

INFLAMMATION

The root cause of canine diseases.

What is inflammation? It is an evolutionarily conserved process that forms part of the body's innate immune system. When the body perceives an internal threat like pathogens, injury or harmful toxins, the immune system is activated to localize and remove the threat through the synthesis of specific inflammatory compounds. This initiates the healing process¹.

In a normal inflammatory response, the production of inflammatory compounds, and the uncomfortable symptoms of inflammation, cease once the perceived threat has been disarmed. However, there are specific factors that may impair the body's ability to deactivate this acute inflammatory response. This causes ongoing, low-level inflammation in the body.

This shift from short to long-term inflammation causes the threat perception signaling to become overactive. A vicious cycle ensues that involves

overstimulation of the immune system, breakdown of the body's immune tolerance and high susceptibility to downstream diseases.

In fact, it is becoming an increasingly popular notion that chronic inflammation is the root cause of all known diseases. In humans, research is revealing that certain cancers, diabetes, cardiovascular disease, chronic kidney disease and many neurodegenerative diseases are all the result of an underlying chronic inflammatory state.

Inflammation in dogs

Our canine companions share our immediate environment, lifestyle and largely our diet. They are also often exposed to the same immunity threats and inflammation symptoms as we are. Sadly, because they cannot communicate their specific discomfort, inflammation in dogs often goes unnoticed until specific downstream disease symptoms are diagnosed.

Words: **Kari du Plessis (PhD):**

Biotechnology for Wagawhey

Here are some of the common ailments linked to chronic inflammation in dogs:

- **Skin irritations:** Canine Atopic Dermatitis (cAD), a pruritic, inflamed and irritated skin ailment is a chronic inflammatory skin disease associated with a dysregulated immune response. Symptoms are exacerbated by allergies, airborne irritants, secondary yeast or fungal infections and dietary allergies.
- **Upset stomach:** Inflammatory bowel disease (IBD) is characterized by a wide range of symptoms, including vomiting, diarrhea, weight loss, lethargy, loss of appetite and abdominal discomfort. It is caused by the accumulation of inflammatory cells in the lining of the stomach and small and/or large intestines, resulting in gastrointestinal inflammation.
- **Cancer:** The most common cause of death in dogs. Inflammatory cells that form part of the immune system, produce reactive oxygen species (ROS) that can damage the DNA of healthy cells, inducing mutations that can ultimately cause cancer.
- **Joint pain:** Osteoarthritis is a progressive inflammatory disease that alters the structure of joints, thereby decreasing flexibility and causing pain during movement.

**Managing canine inflammation:
Where to start?**

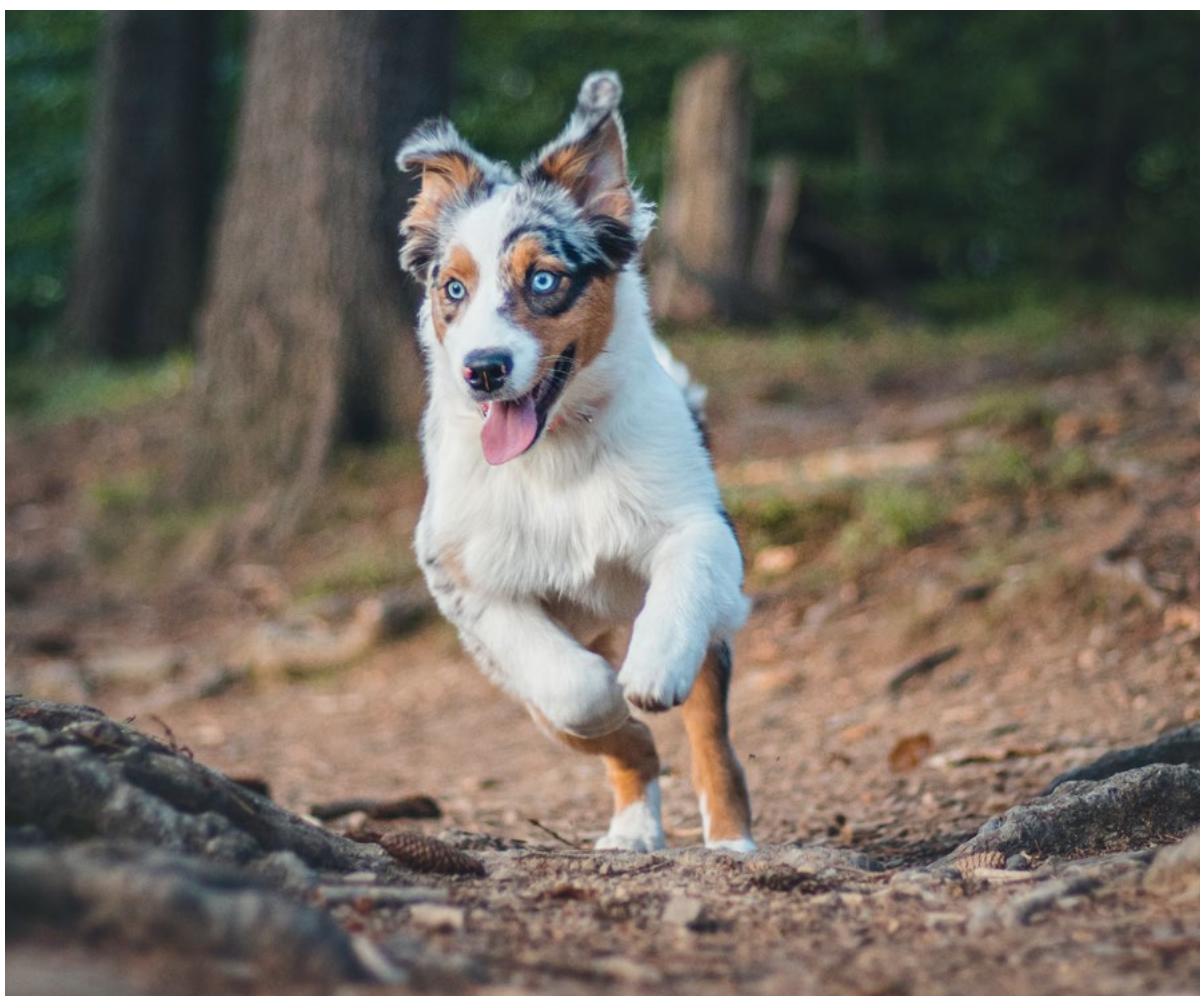
Although anti-inflammatory medications are effective at treating inflammation and its symptoms, it is not a safe, sustainable solution long-term. More holistic approaches to treating systemic inflammation are coming to the forefront through research focused on emerging natural therapies.

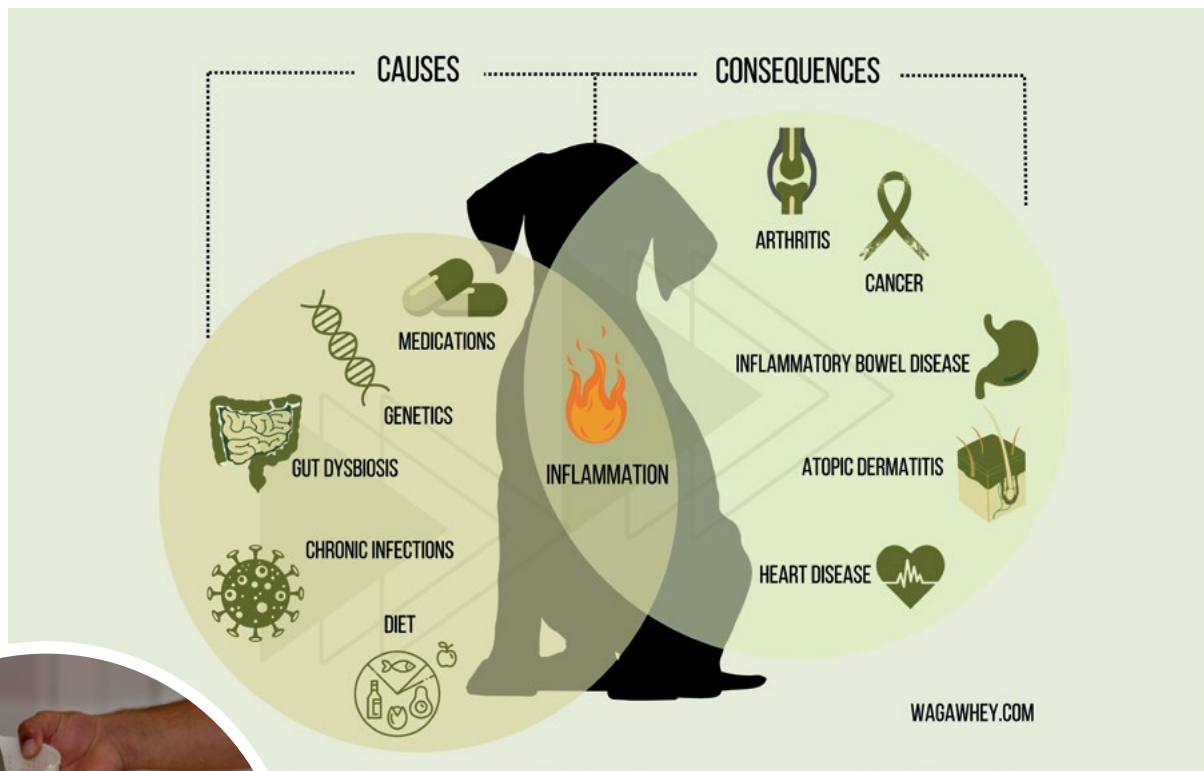
**Gut Health and Inflammation:
The chicken and the egg**

The role that the gut microbiome plays in overall health has come into focus over the past decade.

The gut microbiome is the collection of millions of microorganisms that are present in the gut. It communicates the body's health status to the brain which brings about the synthesis of appropriate compounds to remedy any threats to the immune system. Therefore, it is not surprising that the link between gut dysbiosis and inflammation can be a double-edged sword in disease prevention and treatment of humans and their canine companions.

Firstly, gut dysbiosis can cause dysregulation of immune signaling, causing inflammation, that in turn leads to a range of diseases, as previously discussed. Secondly, inflammation further disrupts





“Lactoserum has its own microbiome that can act as a probiotic for dogs.”

the gut microbiome which causes further gut dysbiosis. Although this chicken-and-egg conundrum remains unresolved, the downstream health repercussions are becoming clear.

For example, the skin ailment, cAD, is the result of a dysregulated immune response that causes inflammation. It has also been found that the gut microbiome of dogs suffering from cAD is altered compared to healthy dogs. Because gut dysbiosis, caused by inflammation, impairs the functionality of the gut-brain axis communication network, immune responses to remedy the state of inflammation are also affected.

Remarkably, fecal transplants from healthy dogs were effective at healing cAD and the inflammatory state by restructuring and healing the gut microbiome profile of dogs with cAD.

These findings propose that some diseases could potentially be effectively treated through gut health intervention alone. Therefore, a healthy gut microbiome should be considered a crucial part of our dogs’ immune system in the management of inflammation.

Antioxidants as anti-inflammatories

As part of the immune system, free radicals like reactive oxygen species (ROS) are compounds that

can fight harmful bacteria and infections. Conversely, antioxidant compounds have the capacity to quench the potentially harmful effects on normal cells.

Oxidative homeostasis is the sensitive balance between free radicals and antioxidants.

This balance can be compromised, either through excessive production of free radicals or depleted antioxidant levels. This leads to higher levels of inflammation with countless downstream health repercussions.

Therefore, a diet rich in antioxidants or antioxidant supplementation can be highly beneficial to maintaining oxidative homeostasis and managing inflammation levels holistically.

The anti-inflammatory superpowers of Lactoserum

What is Lactoserum?

Lactoserum is the new kid on the block when it comes to preventing and treating inflammation, naturally. It has the potential to act as a complete nutraceutical, with gut-supporting properties and anti-inflammatory capabilities.

In truth, lactoserum is not a new product at all! It has been used for its health and beauty benefits for centuries, although the scientific foundation for its properties was not understood at the time.

In the cheese-making process, it is a natural by-

product from when the curds are separated, leaving the rich bioactive peptides to drain in the form of whey. In more recent years, whey protein has become a household name in its more popular form, however, in its more natural state, lactoserum is of particular interest because of its unique protein content that includes a range of bioactive peptides and enzymes with remarkable health benefits.

Lactoserum as a potential gut health therapeutic. Lactoserum has its own microbiome that can act as a probiotic for dogs. Furthermore, lactose, the main carbohydrate in lactoserum, is an important prebiotic that serves as a nutrient source for the beneficial microbial strains in the gut.

It is, however, its unique range of bioactive peptides that uniquely support the gut in several interconnected ways.

Some of these peptides act as natural antibiotics. For example, Immunoglobulins (Igs) specifically, act as natural antibiotics by binding the toxins produced by harmful gut bacteria. This alleviates the symptoms of infections like diarrhea and dehydration without traditional antibiotics.

Another example, lactoferrin, is not only another prebiotic, but it helps shift iron availability to benefit positive gut bacteria, thereby also shifting the microbiome to a more positive microbial ratio.

By effectively supporting the functioning and ratios of the gut microbiome, the communication network via the gut-brain axis is able to more effectively regulate the immune system and maintain healthy levels of inflammation.

Lactoserum supports oxidative homeostasis. Amino acids are the building blocks of proteins and some can support antioxidant activity in the body. More specifically, cysteine is a key rate-limiting precursor to the production of Glutathione (GSH) which is one of the most important role players in maintaining oxidative homeostasis.

Cysteine is present in high concentrations in lactoserum and research has shown that treatment with hydrolyzed lactoserum peptides could increase GSH levels by more than 60%, thereby dramatically increasing antioxidant activity.

Lactoserum also contains lactoferrin which inhibits the production of pro-inflammatory cytokines¹³. Furthermore, Igs have the ability to bind viruses and bacteria, aiding in their destruction during an infection. These Igs comprise up to 15% of the components of lactoserum.

Given the availability of these and many other potent antioxidants in lactoserum, it can be utilised as an effective anti-inflammatory that can promote gut health and prevent downstream diseases, naturally.



INFLAMMATION

Wagawhey: An all-natural inflammation-fighting super serum

Wagawhey is a 100% naturally derived lactoserum powder containing all the enzymatic goodness to support your dog's gut and immune system.

From the initial stages of the cheese-making process, Wagawhey ensures the integrity and stability of the renneting process to enhance the bioavailability of the enzymes in the lactoserum. Through this unique addition, the beneficial compounds are more readily absorbed by your dog's digestive tract.

The natural hydrolysis of the original whey protein is followed by dehydration for ease of use as a powder. The addition of clean, cool water activates the anti-inflammatory, prebiotic, and immune support superpowers of lactoserum for your dogs.

Take home message

A poor diet, infections, specific medications and

even genetics can be the cause of chronic systemic inflammation in our canine companions. This level of inflammation is the root cause of many ailments our dogs suffer from. Some of these include skin irritations, joint pain, certain cancer and stomach upsets.

A healthy gut microbiome and oxidative homeostasis lie at the foundation of an effective immune system and the maintenance of healthy levels of inflammation. Therefore, the potential of supplements that support gut health and antioxidant levels should not be overlooked.

Lactoserum, commonly known as whey, naturally contains a range of bioactive peptides and enzymes that can dramatically improve your dog's gut microbiome and provide your dog with anti-inflammatory compounds, naturally.

Wagawhey is an all-natural lactoserum powder that contains gentle, but powerful bioactive enzymes that support canine gut health and immunity.

Find out more: www.wagawhey.com ↙



“Wagawhey is a 100% naturally derived lactoserum powder containing all the enzymatic goodness to support your dog's gut and immune system.”

