

**Result certificate #011809:**

**Detection of 230-234delATAG mutation in the MDR1 gene causing ivermectin (Ivomec) hypersensitivity in dogs by fragmentation analysis of PCR product**

**Sample**

Sample: 11-19105  
Name: Cinnamon Toast Crunch  
Breed: Miniature Australian Shepherd  
Reg. number: -  
Microchip: -  
Date of birth: 4-15-2010  
Sex: male  
Date received: 11.07.2011  
Sample type: buccal swab

**Customer**

Karen Kollmer

**Result: Mutation was not detected (N/N)**

**Explanation**

Mutation nt230(del4) in exon 4 of canine MDR1 gene was tested. This mutation causes a frame shift and formation of a stop codon during P-glycoprotein synthesis. P-glykoprotein, an ATP-dependent transporter of various substrates, is contained in cells lining the blood vessels in the brain. In P-glycoprotein defective animals, administering of ivermectin or similar drug can lead to elevated levels of drug in the CNS, resulting in potentially lethal neurotoxic reaction. These drugs include, but are not limited to: Acepromazine, Butorphanol, Doramectin, Doxorubicin, Ivermectin, Loperamide, Milbemycin, Moxidectin, Selamectin, Vinblastine, Vincristine.

MDR1 related drug hypersensitivity is inherited as an autosomal recessive trait. That means the defect affects dogs with P/P genotype only. The dogs with N/P genotype are considered carriers of the deletion (heterozygotes). The dogs with N/N genotype are not endangered with MDR1 related drug hypersensitivity. Multiple drug hypersensitivity based on MDR1 gene mutation was proved in following breeds: Rough Collie, Smooth Collie, Shetland Sheepdog, Australian Sheepdog, White Swiss Shepherd Dog, Wäller, Bobtail, Border Collie and others.

Method: SOP04, accredited method

Sensitivity (probability of correct identification of the defective form of the gene in heterozygous or mutated homozygous) is higher than 99%. Specificity (probability of correct identification of the normal form of the gene in a normal homozygous or heterozygous) is higher than 99%.

Report date: 15.07.2011

Responsible person: Mgr. Markéta Dajbychová, Deputy Laboratory Manager



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