VETERINARY TECHNICAL DATASHEET

Hypocatalasia or Acatalasemia

Mutation Found In :Beagle

Disorder Type

- Metabolic

Disease Severity

- Moderate

Background

Hypocatalasia, the deficiency of catalase enzyme activity in red blood cells, has been studied in Beagles. The catalase enzyme plays an important role in the cellular defense against oxidative damage. The disorder has only been recognized in a laboratory colony of Beagles. The acatalasemia phenotype caught particular interest as an animal model of a human condition called Takahara's disease. The disorder is characterized by ulcers and progressive gangrene (tissue death) of the oral cavity. To our knowledge, the disorder is inherited as an autosomal trait, but the exact mode of inheritance is yet to be confirmed. Carriers may potentially show some degree of clinical signs.

Key Signs

- Progressive gangrene in the oral cavity

Clinical Description

The clinical signs of hypocatalasia in dogs have not been described properly in the literature but include progressive gangrene in the oral cavity. In the human condition, the severity of signs can vary remarkably. The erythrocytes of affected dogs show no signs of catalase activity.

Mode of Inheritance

- autosomal recessive

Gene Name

- CAT

Next Steps

Treatment is pain management, supportive care, and symptomatic depending on the severity of the dog's clinical signs.

References

Nakamura K, Watanabe M, Takanaka K, Sasaki Y, Ikeda T. cDNA cloning of mutant catalase in acatalasemic beagle dog: single nucleotide substitution leading to thermal-instability and enhanced proteolysis of mutant enzyme. Int J Biochem Cell Biol 32:1183-1193, 2000.