Does Cranberry Have A Role in Catheter-Associated Urinary Tract Infections?

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Introduction

- Catheter-associated urinary tract infections (CA-UTIs) are a prevalent and costly condition, with very few therapeutic options.
- CA-UTIs account for approximately 36% of health care related infections.[1]
- Cranberry, in its many forms, has been used for the prevention of UTIs.[2]
- The active components in cranberry, known as proanthocyanidins (PACs), are large condensed tannin molecules with A-type linkages exhibiting strong bacterial anti-adhesion activity.[3]
- There are no studies on the efficacy of cranberry for those with CA-UTIs.
- We sought to evaluate the efficacy of a dietary supplement containing 36 mg PAC* from cranberry on CA-UTIs over a 6-month period.

Methods

- Subjects with long-term indwelling catheters and recurrent symptomatic CA-UTIs were enrolled to take a once daily supplement with 36 mg of the active ingredient proanthocyanidins (PACs) for 6 months (ellura®). The Anti-Adhesion Activity value for the supplement was 0.12.
- Primary outcome was reducing the number of symptomatic CA-UTIs.
  - Defined by ≥ 103 (cfu)/mL of ≥ 1 bacterial species in a single catheter urine specimen.
- Secondary outcomes included bacterial counts and resistance patterns to antibiotics.
- Thirty-four patients were enrolled in the trial with a total of 22 patients completing the study (n=12, lost to follow-up).
- 77.27% (n=17) of patients were males and 22.73% (n=5) were females.
- Mean age was 77.22 years old (56-90 years old) and Charlson Age-Comorbidities Index (CACI) mean score was 4.909.

Results

- No CA-UTIs were reported over the 6 months.
- The mean number of antibiotic resistances for the major causative organisms was 2.579 ± 1.774.
- Reduction of antibiotic resistances was 28% during study period.
- Colony counts were reduced by 58.65%.
- No adverse events occurred.

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Conclusions

36 mg PAC supplement from cranberry is effective in reducing recurrent UTIs in patients with symptomatic CA-UTIs

- Antibiotic resistances and patterns of major causative organisms decreased in this study.
- Larger placebo controlled studies are needed to further define the role of cranberry in CA-UTIs.

Comparison of patient urine culture and urinalysis results from baseline throughout 6-month study period

Urine Culture[1]/ Urinalysis Results	Baseline	Month 1	Month 3	Month 6
TOTAL # of Antibiotic Resistances (28% reduction)	49	36	24	13
Mean # of Antibiotic Resistances	2.579	2.400	2.181	1.857
WBC U/A	51.944	55.211	32.75	27.363
Mean Major Causative Organisms	1.318	1.091	0.910	0.545
Nitrite	Negative	Negative	Negative	Negative

Reduction of antibiotic resistances was 28% during study period. Tetracycline, levofloxacin and cefazolin were among the antibiotics with the greatest reduction in resistance.

References

1. Rebmann T, Greene LR. Preventing catheter-associated urinary tract infections: An executive summary of the Association for Professionals in Infection Control and Epidemiology, Inc, Elimination Guide. American journal of infection control 2010; 38:644-6.
2. Dieter AA. Cranberry capsules (2 taken twice daily for an average 38 days) reduce the risk of postoperative urinary tract infection in women undergoing benign gynaecological surgery involving intraoperative catheterisation. Evidence-based medicine 2015; 20:137.
3. Sanchez-Patan F, Bartolome B, Martin-Alvarez PJ, Anderson M, Howell A, Monagas M. Comprehensive assessment of the quality of commercial cranberry products. Phenolic characterization and in vitro bioactivity. Journal of agricultural and food chemistry 2012; 60:3396-408.

*Measured by DMAC/A2 method.