Comparison between two techniques and a new PCR-RFLP assay for the identification of *Toxocara* spp.

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Abstract

Some parasitic nematodes can inhabit different definitive hosts, which raises the question of the intraspecific variability of the nematode genotype affecting their preferences to choose particular species as hosts. Traditionally, Ascaridae nematodes are classified based on morphology and predilection sites in a particular host species However, traditional methods can be considered limited for accurate identification and differentiation of species, especially with regard to eggs and larvae, which may lead to uncertainty concerning the taxonomic analysis of this genus. Based on that, a precise analysis has important implications for the study of the taxonomy, genetic structure, and specific diagnoses. This study aimed to check morphologically and by PCR-RFLP the specific identity of 221 worms being 87 from cats from Denmark and 134 from dogs from Brazil, and compare the results provided by these two techniques. For that, based on the sequences of the cytochrome c oxidase 1 gene (Cox1) a pair of primers were designed, and according to the restriction maps generated, the MseI enzyme was selected for DNA digestion. All worms from cats were microscopically identified as *Toxocara cati*, and all worms from dogs as *Toxocara canis*, the same result was given by the molecular technique, reinforce the host specificity idea. In we present a new PCR-RFLP assay satisfactorily capable to differentiate among *Toxocara* species in a

single reaction. These techinique should provide useful tools for molecular epidemiological investigations of Toxocariasis.

Keywords *Toxocara* spp., morphology, PCR-RFLP, cats, dogs, Denmark, Brazil.