

Metita Sussadee 2014: Genotypic and Phenotypic Investigation of Progressive Retinal Atrophy in Dogs. Doctor of Philosophy (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Aree Thayananuphat, Ph.D. 112 pages.

Progressive retinal atrophy (PRA) is a group of inherited retinal disorders in domestic dogs. To evaluate outer retinal function, normal parameters of electroretinogram (ERG) was established from 56 normal eyes of four dog breeds, Poodle, Labrador Retriever, Thai Ridgeback and Thai Bangkaew. Phenotypic characterizations and genetic study of PRA in dogs were described. One form of PRA, progressive rod-cone degeneration (PRCD) was chosen for genetic testing in Poodles using the PCR-RFLP technique. In addition, the PRA suspected Thai Bangkaew dogs were screened with 4 candidate gene mutation; *PRCD*, *RPGR*, *RHO* and *CCDC66* genes. The normal ERG parameters some significant differences among dog breeds were reported. Genetic testing confirmed the *PRCD* gene mutation in suspected Poodles in Thailand. A prevalence of carriers in 50 Poodles and 58 Labrador Retrievers were 12% and 3.45% respectively while the allele frequency of mutant allele were 0.1 and 0.02 respectively. In suspected Thai Bangkaew dogs, the ophthalmoscopic and ERG alterations were compatible with retinal degeneration. The 4 candidate gene mutations were excluded as causes of this disease in this breed. The normal ERG parameters would be useful for evaluation of retinal diseases in dogs. As well as, the genetic testing to identify disease status before breeding should assist to avoid the transmission of affected allele to offspring.

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