

Academic Year: 2025-2026

Summary of the DVM thesis No 30671, Faculty of Veterinary Medicine, Urmia

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Title: Molecular detection and phylogenetic analysis of adenovirus types 1 and 2 in blood samples of stray dogs in Urmia county by PCR method.

Abstract

Canine Adenovirus (CAV) is a significant viral pathogen in dogs capable of causing infectious hepatitis as well as acute and chronic respiratory disorders. Given that stray dogs can serve as a reservoir and source of viral dissemination within urban and shelter populations, this study was conducted with the aim of molecular detection and phylogenetic analysis of CAV in shelter dogs in Urmia County, as well as evaluating the potential role of ectoparasites in its transmission cycle. In this cross-sectional study, blood samples were randomly collected from 100 stray dogs, and ticks attached to their bodies were gathered. Following DNA extraction, the detection of the adenovirus genome was performed using Real-Time PCR and melting curve analysis. Positive amplicons were subsequently subjected to nucleotide sequencing for final identification confirmation and phylogenetic analysis. The results indicated that 3% of the examined samples (3 cases) were infected with adenovirus. All positive cases were observed in puppies approximately six months of age exhibiting non-specific clinical signs, including lethargy and ocular discharge. Furthermore, the viral genome was identified in 50% of the isolated ticks (2 out of 4 samples); these ticks had fed directly on the same positive dogs, a concurrence demonstrating a close association between vector and host infection. Although the prevalence of the virus in the studied population was estimated to be low, the concentration of positive cases in the young age group highlights the specific susceptibility of puppies, likely attributable to relative immune insufficiency. Moreover, the direct correlation between tick infection and positive hosts reinforces the hypothesis regarding their role in the persistence or mechanical transmission of the virus. Accordingly, the implementation of coherent vaccination programs for puppies and ectoparasite control in shelters are recommended as key components of disease prevention and control strategies.

Keywords: Adenovirus, dog, Real time PCR, phylogenetic analysis.