



# CRANANIDIN™

**SUPPORTS URINARY TRACT HEALTH**



***Bioactive  
Cranberry  
Extract***



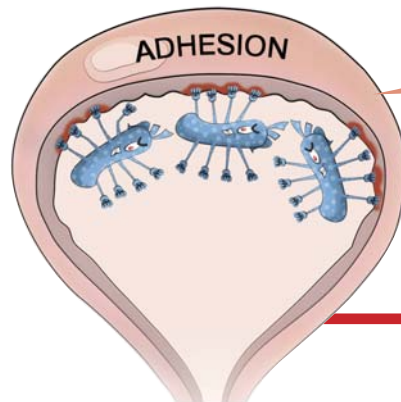
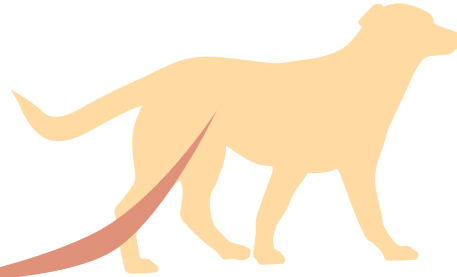
# CRANANIDIN™

## SUPPORTS URINARY TRACT HEALTH

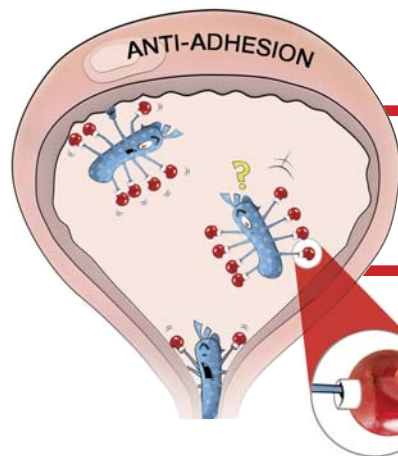
Cranberry has long been associated with urinary tract health and was initially believed to function by acidifying the urine. It is now known that the mechanism is due to proanthocyanidins (PACs), the bioactive compound found in cranberries.

Crananidin is a cranberry extract supplement containing bioactive PACs.

The PACs function to inhibit the adhesion of uropathogenic *E. coli* fimbriae to the bladder wall, thus supporting urinary tract health.



P-fimbriated *E. coli* adhere to the receptors of the uroepithelium which may result in signs of urinary tract discomfort including frequent urination, straining to urinate and painful urination.



Administration of **CRANANIDIN** minimizes adhesion of the *E. coli* fimbriae to the bladder epithelium thus allowing bacteria to pass in urine.



**CRANANIDIN™**

Represents anti-adhesion of bioactive PACs.

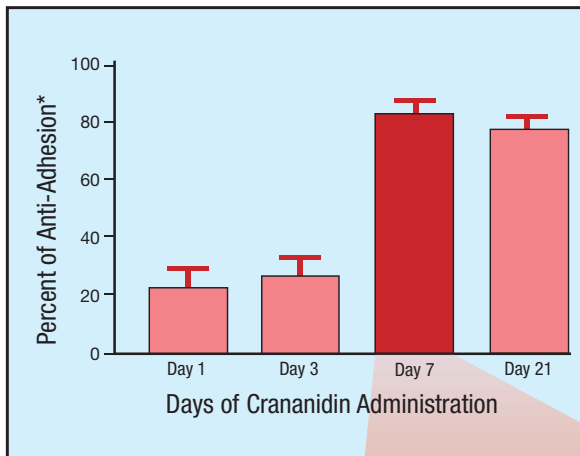
### Mechanisms of action of bioactive PACs in Crananidin

- ▶ Decrease adhesion capabilities of the *E. coli* bacterium to the bladder wall:
  - Result in structural changes to the surface fimbriae of *E. coli*<sup>1</sup>
  - Competitively inhibit *E. coli* from binding to bladder wall receptor sites by acting as receptor analogs<sup>2</sup>
- ▶ PACs from cranberries have a unique type A molecular linkage, not found in other fruits, which contribute to their anti-adhesion activity<sup>3</sup>



## Researched for bioactivity in dogs

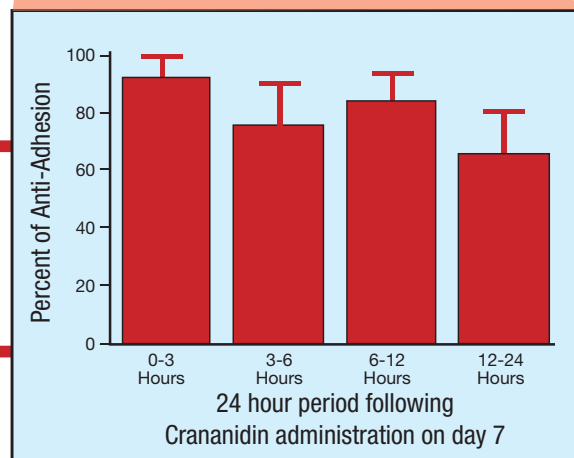
Bioactivity = anti-adhesion<sup>4,5</sup>



*By day 7, the average bioactivity of the urine is over 78% at inhibiting E. coli*

\* Mean 24 hour anti-adhesion activity with once daily oral Crananidin™ administration

*Once daily administration provides anti-adhesion activity throughout the entire day*



## Crananidin supports urinary tract health

- ▶ Contains bioactive proanthocyanidins needed for anti-adhesion activity
- ▶ Concurrent use of Crananidin with antibiotic therapy may reduce *E. coli* bacterial counts in the urine
  - *E. coli* is the most common urinary tract pathogen
  - *E. coli* strains are becoming increasingly resistant to antibiotics
- ▶ Works as an additional modality for managing recurrent *E. coli* urinary tract infections
- ▶ Helps to diminish adherence of *E. coli* bacteria associated with the use of urinary catheters
- ▶ Convenient, once daily administration of palatable, chewable tablets

# CRANANIDIN™

**SUPPORTS URINARY TRACT HEALTH**

Other products may contain cranberry extract, but they do not contain bioactive proanthocyanidins (PACs) and thus fail to inhibit the adhesion of uropathogenic *E. coli* fimbriae to the bladder wall.

**Only Crananidin contains bioactive PACs which exhibit anti-adhesion activity!**

PRODUCT	Labeled PAC's/tablet	Bioactivity of whole product <sup>4,5</sup>	PASS/FAIL
<b>Ideal Results</b>		≤15	✓
CRANANIDIN™	16	7.5	✓
CRANVET™ Tablet	12	no activity	✗
Pala-Tech™ Cranberry Plus	NA	30	✗
Pala-Tech™ Cranberry Plus Granules	NA	60	✗
Cranberry Rx Vitamins®	NA	no activity	✗
NaturVet® Cranberry Relief™	NA	no activity	✗

NA - not available on label  
 CRANVET™ is a trademark of Phenolics, LLC  
 Pala-Tech™ is a trademark of Pala-Tech Laboratories, Inc.  
 RxVitamins® is a registered trademark of RxVitamins Inc.  
 NaturVet® is a registered trademark of Garmon Corporation

**PASS**  
 Exhibit sufficient anti-adhesion activity

**FAIL**  
 Did not show sufficient anti-adhesion activity

To order, contact your authorized Crananidin distributor, or call Nutramax Laboratories, Inc. at 888-886-6442. Visit [crananidin.com](http://crananidin.com) for more information.

**Administration as a supplement for dogs:**

DOG'S WEIGHT (pounds)	TABLETS/DAY
Under 10	1/4
10-19	1/2
20-39	1
40-59	1 1/2
60-79	2
80-100	2 1/2



REFERENCES:

- Liu Y, Black MA, Caron L, et al. *Biotechnology and Bioengineering* 2006;93(2):287-305.
- Howell A. *Molecular Nutrition and Food Research* 2007;51:732-737.
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- Foo LY, Lu Y, Howell AB, et al. *Phytochemistry* 2000;54(2):173-181.
- Data on file. Nutramax Laboratories, Inc., Edgewood, MD 21040, USA 2009.



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