RE: Retrospective Study of Cranberry's Clinical Benefits in the Prevention of Recurrent Urinary Tract Infections in Women


A urinary tract infection (UTI), often considered a minor illness, can cause severe discomfort and if not treated appropriately can lead to more serious infections involving the kidneys. UTIs, with an estimated incidence ranging from 4 to 15%, are common in postmenopausal and elderly women, and have been widely studied in relation to pregnancy, postpartum period, and after genital surgery. UTIs are caused by bladder mucosal invasion, most commonly by enteric coliform bacteria (e.g. *Escherichia coli*) that ascend into the bladder through the urethra. The usual UTI treatment is a short course of antibiotics. Antibiotics, however, often eliminate lactobacilli along with harmful bacteria increasing the risk of subsequent UTIs (low growth of lactobacilli is associated with higher frequency of vaginal colonization with *E. coli*). The increasing prevalence of UTIs caused by antibiotic-resistant bacteria makes treatment even more challenging.

Cranberry (*Vaccinium macrocarpon*) has a long history of use as an alternative prophylactic method of managing recurrent uncomplicated UTIs. In this retrospective study, the authors collected published information on cranberry's clinical use and mechanisms of action for women with recurrent UTIs. Cranberries contain four different classes of flavonoids (flavonols, anthocyanins, catechins, and proanthocyanidins), triterpenoids, hydroxycinnamic, and phenolic acids. The main anthocyanins are absorbed into the human circulatory system, and 5% of the amount consumed can be found intact in the urine with levels reaching a peak between three and six hours after ingestion. Clinical and epidemiological evidence support cranberry's role in maintaining urinary tract health. Urine from subjects on cranberry treatment shows a significant reduction in bacterial adherence to uroepithelial cells compared to placebo. A controlled clinical trial demonstrated that regular drinking of cranberry juice reduces the presence of bacteria in the urine: baseline and monthly urine samples were taken over six months. Bacteriuria and pyuria occurred in 28% of the placebo group, versus 15% in the cranberry juice group. A meta-analysis considering eight randomized controlled trials
RCTs and two quasi-RCTs, concluded that cranberries might decrease the number of UTI episodes over a one-year period. The studies included 1049 participants of all ages who received either cranberry products (juice, tablets, or capsules), placebo juice, or water for at least one month for UTI prevention. Treatment with cranberry reduced UTI incidence at 12 months versus placebo. Cranberry powder has been demonstrated to inhibit adherence of *E. coli* to vaginal epithelial cells in a dose-dependent manner, thus contributing to UTI prevention of and maintenance of the normal vaginal ecosystem. The effectiveness of cranberry proanthocyanidins has also been reported against antibiotic-resistant *E. coli*. It is plausible that cranberry proanthocyanidins prevent bacteria from adhering to the uroepithelium of the bladder, thus blocking the ability of *E. coli* to infect the urinary mucosa. The protective effect of cranberry may also be related to a decrease in nitrate and nitrite concentrations, and dose-dependent decrease in peroxidation.

The authors conclude that the available scientific information seems to support cranberry's role in preventing recurrent uncomplicated UTIs in women. The safety of cranberry's dietary intake and its positive impact on human health, performance, and disease grant further clinical research to better investigate its mechanisms of action, as well as its optimal dosage and form.

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References

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