

## Aiming for a healthy urinary tract

Persistent and recurrent *E. coli*-induced canine UTIs represent a frustrating clinical problem. In addition to the animal's discomfort and potential treatment-related side-effects, repeated courses of antibiotics increase the likelihood of bacterial resistance. Whenever possible, the best treatment strategy for these dogs is to identify and correct any disorder known to increase their risk of UTI.

### What if cranberries could prevent UTIs?

As in dogs, UTIs in women are most often associated with *E. coli*, and cranberry products have been used for many years to help prevent them. Today, clinical studies have demonstrated their benefits in humans.

In one of these studies<sup>4</sup>, twelve women with a history of at least six UTIs in the previous year took 400 mg of concentrated cranberry extract (30% of total polyphenols) per day for 12 weeks. Results indicated that:

- none of the women developed a UTI during this period;
- patient follow-up 2 years later revealed that those who continued to take cranberry supplements (8 women) remained UTI-free.



### For the support of a healthy urinary tract

- ✓ Guaranteed amount of at least 30 mg of polyphenols in each tablet
- ✓ Patented and selective cranberry extraction process
- ✓ Highly palatable chewable tablets
- ✓ Beef-flavored (no animal proteins)
- ✓ Sugar-free
- ✓ Oxalic acid-free
- ✓ Nutraceutical provided by a reputable veterinary pharmaceutical company
- ✓ Technical support from our veterinarians



#### References

- 1 ETTINGER, S.J et al., *Textbook of Veterinary Internal Medicine: Expert Consult Online and Print*, 6<sup>th</sup> edition.
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## PAXON™ The fruitful way to support urinary tract health



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## Recurrent urinary tract infections

Bacterial urinary tract infection (UTI) develops when a breach occurs in the host defense mechanisms and a virulent bacteria is allowed to adhere, multiply, and persist in the urinary tract.

Up to 14% of dogs will develop a urinary tract infection at least once in their lifetime<sup>1</sup>, making it one of the leading causes for in-clinic consultations.

Recurrent or persistent UTIs can be asymptomatic at diagnosis and they are commonly associated with the presence of a predisposing condition such as:

- diabetes mellitus (UTI present in 37% of dogs)<sup>2</sup>;
- hyperadrenocorticism (UTI diagnosed in 46% of dogs)<sup>2</sup>;
- dogs receiving long-term treatment with glucocorticoids<sup>3</sup>;
- dogs with abnormal micturition, alteration of the uroepithelium, urinary tract anatomic defects, etc.<sup>3</sup>

Uropathogenic strains of bacteria often have one or more factors that increase their virulence. *Escherichia coli* (*E. coli*), the cause of up to 69% of canine UTI<sup>2</sup>, has fimbriae that enhance its ability to remain adherent to the uroepithelium.

# The anti-adhesion effect of cranberries

*In vitro*<sup>5</sup> and *ex vivo*<sup>6</sup> studies have shown that cranberry products reduce the adhesion of bacteria to the cell surface. The kind of polyphenols specific to cranberries, called A-type proanthocyanidins (PACs), have been identified as the active component responsible for this property.<sup>7</sup>

Cranberry PACs cause the fimbriae on the surface of the bacteria to become compressed, reducing their potential adhesion. They may also change the shape of the bacteria and cause chemical changes to their surface membranes,<sup>4</sup> thus reducing the bacteria's ability to function normally.

## Uropathogenic *E. coli*

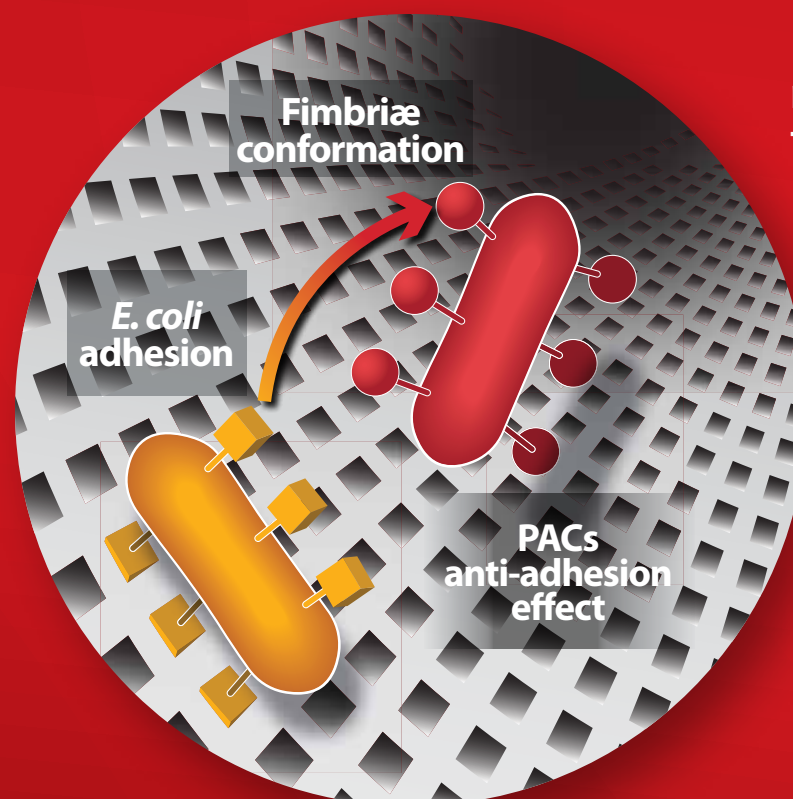
*E. coli* has adhesive fimbriae (pili) that protrude from its surface and enhance its ability to remain adherent to the cell.

## Fimbriae inhibition

A-type PACs induce changes in the conformation of the fimbriae which reduces their ability to bind to receptors on the cell surface.

## The anti-adhesion properties of cranberries

Cranberry PACs inhibit the initial adhesion step of *E. coli* to the uroepithelium, thus preventing bacterial multiplication and persistence in the urinary tract.



# PAXON™: high quality cranberry extract for dogs

PAXON™ is a palatable nutritional supplement to support urinary tract health

- PAXON™ concentrated cranberry extract is produced through a patented and unique selective extraction process which eliminates unwanted compounds, such as sugar and oxalic acid.
- Each PAXON™ tablet contains 100 mg of cranberry extract with standardized levels of 30% of polyphenols, mainly A-type PACs.
- PAXON™ is a highly palatable chewable tablet with a beef flavoring that contains no animal proteins.

## Dosage guidelines

Dog's weight (lb/kg)	Daily dosage
< 10 lb/5 kg	> 0.5 tablet
10-25 lb/5-11 kg	> 1 tablet
25-40 lb/11-18 kg	> 1.5 tablets
40-55 lb/18-25 kg	> 2 tablets
55-70 lb/25-32 kg	> 2.5 tablets
70-100 lb/32-45 kg	> 3 tablets

## What makes cranberries so unique?

The proanthocyanidins in cranberries are unique. The A-type PACs in them are different than the B-type PACs found in other plants and fruits. B-Type PACs found in grapes have minimal anti-adhesion activity, however, PACs from cranberries exhibit greater activity, even at a concentration that is 20 times lower.<sup>5</sup>

