

This Extract Rivals Antibiotics in Preventing Urinary Tract Infections

Studies looking at this common cause of bacterial urinary tract infections found a botanical that may be just as effective as antimicrobials in preventing UTIs, but without their side effects. Why antibiotics aren't always the best course of action for this common condition.

Analysis by Dr. Karen Shaw Becker

STORY AT-A-GLANCE

- Bacterial urinary tract infections (UTIs) are common in dogs, and E. coli is the culprit in about half of all canine UTIs
- One of the dangers of chronic UTIs is reliance on antibiotics to clear the infection; antibiotics carry side effects and antibiotic resistance is a problem in both human and veterinary medicine
- A recent study revealed that cranberry extract may be as effective as antimicrobials in preventing UTIs — without the side effects
- Preventing problems with your dog's urinary tract starts with keeping his or her urine pH between 6 and 6.5
- The majority of dogs with recurring UTIs require a change to a meat-based diet that is low-carb and starch-free

Bacterial urinary tract infections (UTIs) are fairly common in dogs, and similar to humans, females are more often affected. E. coli bacteria is responsible for about half of all canine UTIs.

The development of a urinary tract infection is the result of a change in a dog's immune defenses or an overwhelming bacterial burden that allows pathogenic bacteria to proliferate. This can be the result of a disease process, the dog's individual anatomy, the use of catheters, and certain drugs.

For example, dogs with diabetes or **Cushing's disease** (hyperadrenocorticism), dogs who are treated repeatedly with steroids (e.g., prednisone), and hospitalized dogs who are catheterized have more E. coli-related bacterial UTIs than other dogs.

Unfortunately, adding antibiotics to the mix can intensify the risk, as does the increasing age of the dog.

Risks Associated With Chronic Urinary Tract Infections

Urinary tract infections are treated with antibiotics. For treatment to be successful, it's important that the appropriate drug is selected (which requires a culture and sensitivity test), and the length of therapy is adequate.

There are many side effects of antibiotic use, including **gastrointestinal (GI) symptoms** that can lead to the dog's owner not giving the drug as prescribed, the dog refusing the drug, and/or decreased absorption leading to inadequate levels of antibiotic in the blood or urine.

These issues can interfere with the elimination of the bacteria that is causing the UTI, and can also contribute to antibiotic resistance. When a dog has recurring UTIs, it can be the result of a too-short course of antibiotic therapy, or the inability of the drug to reach the location of the bacteria.

Sometimes relapses occur very quickly after a course of antibiotics is finished; other times the infection reappears after some time has passed, in which case it can be mistaken for a new infection, especially if a follow up urinalysis isn't performed after the medication is finished.

Antibiotic resistance is a growing problem in both human and veterinary medicine. A 2008 study revealed that bacterial resistance is highest in dogs with recurrent E. coli-related urinary tract infections.¹

An earlier study identified E. coli bacteria in two dogs that proved resistant to 12 different antibiotics over the span of two weeks.²

Study Shows Cranberry Extract May Prevent UTIs

In a study published in 2016, a team of researchers from the College of Veterinary Medicine at National Chung Hsing University in Taiwan set out to determine the effects of cranberry extract on the development of urinary tract infections in dogs.³ They also wanted to measure the adherence of E. coli bacteria to canine kidney cells.

The team studied 12 pet dogs in one experiment, and 6 additional dogs in a second experiment. In the first experiment, the 12 dogs all had a history of recurrent UTIs (at least 3 infections in the previous year). Six of the 12 received an antibiotic for 2 weeks, while the remaining dogs received cranberry extract for 6 months. Over the course of the 6-month study, none of the 12 dogs developed a UTI.

In the second experiment, 6 dogs received cranberry extract for 60 days. In urine samples taken at 30 and 60 days, E. coli adhesion to kidney cells was significantly reduced compared to samples taken before the dogs began the extract. The researchers concluded that:

Oral administration of cranberry extract prevented development of a UTI and prevented E coli adherence to MDCK [canine kidney] cells, which may indicate it has benefit for preventing UTIs in dogs.⁴

Translation: Cranberry extract appears to be as or more effective than short-term antimicrobial treatment in preventing E. coli-related urinary tract infections, and without the side effects. In addition, cranberry extract can help fight multi-drug resistant bacteria in dogs with recurrent E. coli UTIs.

In a study published just last year, a team of researchers from France and Spain also investigated the potential for the prevention of UTIs in dogs by dietary consumption of cranberry, with the following results:

"Significant reductions in bacterial adherence to MDCK cells (from -16.5 to -73.4%, P < 0.05) were observed in the four females but not in the males after consumption of the cranberry extracts compared to the same animals consuming the control diet.

Conclusion: Dietary supplementation with cranberry may provide some degree of protection to female dogs against adhesion of uropathogenic E. coli to urinary epithelial cells.”⁵

It's important to note that in the 2016 study, the cranberry extract was in powdered form and mixed with the dogs' meals before serving. In the 2023 study, the dogs were fed a "diet containing cranberry extracts." It's unclear whether the extracts were included with the raw ingredients before processing or were added right before feeding. If they were added to the raw ingredient mixture, their effectiveness would be compromised to some degree by whatever processing methods were used.

Also important: all the dogs in the 2016 study were female. Only the 6 female dogs in the 2023 study derived some protection against UTIs from dietary supplementation with cranberry; the 6 male dogs did not. The good news is that as I noted earlier, UTIs are more common in females than males.

I recommend choosing an organic cranberry extract with D-mannose, which is a simple sugar closely related to glucose that occurs naturally in cranberries, peaches, apples, other berries, and some plants.

D-mannose is fully absorbed (but does not prompt an insulin release or rock blood glucose levels, so there's no negative systemic side effects) and quickly travels to the kidneys, then the bladder, and is excreted in urine.

D-mannose goes to work in your dog's bladder, where it adheres to E. coli lectins. Almost all the D-mannose winds up in urine, which in turn coats the E. coli bacteria so it can't stick to the walls of the bladder and is rinsed out of the body when your dog urinates.

Symptoms of a Urinary Tract Infection

Some signs your dog may have a urinary tract infection include:

- Suddenly urinating in the house
- Constant licking of urinary openings
- Visible blood in the urine; dark or cloudy urine
- Loss of bladder control; urine dribbling
- Inability to pass urine; passing very little
- Vomiting, lethargy, lack of appetite
- Straining to urinate; crying out in pain
- Drinking more water than usual

These are all signals that may indicate a potentially serious issue with your dog's urinary tract or bladder. It's important to get your canine companion, along with a urine sample, to your veterinarian as soon as possible.

A **urinalysis** will provide valuable information about why your dog is having urinary problems. In addition to providing information about the presence of blood, protein, glucose, ketones and bilirubin, a urinalysis will also determine how well your dog can concentrate his urine, which is an indicator of kidney health.

The urinalysis will also detect white blood cells, which means there is inflammation or infection, and a urine culture and sensitivity can determine if bacteria is present, and what type, to help devise a treatment plan. If an infection is present, medication will be needed to treat the problem.

However, sometimes pets experience inflammation or crystals without any infection present. In this latter case a different set of medications may initially be needed, but ultimately, in both situations, this is often a sign that it may be time to change your dog's diet (more about that shortly).

The Importance of Urine pH in Urinary Tract Health

Dogs are carnivores and should have a slightly acidic urine pH of between 6 and 6.5. (The higher the urine pH, the more alkaline it is.) Vegetarian mammals like rabbits and horses naturally have a very alkaline urine pH (above 8.0).

Human urine is slightly more alkaline (between 6.5 and 7), and many pet owners wrongly assume their dog's body functions in the same manner as their own.

It's important to keep your healthy dog's urine pH slightly acidic (below 7), because urine maintains its natural defenses when kept in the appropriate 6 to 6.5 range. When the pH creeps up toward the alkaline side, the urine loses its natural defenses and creates a more hospitable environment for bacterial growth and the development of struvite crystals.

The flip side of the coin is a urine pH below 6, which can cause your dog to develop a different type of problem, calcium oxalate crystals or stones.

If your dog has had one or more infections or other problems with the urinary tract, I recommend buying pH strips from your veterinarian or at the local drug store to check her urine pH at home so you know when it's in or outside the desired range.

You should collect urine samples in the morning before you feed your dog. You can either hold the pH tape in the stream of urine while your dog is voiding, or you can catch a urine sample in a container and dip the tape into the sample to check the pH. This should be done immediately with a fresh sample to insure accuracy.

The Right Diet for a Healthy Urinary Tract

In my experience, poor or improper diet is the culprit in the vast majority of cases of dogs with chronic urinary tract problems.

A prescription diet, which many conventional veterinarians recommend, typically combines high-carb foods with medications to lower your dog's urine pH. This is never my approach. Instead, I transition dogs to a diet that does not contain pro-inflammatory alkalizing carbohydrates.

When we feed carnivores a cereal-based diet, their urine becomes alkaline as a result. **Meat-based diets** are naturally acidic, whereas alkalizing starch-based diets are frequently the cause of chronic UTIs because lack of acidity removes the antimicrobial activity in urine.

Alkaline urine can also create cystitis (irritation of the lining of the bladder), crystals, and even uroliths, or stones, that require surgery.

Often, a dog's urine pH can be maintained naturally between 6 and 6.5 by feeding a species-appropriate diet. To reduce urine pH, you must feed a low-carb, starch-free, potato/tapioca/lentil-free (so no "grain free" dry foods), and preferably fresh or at least canned food diet for the increased moisture content.

There are products on the market to reduce urine pH that contain the acidifying amino acid DL-methionine. This is a safe addition to your dog's diet, but a more logical approach is to simply stop feeding grains and alkalizing foods.

Some breeds are predisposed to calcium oxalate crystals, which form in hyper-acidic, concentrated urine. The goal for these dogs is to create more dilute urine with a neutral pH (7). This can be accomplished by eliminating dry food and feeding a well formulated, moisture-rich diet that meets minimum nutritional requirements for calcium and other minerals without providing larger amounts of minerals. Potassium citrate can be supplemented to increase urine pH, if needed.

Sources and References

[Clinician's Brief July 2016](#)

¹ [Ball, K.R. et al. Canadian Veterinary Journal. 2008 Oct;49\(10\):985-90](#)

² [Sanchez, S. et al. J Clin Microbiol. 2002 Oct;40\(10\):3586-95](#)

^{3,4} [Chou, H. et al. Am J Vet Res. 2016 Apr;77\(4\):421-7](#)

⁵ [Carvajal-Campos, A. et al. J Vet Res. 2023 Mar 9;67\(1\):49-54](#)
