



Multidrug Resistance 1 DNA Test

Case Number: 144368

Owner: Ashley Hubbard
1611 Tenth Ave SE
Puyallup WA 98372

Canine Information

DNA ID Number: **192745**

Call Name: **Moxie Belle**

Sex: **Female**

Birthdate: **12/19/2019**

Breed: **German Shepherd Dog**

Coat Color: **Red & Black**

Registered Name: **Moxie Belle Hubbard**

Registration Number: **DN60353501**

Microchip/Tattoo: **956000012536238**

Report Date: 6/24/2020

DNA Result: **Clear (no MDR1 mutation; 2 copies of the normal allele)**

These results are based on data obtained from analysis of unique DNA loci in accordance with the standards and protocols set forth by DDC Veterinary. The accuracy of the result is based on the information and the quality of samples provided by the client. DDC Veterinary does not assume responsibility of errors due to mislabeled or incorrectly sampled submissions.


Matt Shaunessy, Senior Scientist



This supplemental sheet can be used as a guide to help you understand your DNA Multidrug Resistance 1 (MDR1) results.

There are 3 possible genotypes reported **for Multidrug Resistance 1:**

- **CLEAR** (those having 2 copies of the normal allele and appear to be normal, not affected by MDR1).
- **CARRIER** (those having 1 copy of the normal allele and 1 copy of the mutation, increased risk of drug sensitivity).
- **AFFECTED** (those having 2 copies of the mutation and at risk for adverse drug reactions).

P-glycoprotein is a pump that removes certain drugs and toxins from the body. A mutation in the ABCB1 gene associated with MDR1 prohibits P-glycoprotein's ability to limit absorption, distribution, and excretion of drugs. Dogs with one copy of the MDR1 mutation can have some drug sensitivity. Dogs with two copies of this mutation can experience more serious neurologic symptoms like excess salivation, tremors, anorexia, blindness and possibly death. The following is a list of drugs known to cause reactions:

Acepromazine (tranquilizer), **butorphanol** (pain control), **doramectin**, **doxorubicin**, **emodepside**, **erythromycin**, **ivermectin** (found in heartworm medications), **loperamide** (anti-diarrheal agent), **milbemycin**, **moxidectin**, **paclitaxel**, **rifampin**, **selamectin**, **vinblastine** (anti-cancer agent), **vincristine and vinorelbine**

*You should inform your veterinarian if your dog is a MDR1-carrier or MDR1-affected so they can give your dog the adjusted dosage or an alternative medication. Other medications not listed may also cause a reaction.

Breeds, crosses and mixes of breeds that are more commonly affected by MDR1 are: **Australian Shepherd, Border Collie, Collie, English Shepherd, German Shepherd Dog, Longhaired Whippet, McNab Shepherd, Miniature Australian Shepherd, Old English Sheepdog, Shetland Sheepdog, Shiloh Shepherd, Wäller, White Shepherd Dog**