

SUMMARY

Development of assays for the in vivo diagnosis of canine distemper virus (CDV) and characterization of the circulating strains in central Italy

General objectives

- Improve the efficiency of the diagnostic system for the diagnosis of distemper *in vivo* and provide diagnostic services that better meet the needs of veterinarians.
- To investigate the epidemiology of the infection also through the characterization of circulating viral strains.

Specific objectives

- Identification of rapid and sensitive methods for the diagnosis of distemper *in vivo*.
- Selection of the most suitable biological specimens to be collected from the animal *in vivo*.
- Study the histopathological pattern of CDV circulating strains.
- Genetic characterization of the circulating strains of CDV.
- Representation of the results obtained.

Methodology:

- Development of molecular assays for *in vivo* diagnosis of CDV and identification of suitable biological specimens for submission.
- Phylogenetic analysis of circulating viral strains.

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- Conduct a study on the correlation of histopathological lesions with the presence of the different strains detected in domestic and wild carnivores

Results:

The method described by Scagliarini et al. (2007) was found to be the most sensitive in the various conditions examined.

Analyzing in detail the results obtained with the molecular tests on the different biological specimens of the positive subjects, it was observed that with a positive outcome of the lung and /or brain (matrices used so far for the post mortem molecular diagnosis), there corresponds at least a positive outcome among the conjunctival, nasal or rectal swabs, specimens that can be easily sampled in the sick animals.

The strains identified confirm the co-circulation in central Italy of viruses belonging to the Europe wildlife and Arctic-like lineages, as already documented by Di Sabatino et al. (2016).

The presence of specific histological lesions could not be correlated to a given strain. This was due to the reduced number of positive samples available for histological and immunohistochemical examinations.

Discussion and conclusions:

The inclusion in the routine diagnostics of rapid and sensitive molecular tests such as PCR will improve the efficiency of *in vivo* diagnosis both for the purposes of vaccination and targeted treatments and for containing the spread of the infection.

The conjunctival, nasal or rectal swabs can be used for a rapid diagnosis of distemper *in vivo*, improving the effectiveness of the diagnostic system. Molecular tests can also be used for postmortem diagnosis of distemper, replacing direct immunofluorescence with an improvement in in

terms of speed and sensitivity.

It is desirable to continue with the activity of identifying and studying the strains circulating in central Italy to consolidate the results obtained and increase the information available.

The implementation of molecular tests, with the possibility of characterizing the circulating strains, will allow to acquire further elements on the possible association of histopathological lesions to specific viral strains.

Key words: Canine distemper virus, PCR, Central Italy