Identification of cestodes in veterinary diagnostics: evaluation of two PCR methods

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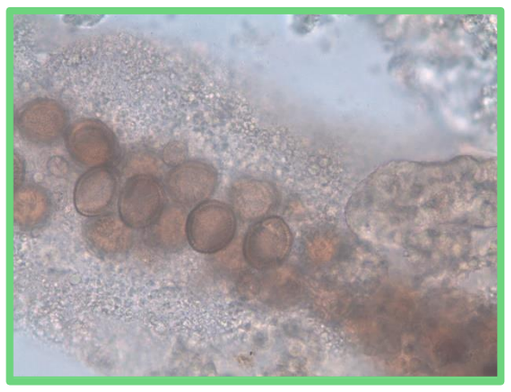
S. Sgubin[1], V. Cagnin[1], G. Da rold[1], E. Quaranta[1], G. Simonato[2], S. Pasqualotto[1], A. Zoroaster[1], E. Porcellato[1], S. Ravagnan[1].

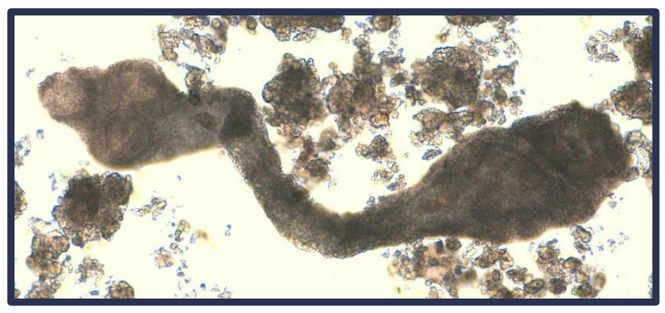
[1]Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro, Padua, Italy.
[2]Department of Animal Medicine, Production and Health, University of Padova (Italy).

INTRODUCTION

The molecular identification can support the morphological identification of cestodes (eggs, larvae and adults) that can be difficult. The aim of the study was to evaluate the ability of two PCR methods to identify cestodes at the species level.



E. multilocularis eggs (40X)



E. multilocularis adult (10x).

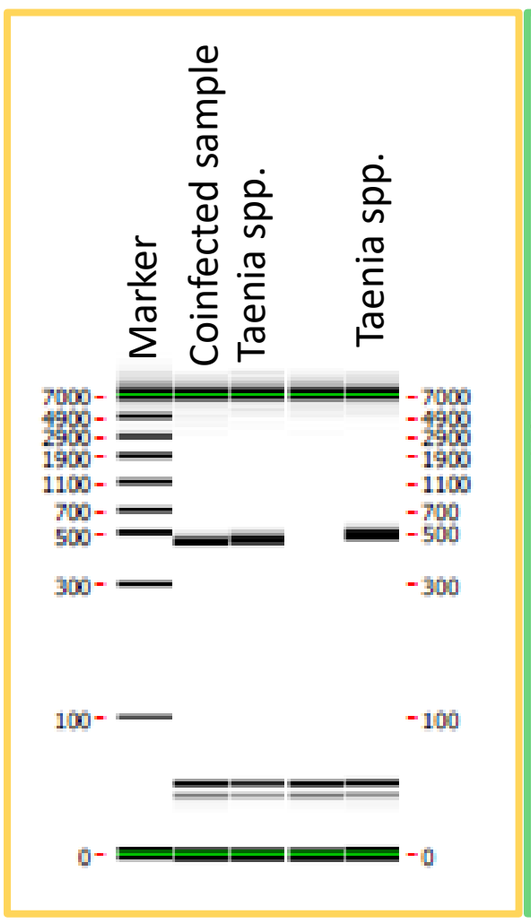


Fig.1 COI-PCR gel

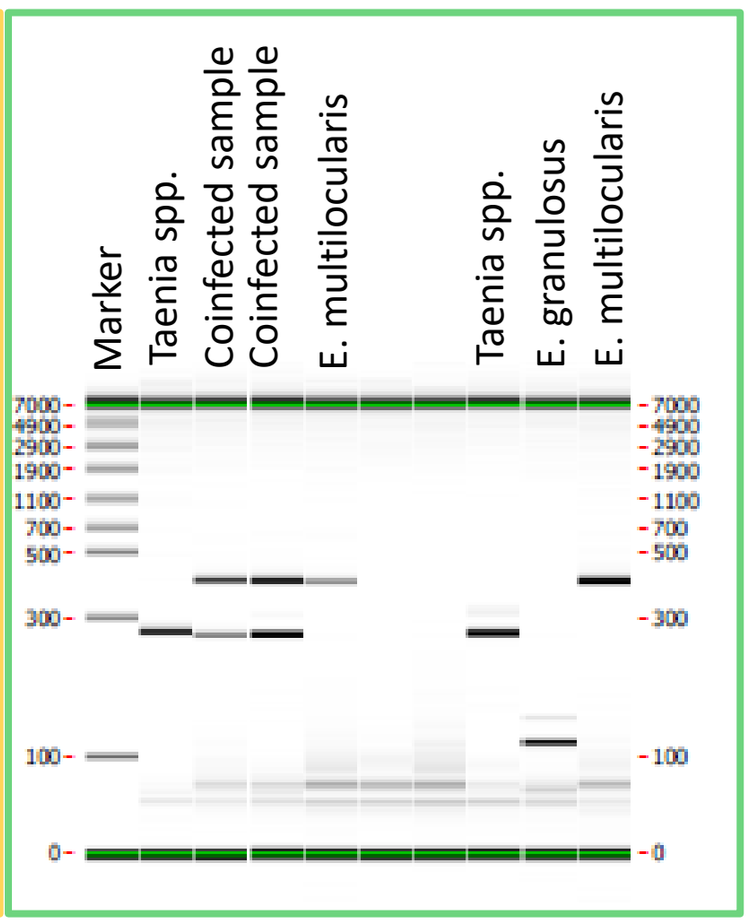


Fig.2 Multiplex PCR gel

MATERIALS AND METHODS

162 samples of feces (from foxes n.138, dogs n.9 and badger n.1) positive for cestode eggs at copromicroscopy and 14 cysts (collected from ruminants) were tested with both COI-PCR assay, targeting the cytochrome oxidase gene (COI) (Bart et al., 2006 Parasitol Res 98:130-137) (460bp, Fig.1) and the Multiplex PCR amplifying the ND1 gene for *Echinococcus multilocularis* (394 bp) and the 12SrRNA for *E. granulosus* (117 bp) and *Taenia spp.* (271 bp) (Trachsel et al., 2007 Parasitology 134:911-920) (Fig.2). Amplicons of COI and 12SrRNA Taenia PCR were sequenced for species identification.

RESULTS AND CONCLUSIONS

E. granulosus was identified in 7 out of 14 cysts with both PCR methods. Results of fecal samples are shown in Fig. 3. Multiplex PCR confirmed all COI-PCR positive samples (except for 5 *Taenia* spp.) and it was able to identify 7 more cestodes that were hidden by coinfection: 2 *E. multilocularis* and 5 *Taenia spp*. Two samples COI-PCR negative resulted positive (1 *T. crassiceps* and 1 *E. multilocularis* and *T. crassiceps*).
The two methods gave the same results for cysts, while for faecal samples, often coinfected, Multiplex PCR is more suitable, as COI-PCR detects only the prevalent cestode. Multiplex PCR seems to be more sensitive in the detection of *E. multilocularis* (3 more were found) although for phylogenetic analysis, COI-PCR is the recommended method.

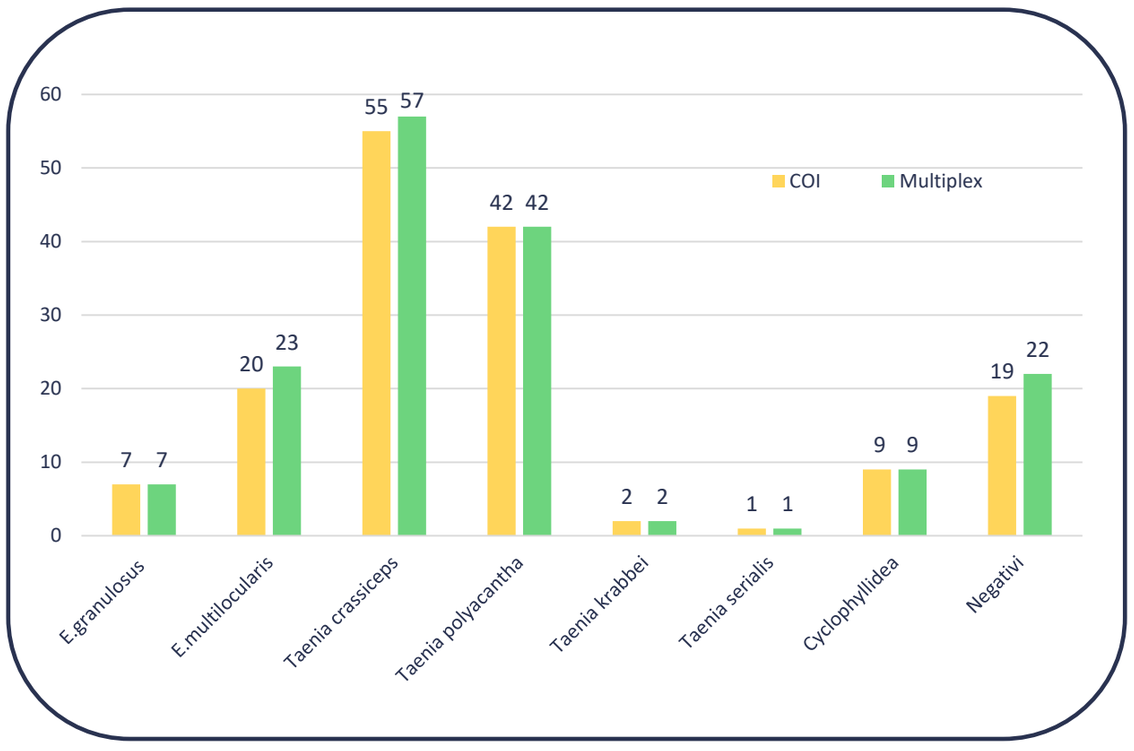


Fig.3 Results of two PCR methods (COI PCR and Multiplex PCR)