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Clinical question

Do cranberry products prevent recurrent urinary tract infections (UTIs)?

Bottom line

Evidence is of low quality because of potential publication bias, small studies, and unblinding. If biases are disregarded, cranberry products might reduce the proportion of women with recurrent UTIs to 18% vs 24% with placebo over 1 year or less. Results are inconsistent between populations (eg, children with recurrent UTIs may benefit but not institutionalized elderly patients or pregnant women).

Evidence

We found 5 systematic reviews (7-50 RCTs, N=1498-8857).[1-5] The definition of *UTI* varied: based on symptoms, bacteriuria, or both. Results are statistically different unless noted.

- In the most recent and largest systematic review (50 RCTs, N=8857),[1] "people-at-risk" subgroups included women (generally ≥2 UTIs/y) or children (1-18 y with ≥1 past UTIs); adults with pelvic radiation, surgery, or transplant or neuromuscular dysfunction; institutionalized elderly patients; and pregnant women. The following results were found for any cranberry product vs placebo or no treatment for patients with 1 or more UTIs at 1 to 12 months (reporting subgroups owing to inconsistent results).
  - -Women (8 RCTs, N=1555): 18% vs 24% for placebo, number needed to treat (NNT)=17.
  - -Children (5 RCTs, N=504): 16% vs 34% for placebo, NNT=6.
  - -Adults after pelvic radiation, surgery, or transplant (6 RCTs, N=1434): 11% vs 23% for placebo, NNT=9.
  - -Institutionalized adults, pregnant women, or those with neuromuscular dysfunction: no statistical difference.
- Other systematic reviews report benefits for women with recurrent UTIs[2,3] and any "people at risk."[4,5]
- Adverse events: no difference.[1]
- Limitations
  - -Publication bias[5]: UTI prevention risk ratio (RR) of 0.68 (95% CI 0.57-0.80) worsens when adjusted for missing studies (RR=0.83, 95% CI 0.70-1.00).
  - -Systematic reviews[1-5] did not analyze by quality. We performed quality analysis for study size and placebo control (in women with recurrent UTI).[1]
    - —In smaller RCTs RR=0.47 (95% CI 0.33-0.68) vs larger RCTs RR=0.97 (95% CI 0.77-1.22).
    - —No placebo (unblinded) RCTs: RR=0.39 (95% CI 0.21-0.74) vs placebo RR=0.83 (95% CI 0.62-1.10).

Context

- Studied doses of proanthocyanidin (proposed active ingredient) varied (2.8-118 mg).
- For women, the typical intervention was juice (0.5-3 cups/d) or capsule (500 mg/d).[1] There was no statistical difference between them (1 RCT, 100 patients).[6]
- Daily antibiotics reduce recurrence to 12% over 6 to 12 months vs 66% with placebo.[7] Guidelines support antibiotic prophylaxis and conditionally recommend cranberry.[8]
- Costs: Juice per cup is about $0.60 and 110 calories (low-calorie juice is 10 calories); capsules are about $0.15 to $0.63 per capsule (doses vary).[9]

Implementation

Low-dose antibiotics provide the most effective prophylaxis but may be associated with side effects and an unknown degree of antibiotic resistance.[7] If cranberry products are effective, the optimal dose and formulation are unclear.[1] Capsules may be preferred for palatability and reduced caloric intake. Increasing water intake (those who drink <1.5 L/d) resulted in 1.5 fewer UTIs per patient per year.[10] Evidence for postmenopausal vaginal (not oral) estrogen is minimal but suggests efficacy.[10] Probiotics are not effective.[10]

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Competing interests
None declared

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