

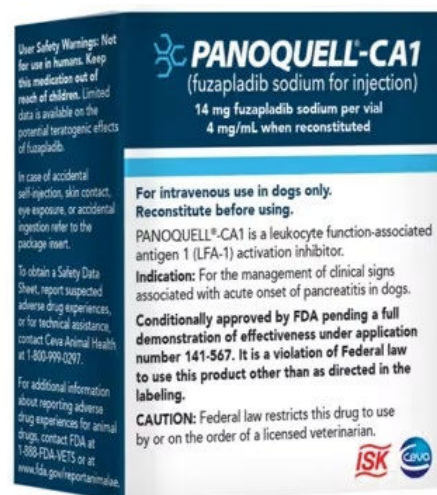
# A Closer Look at Panoquell-CA1 in Dogs



By Megan Whelan, DVM, DACVECC, CVA  
Service Co-Director  
angell.org/emergency  
emergency@angell.org  
617-522-7282  
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Acute pancreatitis (AP) is a common but often challenging disease to treat in our canine patients due to the variability in the severity of the disease and the response to treatment. In the past, the mainstay of treatment has been supportive care (intravenous fluids, anti-emetics, dietary changes).

The etiology and pathogenesis of spontaneous pancreatitis are poorly understood in humans and dogs.<sup>1</sup> Often, in dogs, the cause of pancreatitis is thought to be idiopathic. Spontaneous disease is likely far more complex and dependent on multiple genetic and environmental factors, some of which might be unknown.<sup>1</sup> Potential risk factors in dogs are divided into categories in Cridge et al.'s paper (table below).<sup>1</sup>



**TABLE 1.** Suggested risk factors for pancreatitis in dogs<sup>1</sup>

Category	Potential risk factor
<b>Dietary factors</b>	High-fat diet
	Ingestion of unusual food items
	Ingestion of table scraps
	Ingestion of trash
<b>Drugs/toxins</b>	L-asparaginase

**Category****Potential risk factor**

Phenobarbital and potassium bromide<sup>a</sup>

Azathioprine

Potentiated sulfonamides

Organophosphates

Corticosteroids<sup>b</sup>

Furosemide

Atovaquone/proguanil (Malarone)

N-methyl-glucamine (Meglumine)<sup>b</sup>

Clomipramine

Zinc

**Endocrinopathies**

Hyperadrenocorticism<sup>a</sup>

Hypothyroidism<sup>a</sup>

Diabetes mellitus<sup>ac</sup>

**Hereditary/breed predispositions**

SPINK 1 mutation<sup>b</sup>

Acute: Terrier breeds, miniature poodles, dachshunds, cocker spaniels, Alaskan malamute, laika, miniature schnauzer

Chronic: Cavalier King Charles spaniel, collies, boxers

Category	Potential risk factor
Lipid disorders	Hypertriglyceridemia
Miscellaneous	Babesiosis
	Canine monocytic ehrlichiosis
	Schistosomiasis ( <i>Heterobilharzia americana</i> )
	Honeybee envenomation
	Organic acidemias
	Immunoglobulin G4-related disease
	Increasing age
	Obesity/overweight status
	Neutered status
	Previous surgery
	Hepatitis/cholangitis

- *Note:* Potential risk factors for AP in dogs. Many of these factors are implied by a temporal association alone, and causation has not been established for many of these factors. Additionally, various definitions and indicators of AP were utilized in the referenced studies, and clinical signs of AP were not always noted. Thus, some of these risk factors might represent risk factors for subclinical pancreatic injury rather than primary clinical AP. The relationship between the proposed risk factors and pancreatitis is often



challenging to determine clinically, and for some risk factors, the direction of causation cannot be determined.

- <sup>a</sup> May be due to secondary lipid abnormalities.
- <sup>b</sup> Contradictory evidence exists.
- <sup>c</sup> Reverse direction of causation has been suggested.

Cridge et al. discuss the balance between stressors and protective mechanisms determining clinical evidence of acute pancreatitis.

Panoquell-CA1 (fuzapladib sodium) is the first and only drug conditionally approved in the U.S.<sup>3</sup> to treat acute canine pancreatitis. It is a leukocyte function-associated antigen 1 (LFA-1) activation inhibitor that is given to block the specific pathway of inflammation associated with acute pancreatitis.<sup>3</sup>

The drug is given IV at a dose of 0.4 mg/kg once daily for three days. The product comes in two vials. One vial contains 14 mg of fuzapladib sodium, 52.5 mg of mannitol, and 21 mg of

tromethamine as a sterile lyophilized powder. The second vial of 3.9 ml sterile diluent (bacteriostatic water for injection), containing 1.8% w/v benzyl alcohol, is for reconstituting the sterile lyophilized powder before use. No other diluent should be used, and only 3.5 mL is needed for the reconstitution.<sup>4</sup> The resulting concentration is 4 mg/ml and given in a bolus injection over 15 seconds to a minute. The product is good for 28 days once reconstituted and refrigerated.

Panoquell-CA1 is a highly protein-bound drug, and caution should be used with other highly protein-bound drugs (NSAIDs, anti-emetics, antibiotics, diuretics, behavior modifying medications).<sup>5</sup> The safe use of Panoquell-CA1 has not been evaluated in dogs with cardiac disease, hepatic failure, renal impairment, pregnant, lactating, or breeding dogs, or less than six months of age.<sup>3</sup>

Neutrophils and macrophages are key in local and SIR (systemic inflammatory response) in acute pancreatitis.<sup>1</sup> Neutrophils within the capillaries enter pancreatic tissue by adhering when LFA-1 binds to ICAM-1, resulting in tissue inflammation. Panoquell-CA1 blocks LFA-1 and the process of neutrophils entering the tissue.<sup>1</sup>

The cost of one 3.5 ml vial of Panoquell-CA1 in our hospital is a few hundred dollars. This is relatively inexpensive if it decreases the length of hospital stay.

Possible side effects include anorexia, digestive tract disorders, respiratory tract disorders, hepatopathy, and jaundice. Swelling and bruising may occur at the injection site.<sup>5</sup>

Panoquell-CA1 has been approved in Japan since 2018 for treating acute pancreatitis in dogs. This drug received temporary approval on November 15, 2022, and must meet the requirements for full approval



within five years. This paper includes the freedom of information summary application<sup>4</sup>, which describes the pilot field study that concluded that the drug is safe and has a reasonable expectation of effectiveness when used according to the labeling.<sup>4</sup> On day three of the study, the clinical scores (activity, appetite, vomiting, etc.) in the treatment group were improved compared to those of the control group.

Panoquell-CA1 is still in the initial stages of its clinical use. The drug has been used in a few cases at Angell Animal Medical Center. Further research must be conducted to determine its efficacy and when it is best to administer the medication during the disease process. A multicenter clinical trial in spontaneous pancreatitis in dogs is ongoing in the United States.<sup>1</sup>

## References

1. Cridge, H et al. New Insights into the etiology, risk factors, and pathogenesis of pancreatitis in dogs: Potential impacts on clinical practice. *J Vet Intern Med* 36: 847-864, 2022.
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