

Role of cranberry juice in preventing recurrent urinary tract infections in the pediatric population

Sir,

Urinary tract infections (UTIs) are common in the pediatric population, a majority being caused by *E. coli*. Recurrent UTI not only results in disruption of the daily routine but can also lead to renal scarring. An important bacterial property leading to UTI is the presence of adhesion factors that decrease bacterial washout. The most common intervention used to prevent recurrent UTI is long-term and low-dose antibiotics. Cranberry products, available in India, have also been used as prophylactic intervention.

Cranberries, scientifically known as *Vaccinium macrocarpon*, were used for a variety of complaints, including blood disorders, stomach ailments, liver problems and fever. Cranberries contain citric, malic, quinic, benzoic, ascorbic and glucuronic acids.^[1] The single-strength juice is very acidic (pH <2.5) and unpalatable.^[1] Cranberry products are available worldwide as 25-35% cranberry juice with sweetener, juice cocktail and dried cranberry concentrates in capsules or tablets. In India, it is available as cranberry nectar. These are promoted as products that can help in maintaining urinary tract health and provide relief from the pain and dysuria associated with cystitis.

Initially, cranberries were reported to decrease the urinary pH and increase the amount of hippuric acid in urine. The bacteriostatic property of hippuric acid was thought to offer the antibacterial character to cranberries.^[2] This was later proven to be incorrect. Bacteriostatic urinary concentrations of hippuric acid were rarely achieved even with ingestion of 4 L of cranberry juice per day. Cranberry ingestion in fact decreased adherence of *E. coli* to the urothelium.^[3] Cranberry in randomised controlled trials was shown to significantly reduce the incidence of UTI in women over a 12-month period.^[4] Uncontrolled trials have reported that cranberry improves symptoms of UTI but there is no good-quality evidence to suggest that it can be used to treat UTI. A small randomised control trial has shown no effect of cranberry on bacteriuria in children with neurogenic bladder needing clean intermittent catheterization.^[5] There is lack of data in the pediatric population in regards to the efficacy of cranberry products in preventing UTI. Also, dosage, form (juice or concentrate), duration of treatment and cost effectiveness

are not clear. Cranberry products are generally well tolerated. Reported side-effects include mild nausea and increased frequency of bowel movement. MIMS reports that cranberry may increase the activity of warfarin.

In summary, there is clinical benefit from cranberry products in preventing UTI in some populations, but their role is not clear for the pediatric population. After discussion with the patient and his family in regards to possible but unclear benefits, cost and relative lack of side-effects, cranberry products can be offered to pediatric patients with recurrent UTI who are willing to comply for a prolonged period of consumption.

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