Urinary tract infections (UTIs) are a very common, but not talked about, health problem. For those who have suffered with a UTI, the symptoms of burning, frequency, urgency and pain are a very serious matter. Eighty percent of all women will experience a UTI in their lifetime and approximately 20 percent of women will have a UTI each year. In the U.S. alone, 9.6 million doctor visits per year are attributed to UTI and they are the second leading cause of lost work days for women. In addition to the personal suffering and lost productivity, the costs of treating these infections are estimated at over $1 billion per year.

Normally the urine is sterile and does not contain any bacteria, viruses or fungi. An infection can develop when these bugs enter the urethra (the tube that carries urine out of the body) and travel up into the bladder. Over 90 percent of UTIs are caused by the bacteria *E. coli*, which is present in the colon and rectal area.

**RISK FACTORS**

UTIs are certainly more prevalent among women but men can get them too. There are several reasons for their frequency in women. In women, the urethra (tube that carries urine out of the body) is closer to the anus and much shorter, making it easier for bacteria to enter and travel up into the bladder.

During pregnancy women are at increased risk because the growing baby presses on the bladder, which may prevent the bladder from emptying completely. When urine is left to stagnate in the bladder, the risk of developing infection increases. Menopause also increases the likelihood of UTI because the decline in estrogen levels leads to thinning of the urinary tract, again making it easier for bacteria to break through. Individuals that have a catheter are also at greater risk because bacteria can enter during insertion and removal of the device.

Sexual intercourse is the most common cause of UTI in women ages 20 to 40. During sex, bacteria can be pushed from the rectal area toward the vagina and can then enter the urethra and ascend into the bladder.

In men, enlargement of the prostate gland can put pressure on the urethra and the bladder opening. This prevents complete emptying of the bladder and may result in infection.

A suppressed immune system can also make a person more susceptible to UTI. Conditions such as diabetes, AIDS, cancer and stress can weaken the immune system, affecting its ability to fight off infection.

**TREATMENT**

The most common treatment is antibiotic therapy, which carries with it various health and societal risks. Antibiotic use is also associated with many side effects such as diarrhea, stomach cramps, yeast overgrowth, etc. and can be costly. Overuse of these medications is a major factor in the development of resistance—the bugs are becoming stronger than the drugs, leaving people vulnerable for attack by bacteria. For these reasons, there is great interest in natural alternatives.

**CRANBERRY AND BLADDER HEALTH**

For centuries cranberry has been a popular folk remedy for urinary health. Research conducted in the 1700s and 1800s suggested that its benefits may be due to its ability to acidify the urine. Further research failed to validate this theory and for decades cranberry continued to be popular but its true mechanism remained a mystery.

In the early 1980s groundbreaking research published in the *Journal of Urology* shed some light on this matter. A study done in mice demonstrated that cranberry inhibited the adherence of *E. coli* to the epithelial cells in urinary tracts by 80 percent. *E. coli* is the primary cause of urinary infections. Similar activity was found in human subjects as well.

Later research identified that certain compounds in cranberry, namely the condensed tannins or proanthocyanidins (a type of flavonoid), were responsible for this anti-adherence effect. These compounds adhere to the tiny hairs on the bacterial surface, thus preventing them from implanting in the mucosal linings of the bladder. Rather, they are flushed out of the body via the urine. In 1991 this finding was duplicated by Israeli researchers and published in the prestigious *New England Journal of Medicine*.

Several clinical studies found cranberry juice beneficial in preventing UTI. The only drawback however, was that the amount of juice required was quite large—10 to 20 ounces per day. Not only is that difficult for most people to comply with, but cranberry cocktail also contains a fair amount of sugar and calories. Newer research has evaluated the effects of cranberry supplements that provide a concentrated extract of all of the benefits of this berry.
Antibiotic use is also associated with many side effects such as diarrhea, stomach cramps, yeast overgrowth, etc. and can be costly. Overuse of these medications is a major factor in the development of resistance—the bugs are becoming stronger than the drugs leaving people vulnerable for attack by bacteria.

SELECTING SUPPLEMENTS
There are a variety of products to choose from which vary greatly in quality, potency and activity. The most studied cranberry product on the market is CranMax®. CranMax is a full-spectrum supplement containing all the vital parts of the cranberry—the fruit, seeds, skin and juice. Cape Cod Biolab Corp. has developed a patented technology, called Bio-Shield®, which enhances the bioactivity of the cranberry. In fact, CranMax is the most potent cranberry supplement on the market. It takes 34 pounds of cranberries to produce one pound of this product. CranMax has three times greater antioxidant activity than cranberry juice, 25 percent more fiber and has been clinically studied for urinary health.

The unique delivery system of CranMax protects the cranberry from destruction in the gut (by gastric acid) and provides a sustained release of the cran factor to the sites of action. This extended release mechanism prevents the E. coli bacteria from settling in the bladder wall and causing an infection. It allows nature to do its job and flush the bacteria out of the body through the urine.

In comparison, most cranberry products on the market, which are made from cranberry fruit powder, are quickly destroyed by the stomach acid and only deliver a small amount of the cran factor to the urinary tract.

CLINICAL STUDIES ON CRANMAX
CranMax has been clinically studied and found to be effective in the prevention of urinary tract infections and preliminary evidence indicates that it may play a role in the acute treatment of these infections.

Some of the early research on CranMax was conducted in Prague, Czech Republic. Two separate studies involving women at high risk of developing UTI were performed. In both studies CranMax was found to be safe and effective in preventing UTI.

The most recent study on the ability of cranberry to prevent UTI was published in the Canadian Journal of Urology. This one-year study involved 150 women, ages 21 to 72, who were randomized to one of three groups:

- Placebo juice + placebo tablets
- Placebo juice + CranMax tablets
- Cranberry juice + placebo tablets

The study consisted of 150 subjects in a double-blind, placebo-controlled crossover study. Subjects will be assigned to CranMax and placebo tablets, each over a successive period of six months.

STUDIES UNDERWAY
Two new studies are currently underway with results expected this fall. One study is comparing CranMax extract to prescribed antibiotics for patients with diagnosed UTI. According to urologist and researcher, Anil Kapoor, M.D., "The early results look promising for CranMax extract, not only in preventing UTI, but also as a potential alternative to antibiotic use in the treatment of UTI."

A second study, being conducted at the Veterans Medical Center, West Roxbury, MA, is evaluating the use of CranMax tablets for the prevention of UTI in spinal cord injured (SCI) patients with neurogenic bladders. Spinal cord injured patients are at risk for developing urinary tract infections for a number of reasons including abnormal bladder pathophysiology and frequent instrumentation. This study came as a result of the institution's treatment of approximately 100 patients with CranMax and reports a significant reduction in the frequency of urinary tract infections.

The study consists of 150 subjects in a double-blind, placebo-controlled crossover study. Subjects will be assigned to CranMax and placebo tablets, each over a successive period of six months.

DOSAGE AND DIRECTIONS
For those who enjoy cranberry juice, the amount that is recommended for prevention of UTI is five to 20 ounces daily. Since this is impractical for most, a quality cranberry supplement such as CranMax should be considered. CranMax offers demonstrated efficacy against the bacteria that cause UTI and is safe and well tolerated. The recommended dosage of CranMax is 500 mg once a day.