

## Clinical Applications of Cranberry in Urinary Tract Infections

Urinary tract infections (UTIs) account for more than 5.2 million visits to physicians' offices by women each year. UTIs are 50 times more prevalent in women than in men, largely due to anatomical differences. One out of five women in the United States will experience a UTI at some point in her life. Most UTIs in women are categorized as uncomplicated, primarily affecting the bladder. Symptoms typically include increased urinary frequency, urgency, and painful urination. *Escherichia coli* causes 90% of UTIs by adhering to the wall of the bladder via thin, hair-like appendages called P-fimbriae. The usual initiating mechanism involves bacterial adhesion to specific receptor sites on the cell membrane of epithelial cells that line the urinary tract, followed by invasive disease. Uncomplicated UTIs are easily treatable with short courses of antibiotics. Many women turn to natural therapies such as Cranberry (*Vaccinium macrocarpon*) for the management of UTIs, including prevention, decreasing the occurrence, and treatment of nonacute forms.

### OVERVIEW

Cranberry is a fruit native to North America, cultivated in the northern United States and Canada, which provide almost 98% of the world supply. The ripe fruit of cranberry was held in esteem by both indigenous Americans and colonists for its medicinal and nutritional properties. Historically, cranberry was used as a remedy for problems affecting the urinary tract. Now, through scientific research, these claims

**Current research indicates that drinking cranberry juice in therapeutic amounts, on a regular basis, appears to reduce the risk of UTIs, and may help in the treatment of existing UTIs.**

have been validated. Cranberry juice has growing recognition among both consumers and integrative healthcare professionals for its health benefits for the urinary tract system.

### PRIMARY USES

- Prevention of UTIs
- Treatment of recurrent UTIs

### POTENTIAL USES

- Treatment of mild UTIs

### DOSAGE

Internal (*Note:* The following juice doses are based on sweetened preparations unless otherwise noted. Some practitioners suggest unsweetened cranberry juice [which can be unpalatable], or a concentrated juice extract in a capsule form since cranberry juice cocktail contains only one-third juice mixed with water and sugar).

#### Juice

*Prevention of UTIs:* 4 to 32 fl oz daily

*Treatment of UTIs:* 16 to 32 fl oz daily or at least 0.5 L (approximately 18 fl oz) of unsweetened juice daily

#### Concentrated juice extract

*Prevention and treatment of UTIs:* 300 to 400+ mg, 2 to 3 times daily

### PHARMACOLOGICAL ACTION

Scientists originally attributed the beneficial effects of cranberry to its acidification of the urine, which results

---

Stephanie Maxine Ross, MH, HT, CNC  
Drexel University  
Philadelphia, Pa.

in the prevention of bacterial replication. It is now recognized that the effectiveness of cranberry juice in treating UTI arises not from its acidifying properties but rather from its ability to prevent microorganisms from adhering to the epithelial cells that line the urinary tract. The primary constituent responsible for the antiadhesion effect of cranberry appears to be proanthocyanidins.

## CONTRAINDICATIONS

There is conflicting opinion regarding the contraindications of cranberry with renal insufficiency and in individuals with a potential for developing uric acid or calcium oxalate stones. One study has shown that cranberry juice contains very low amounts of oxalate and is safe for individuals with calcium stones. Until conclusive evidence is available, caution is advised.

There are no known restrictions on taking cranberry juice during pregnancy or lactation.

## ADVERSE EFFECTS

There are no known adverse effects at therapeutic dosage levels. At high doses (more than 3–4 L/d), diarrhea or mild gastrointestinal upset can occur.

## DRUG INTERACTIONS

There are no known interactions with antibiotics or other drugs.

## BRANDED PRODUCTS

### Juices

Ocean Spray<sup>®</sup> Cranberry Juice Cocktail  
(sweetened) R.W. Knudsen 100% Natural

Juices “Just Cranberry” Trader Joe’s “100% Cranberry”

### Capsules

Solaray<sup>®</sup> CranActin<sup>®</sup>: Nutraceutical Corporation, Park City, Utah  
Azo-Cranberry<sup>®</sup>: PolyMedica Corporation, Woburn, Mass

## COMMENTS

Current research indicates that drinking cranberry juice in therapeutic amounts, on a regular basis, appears to reduce the risk of UTIs, and may help in the treatment of existing UTIs. However, for individuals with recurrent UTIs, and in cases of acute UTIs, proper medical diagnosis is essential. Improperly treated UTIs can result in serious kidney infections. Cranberry is not a substitute for antibiotics in the treatment of acute UTIs.

## REFERENCE SOURCES

1. Leahy M, Speroni J, Starr M. Latest developments in cranberry health research. *Pharm Biol.* 2002;40:50–54.
2. Leung AY, Foster S. *Encyclopedia of Common Natural Ingredients*. 2nd ed. New York: Wiley Inter-Science Publication; 1996.
3. Blumenthal M, Goldberg A, Brinckmann J, eds. *Herbal Medicine: Expanded Commission E Monographs*. Austin, Tex: American Botanical Council; 2000.
4. Leaver R. Cranberry juice. *Prof Nurs.* 1996;11(8):525–526.
5. Howell AB, Vorsa N, Der Marderosian A, Foo LY. Inhibition of the adherence of P-fimbriated *Escherichia coli* to uroepithelial-cell surfaces by proanthocyanidin extracts from cranberries. *New Engl J Med.* 1998;339(15):1085–1086.
6. Jellin JM, Gregory BF, Hitchens K, et al. *Pharmacist's Letter/Prescriber's Letter Natural Medicines Comprehensive Database*. 5th ed. Stockton, Calif: Therapeutic Research Faculty; 2003.
7. Walker EB, Barney DP, Mickelsen JN, Walton RJ, Mickelsen RA Jr. Cranberry concentrate: UTI prophylaxis. *J Fam Pract.* 1997;45(2):167–168.
8. Yarnell E. Botanical medicine for cystitis. *Altern Complement Ther.* 1997;269–275.