Multi-Drug Resistance Gene (MDR1)

Description:

Multi-Drug Resistance Gene (MDR) codes for a protein that is responsible for protecting the brain by transporting potentially harmful chemicals away. In certain breeds, a mutation occurs in the MDR1 gene that causes sensitivity to Ivermectin, Loperamide, and a number of other common drugs. Dogs with this mutation have a defect in the P-glycoprotein that is normally responsible for transporting certain drugs out of the brain. The defective protein inhibits the dog's ability to remove certain drugs from the brain, leading to a buildup of these toxins. As a result of the accumulation of toxins, the dog can show neurological symptoms, such as seizures, ataxia, or even death.

Dogs that are homozygous for the MDR1 gene (meaning that they have two copies of the mutation) will display a sensitivity to Ivermectin and other similar drugs. These dogs will also always pass one copy of the mutation to all potential offspring. Dogs that are heterozygous (meaning they have only one copy of the mutation) can still react to these drugs at higher doses. Also, there is a 50% chance that a dog with one copy of the mutation will pass it on to any offspring.

There are many different types of drugs that have been reported to cause problems. The following is a list of some of the drugs:

- Ivermectin (found in heartworm medications)
- Loperamide (Imodium over the counter antidiarrheal agent)
- Doxorubicin
- Vincristine
- Vinblastine (anticancer agents)
- Cyclosporin (immunosuppressive agent)
- Digoxin (heart drug)
- Acepromazine (tranquiliser)
- Butorphanol ("Bute" pain control)

The following drugs may also cause problems:

- Ondansetron
- Domperidone
- Paclitaxel
- Mitoxantrone
- Etoposide
- Rifampicin
- Quinidine
- Morphine

This Test Is Relevant For the Following Breeds:

- Australian Shepherd
- Collie
- Longhaired Whippet
- Old English Sheepdog
- Silken Windhound
- Smooth Collie
- Bobtail
- Border collie
- English Shepherd
- McNab Shepherd (McNab Border Collie)
- Shetland Sheepdog (Sheltie)
- Rough Collie
- German Shepherd
- American White Shepherd

Why Do You Need to Be Aware?

Since your puppy's ancestry involves an Australian Shepherd, it's possible that your puppy carried this mutation from her mother/father. If in the event your puppy ever needs any of the medications listed above, please confirm with your veterinarian that they are safe with your puppy.

https://www.animalgenetics.us/Canine/Genetic_Disease/MDR1.asp