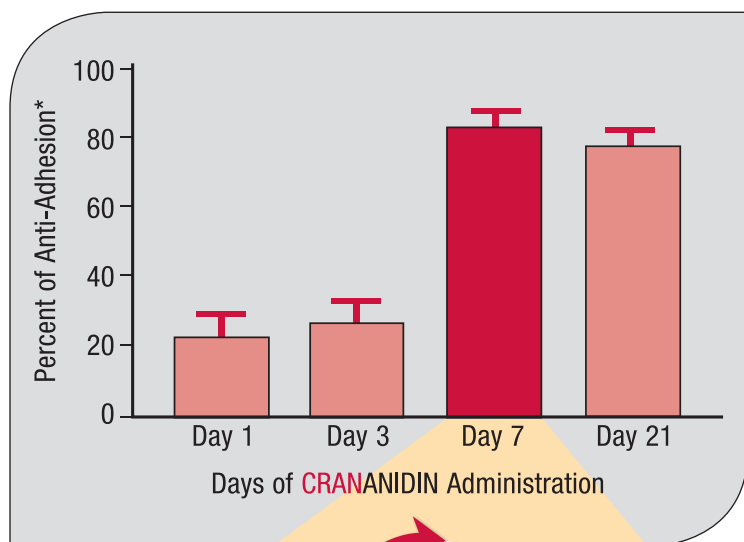




CRANANIDIN, RIGHT ON TARGET WITH: RESEARCH

Researched for bioactivity in dogs
Bioactivity = anti-adhesion^{4,5}

By day 7, the average bioactivity of the urine reaches preferred levels to inhibit *E. coli* adhesion.



CRANANIDIN helps to support urinary tract health

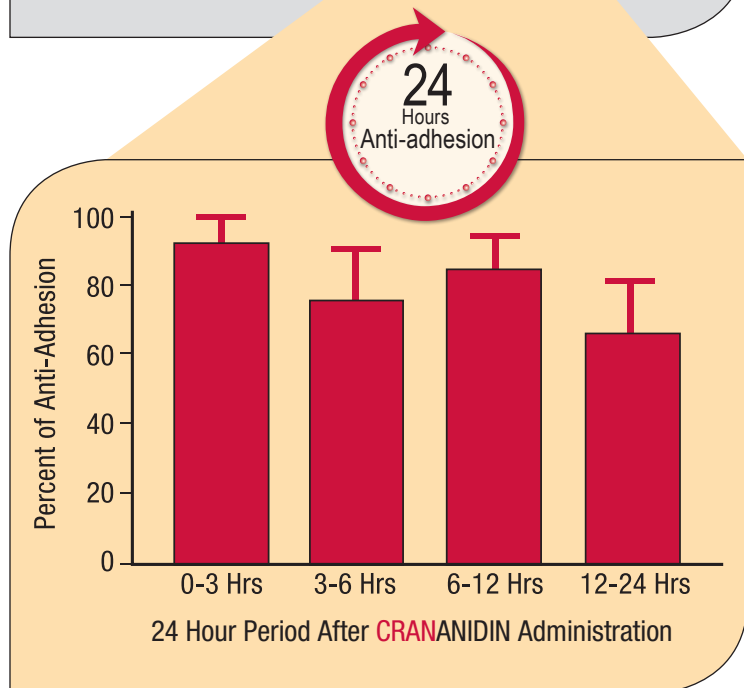
- Concurrent use of CRANANIDIN PACs with antibiotic therapy may reduce *E. coli* bacterial counts in the urine.

- *E. coli* is the most common urinary tract pathogen and is becoming increasingly resistant to antibiotics.

- PACs help to diminish adherence of *E. coli* bacteria associated with the use of urinary catheters.

- PACs have also been shown *in vitro* to inhibit invasion of canine kidney epithelial cells by not just two strains of *E. coli*, but also a strain of *Enterococcus faecalis* and *Pseudomonas aeruginosa*.⁶

- No known interaction with any medications or other nutritional supplements.



Once-a-day administration provides anti-adhesion activity throughout the entire day.

*Mean 24 hour anti-adhesion activity with once-a-day oral CRANANIDIN administration.

CRANANIDIN[®]

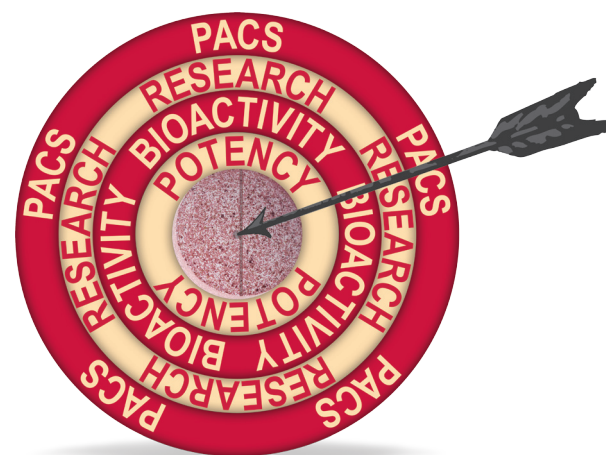
URINARY TRACT HEALTH SUPPLEMENT

- Shown to have more potent PACs than other cranberry products.
- Works as an additional modality for supporting urinary tract health.
- May have activity against other organisms in addition to *E. coli*.
- Once-a-day, easy to administer, palatable tablets.



Available in 21 & 75 count cartons.

STAY ON TARGET WITH CRANANIDIN!



ADMINISTRATION as a supplement for dogs:

DOG'S WEIGHT (pounds)	TABLETS PER DAY
Under 10	¼
10-19	½
20-39	1
40-59	1½
60-79	2
80-100	2½

Recommended to be given at bed time.

1. Liu Y, Black MA, Caron L, et al. *Biotechnology and Bioengineering* 2006;93(2):287-305.
 2. Howell A. *Molecular Nutrition and Food Research* 2007;51:732-737.
 3. Howell A, Reed JG, Krueger CG, et al. *Phytochemistry* 2005;66(18):2281-2291.
 4. Foo LY, Lu Y, Howell AB, et al. *Phytochemistry* 2000;54(2):173-181.
 5. Howell AB, Griffin DJ, Whalen MO. *J Vet Intern Med* 2010;24(3):678.
 6. Tufenkji N, Rifai OJ, Harmidy K, et al. *Food Research International* 2010;43:922-924.

CRANANIDIN.com

To order, contact your authorized CRANANIDIN distributor, or call Nutramax Laboratories Veterinary Sciences, Inc. at 1-888-886-6442.

Ask for our CRANANIDIN Client Brochures!

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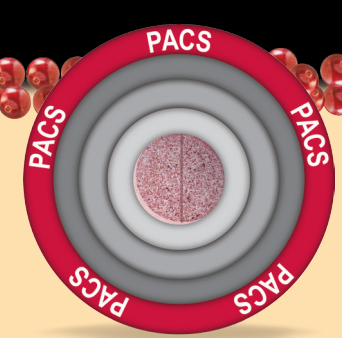
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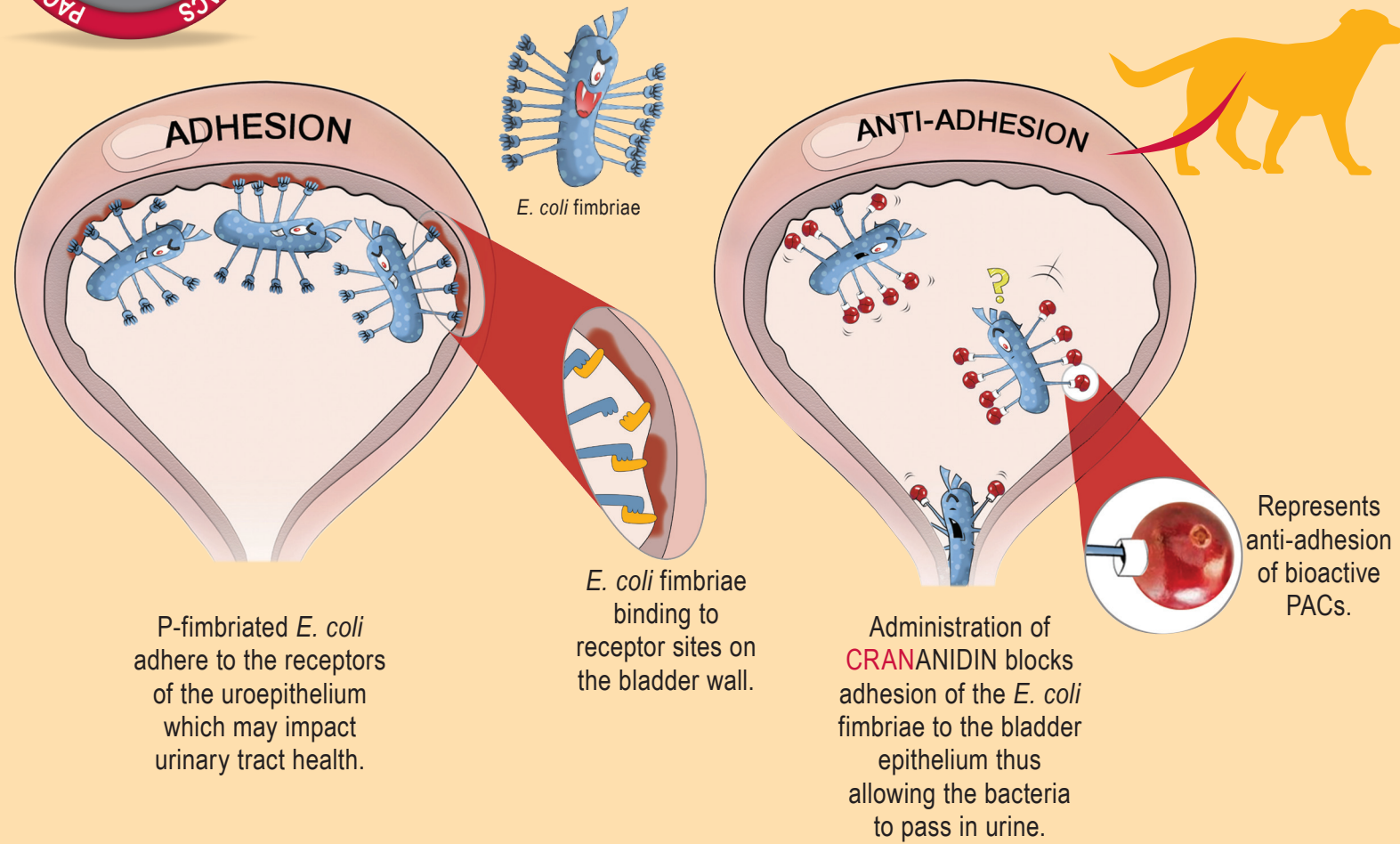
CRANANIDIN[®]

Helps to support urinary tract health in dogs!





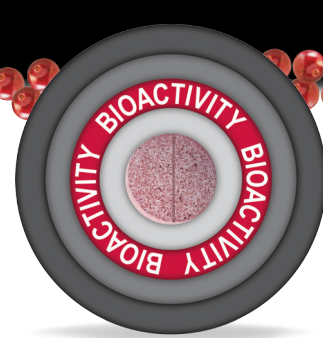
CRANANIDIN, RIGHT ON TARGET WITH: PACs



IT'S THE PACs, NOT THE pH.

It was once believed, and is still a common misconception, that cranberries support urinary tract health by acidifying the urine.

- **Proanthocyanidins**, or PACs, are the bioactive compound found in the North American cranberry, *Vaccinium macrocarpon*.
- **Mechanisms of action of bioactive PACs in CRANANIDIN:**
 - Decrease adhesion capabilities of the *E. coli* bacterium to the bladder wall by:
 - Causing structural changes to the surface fimbriae of *E. coli*.¹
 - Competitively inhibiting *E. coli* from binding to bladder wall receptor sites by acting as receptor analogs.²
 - PACs from cranberries have a unique "type A" molecular linkage, *not found in other fruits*, which contributes to their anti-adhesion activity.³



CRANANIDIN, RIGHT ON TARGET WITH: BIOACTIVITY

The testing for bioactivity of **PACs in whole cranberry products** was performed with *in vitro* dilution tests[^] in 2009 and 2012.

	CRANANIDIN[®]	Pala-Tech [™] Cranberry Plus Chewables	Pala-Tech [™] Cranberry Plus Granules	Cranberry Rx Vitamins [®]	NaturVet [®] Cranberry Relief [®]	Paxon [®] (2 samples) [†]	CranMate [®] (2 samples) [†]
2012 <i>in vitro</i>	BIOACTIVE	NO BIOACTIVITY	NO BIOACTIVITY	NO BIOACTIVITY	NO BIOACTIVITY	NO BIOACTIVITY	NO BIOACTIVITY
2009 <i>in vitro</i>	BIOACTIVE	LOW BIOACTIVITY	LOW BIOACTIVITY	NO BIOACTIVITY	NO BIOACTIVITY	N/A*	N/A*

Pala-Tech[™] is a trademark of Pala-Tech Laboratories, Inc. // Rx Vitamins[®] is a registered trademark of Rx Vitamins, Inc. // NaturVet[®] Cranberry Relief[®] is a registered trademark of Garmon Corporation. // Paxon[®] is a registered trademark of Vetoquinol N-A, Inc. // CranMate[®] is a registered trademark of Pegasus Laboratories, Inc.

A bioactivity score of ≤15 mg/mL indicates a product has effective anti-adhesion activity.[^]

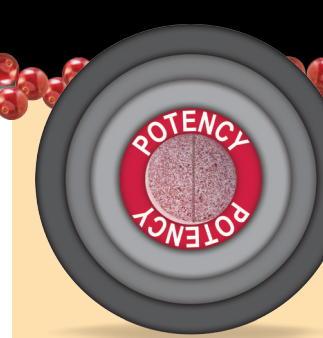
- Other products may contain a cranberry extract, but they may not contain bioactive proanthocyanidins (PACs) and thus fail to inhibit the adhesion of uropathogenic *E. coli* fimbriae to the bladder wall.

Bioactive PACs in CRANANIDIN = EFFECTIVE anti-adhesion

[^]Whole product, data on file.

[†]Two samples from one lot were tested.

*Products were not available in 2009.



CRANANIDIN, RIGHT ON TARGET WITH: POTENCY

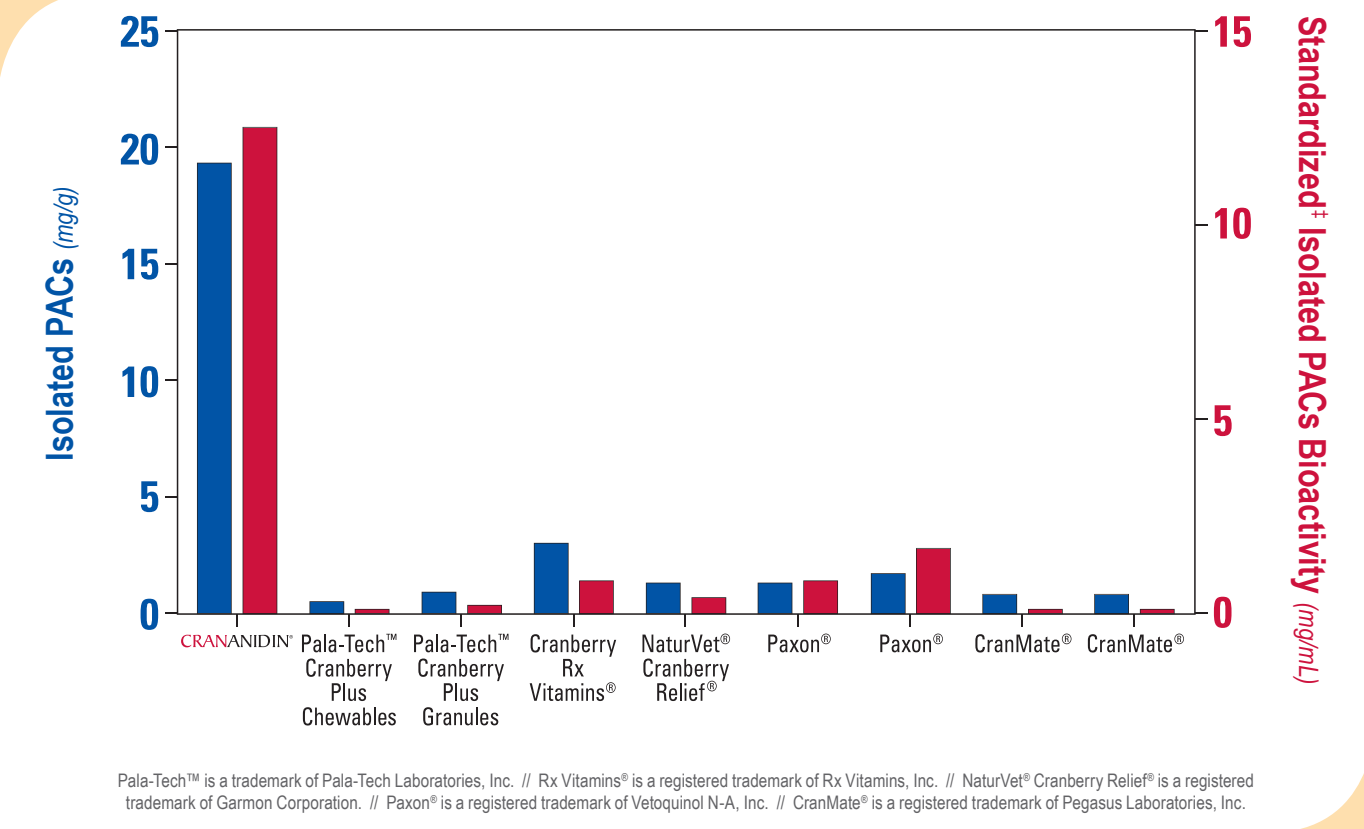
In the same 2012 test, **PACs were isolated from the whole product** and measured for their levels and bioactivity. This was done to ensure that nothing in the whole product was interfering with the bioactivity of those PACs.

Isolated PACs

■ (mg/g)
PAC content of each product.

Standardized[‡] Isolated PACs Bioactivity

■ (mg/mL)
Bioactivity of the isolated PACs of each product.



CRANANIDIN has *significantly* more isolated **AND** bioactive PACs than other products.

Higher count of PACs + Enhanced Bioactivity = GREATER POTENCY

[‡]Standardized to 0.5 mg/mL