



## Use of cranberry in Urinary Tract Infection of *E. coli*

Deepak Sharma\* and Shashank Tiwari

Amity Institute of Pharmacy, Department of Pharmaceutics, Amity University (U.P.), India

### Abstract

Cranberry juice is well known for its benefits for the urinary tract but it is also beneficial in treating and preventing ailments in other systems of the body. Some of the health benefits of drinking cranberry juice include treating or preventing urinary tract infections, kidney stones, respiratory disorders, heart disease, and cancer and even to promote good dental care. The action of cranberry juice in the urinary system is due to its production of hippuric acid in the urine. This causes the pH of the urine to become acidic and prevents bacteria from adhering to the bladder tissue. Drinking one glass of cranberry juice per day can decrease your risk of infections such as UTI or cystitis. Those who have a history of kidney or bladder stones can benefit from consuming cranberry juice. Cranberry juice has been shown to be effective in preventing stone formation due to the high amounts of acid components it contains.

Key-Words: UTI, Cranberry, *E. coli*

### Introduction

Urinary tract infection is a bacterial infection affects the different part of urinary tract. It affects both upper and lower urinary tract. When it affects the lower urinary tract it is known as a Simple Cystitis (A Bladder Infection) Symptoms from a lower urinary tract include painful urination and either frequent urination or urge to urinate (or both), and when it affect the upper urinary tract it is known as Pyelonephritis (A Kidney Infection). Symptoms of pyelonephritis include fever and flank pain in addition to the symptoms of a lower UTI. In the elderly and the very young, symptoms may be vague. The main cause of urinary tract infection is infection of the *Escherichia coli* (80% - 85%) with *staphylococcus saprophyticus* being the cause in 5-10%. Rarely may they be due to viral or fungal infection. Other bacterial causes include *Klebsiella*, *Proteus*, *Pseudomonas* and *Enterobacter*.

In young sexually active women, sexual activity is the cause of 75–90% of bladder infections, with the risk of infection related to the frequency of sex. The term "honeymoon cystitis" has been applied to this phenomenon of frequent UTIs during early marriage. In post-menopausal women, sexual activity does not affect the risk of developing a UTI. Spermicide use, independent of sexual frequency, increases the risk of UTIs.

Women are more prone to UTIs than men because, in females, the urethra is much shorter and closer to the anus. As a women's estrogen levels decrease with menopause, her risk of urinary tract infections increases due to the loss of protective vaginal flora.

### Medications

For those with recurrent infections, a prolonged course of daily antibiotics is effective.<sup>[1]</sup> Medications frequently used include nitrofurantoin and trimethoprim and sulfamethoxazole. In cases where infections are related to intercourse, taking antibiotics afterwards may be useful. In post-menopausal women, topical vaginal estrogen has been found to reduce recurrence. As opposed to topical creams, the use of vaginal estrogen from pessaries has not been as useful as low dose antibiotics. A number of vaccines are in development as of 2011.

Used of prolong antibiotics may cause severe side effects and resistance in bacteria against antibiotics. So, now a day's doctors recommended a cranberry juice along with antibiotics for the treatment of UTI.

### Cranberry

#### Species

*Vaccinium erythrocarpum*  
*Vaccinium macrocarpon*  
*Vaccinium microcarpum*  
*Vaccinium oxycoccos*

\* Corresponding Author

E.mail: shashank6889@gmail.com



About 95% of cranberries are processed into products such as juice drinks, sauce, and sweetened dried cranberries. The remaining 5% are sold fresh to consumers. Cranberries are normally considered too sharp to be eaten plain and raw, as they are not only sour but bitter as well.

Cranberry juice is a major use of cranberries; it is usually either sweetened to make "cranberry juice cocktail" or blended with other fruit juices to reduce its natural severe tartness. Many cocktails, including the Cosmopolitan, are made with cranberry juice.

Usually cranberries as fruit are cooked into a compote or jelly, known as cranberry sauce. Such preparations are traditionally served with roast turkey, as a staple of English Christmas dinners, and the Canadian and US holiday Thanksgiving. The berry is also used in baking (muffins, scones and cakes). Less commonly, innovative cooks use cranberries to add tartness to savory dishes such as soups and stews.

Fresh cranberries can be frozen at home, and will keep up to nine months; they can be used directly in recipes without thawing.

Cranberry wine is made in some of the cranberry-growing regions of the United States and Canada from whole cranberries, cranberry juice or cranberry juice concentrate.



Cranberry juice is well known for its benefits for the urinary tract but it is also beneficial in treating and preventing ailments in other systems of the body.

Some of the health benefits of drinking cranberry juice include treating or preventing urinary tract infections, kidney stones, respiratory disorders, heart disease, and cancer and even to promote good dental care.

The action of cranberry juice in the urinary system is due to its production of hippuric acid in the urine. This causes the pH of the urine to become acidic and prevents bacteria from adhering to the bladder tissue. Drinking one glass of cranberry juice per day can decrease your risk of infections such as UTI or cystitis. Those who have a history of kidney or bladder stones can benefit from consuming cranberry juice. Cranberry juice has been shown to be effective in preventing stone formation due to the high amounts of acid components it contains.



#### **Nutritional information**

1cup of cranberry juice (253ml) contains the following nutritional information according to the USDA:

- Calories : 116
- Fat: 0.33
- Carbohydrates: 30.87
- Fibers: 0.3
- Protein: 0.99
- Cholesterol: 0





Cranberry juice and urinary tract infection (UTI)

Urinary tract infection is cure by the antibiotics but it reoccurrence after some time and cause problem to the patient. The reoccurrence of UTI is a major problem especially in women's. For some how the problem will be prevented by using cranberry juice along with the antibiotics.

Cranberry contain proanthrocynadins and fructose which have similar structure as of e.coli so, they enter in the receptors of the uroepithelial cells and blocks the receptors of uroepithelial cell. Hence the e coli will not able to enter in the receptors of uroepithelial cells and they are killed by the antibiotics and flush out when patient consume the glass of water.

According to some manufacturer the dose of cranberry is for 7 days with antibiotics and continue for at least 2 to 3 month to stop the reoccurrence of UTI

Some pharmaceuticals companies are manufacturing the cranberry powder in the form of capsule

### **Conclusion**

Cranberry juice is useful in the treatment of urinary tract infection especially in women's. According to some manufacturer the dose of cranberry is for 7 days with antibiotics and continue for at least 2 to 3 month to stop the reoccurrence of UTI

### **References**

1. Steven Clemants. "*Vaccinium oxycoccos*: Small Cranberry, Technical Page". Brooklyn Botanic Garden.
2. "About Cranberries". Cranberry Institute. Retrieved 2009-11-13.
3. Carol Cloud Bailey (2009-11-19). "Garden Tips: Give thanks for cranberries, grown with a taste of Florida". *TCPalm.com*. Scripps Interactive Newspapers Group. Retrieved 2009-11-20.
4. "Cranberries: How Ocean Spray made them the world's most successful superfruit". New Nutrition Business. Retrieved 21 October 2011.
5. "Newsroom – 'Superfruits' the future of health". HortResearch. Retrieved 2009-11-13.
6. "borealforest.org". Lakehead University Faculty of Natural Resources Management.
7. "History". Cranberries.org. Retrieved 2009-11-13.
8. United States Department of Agriculture (18 August 2010), *Wisconsin -Cranberries*, retrieved 31 July 2011
9. "Cranberry Terschelling BV". Retrieved 19 November 2011.
10. Zeldes, Leah A. (November 25, 2009). "Eat this! Cranberries more than a thanksgiving condiment". *Dining Chicago*. Chicago's Restaurant & Entertainment Guide, Inc.. Retrieved Nov. 25, 2009.