

ACCES for Pet Health

<http://blog.seattlepi.com/accesforpethealth/archives/222410.asp>

NSAIDs: Good vs Evil

By Dr. Beth Guerra

When injury to tissues occurs, several pathways are activated that serve to propagate the inflammatory pathway. The fatty cell membranes (phospholipids) are broken down to provide inflammatory mediators such as prostaglandins and leukotrienes. Vessels dilate, smooth muscles constrict, and platelets are activated to form a clot. Disrupted nerve pathways send signals to the brain that are perceived as pain. In addition, prostaglandins also work in tandem with other mediators to heighten pain perception. Prostaglandins are also continuously produced in the body and provide protective mechanisms for the GI tract and kidneys. They help augment the barrier on the inside lining of the intestines, which prevents ulceration and subsequent introduction of bacteria into the bloodstream. They also promote blood flow through the kidneys and preserve the filtration ability.

Non-steroidal anti-inflammatory drugs (NSAIDs) work to block the formation of these mediators through inhibition of the COX 1, COX2, and COX 3 enzymes. Whether used pre-operatively or after trauma to the tissue has occurred, the major goal is reduction of pain and inflammation. However, blocking this pathway also reduces these crucial prostaglandins and other substances, which can lead to GI ulcers, reduction in kidney function, and decreased effectiveness of platelets. Much research has been done in both human and veterinary medicine to produce selective NSAIDs that target the inflammatory mediators but don't affect the production of the crucial prostaglandins. NSAIDs should never be combined as these potentially deleterious side effects can be amplified. In addition, NSAIDs should never be combined with steroids (such as prednisone) due to a greatly increased potential for GI ulceration and bleeding. When changing NSAIDs, or switching from this medication to a steroid, a 'washout' period of several days is needed between medications to allow for clearance of the drug.

There are several veterinary approved NSAIDs available that can be used to manage a wide variety of painful conditions, including osteoarthritis, post-operative pain, wound or fracture pain, chronic inflammatory disease, or cancer pain. Commonly used medications include Rimadyl, Deramax, Etogesic, and Metacam. These are veterinary formulations and can be obtained through your veterinarian. Several contra-indications for usage exist, including pre-existing kidney or liver disease, bleeding disorders, or certain types of heart failure, therefore, a full physical exam and bloodwork are usually recommended before starting any NSAID. Many of these drugs are metabolized by the liver, so monitoring of liver values if a pet is on these medications long-term becomes crucial. All NSAIDs can have mild gastrointestinal side effects, however, if any of these major side effects occur, your pet could experience vomiting (with or without blood), inappetence, abdominal pain, or dark, tarry stools known as melena.

Over the counter NSAIDs, such as acetaminophen, ibuprofen, and aspirin, have been used in veterinary medicine but are considered off-label and should be used with caution. Cats and dogs are much more sensitive to NSAIDs than humans, due to greater GI absorption and higher drug concentrations in the blood. Cats should never be given acetaminophen as they metabolize the drug into a substance that leads to liver damage and destruction of red blood cells. Dogs can develop liver damage as well. Ibuprofen and aspirin can affect platelet function, cause gastric ulceration and liver or kidney disease. Before considering any of these medications, please contact your veterinarian. If your pet has gotten into any of these medications, please contact your veterinarian or ASPCA Poison Control at 1-800-548-2423.

Posted by [Christina Ryan](#) at September 23, 2010 12:54 p.m.

[Return to NSAIDs: Good vs Evil](#)