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Result certificate #104158

Detection of c.227_230delATAG mutation in the MDR1 gene causing drug sensitivity in dogs

Sample
Sample: 18-00234
Name: Ululallaluna Lamu'
Breed: Shetland Sheepdog
Microchip: 380 260 100 501 822
Reg. number: DK14377/2017
Date of birth: 14.10.2016
Sex: female
Date received: 19.01.2018
Sample type: buccal swab

Customer
Pia Skøtt Hansen
Rejnstrupvej 2a
4250 Fuglebjerg
Denmark

Result: Mutation was not detected (N/N)

Explanation

Presence or absence of AF045016.1: c.227_230delATAG mutation in 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.

Mutation that causes MDR1 related drug hypersensitivity is inherited as an autosomal recessive trait. That means the defect affects dogs with P/P (positive / positive) genotype only. The dogs with N/P (negative / positive) genotype are considered carriers of the deletion (heterozygotes). The dogs with N/N genotype are not endangered with MDR1 related drug hypersenzitivity. 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: SOP171-MDR1, fragment analysis, accredited method

Report date: 29.01.2018
Responsible person: Mgr. Markéta Dajbychová, Deputy Laboratory Manager

verified and certified document
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