

PCR tools for the diagnosis of nematodes from *Toxocara* genus

Anna Borecka

Witold Stefański Institute of Parasitology, Polish Academy of Sciences, Warsaw, Poland

Toxocara canis and *T. cati* are nematodes of dogs and cats, infection with which leads to health problems in their hosts. *Toxocara* worms are also capable of infecting humans, causing ocular larva migrans (OLM), visceral larva migrans (VLM), neurotoxocariasis (NT) and covert toxocariasis (CT). Morphological observation is the traditional approach for the identification of adult nematodes, but is insufficient in the differentiation larvae obtained from animal or human tissues or eggs extracted from soil or sand in environmental studies.

The PCR technique or PCR-linked RFLP method were developed in our laboratory for the detection and identification of *Toxocara* spp. eggs in the soil.

PCR amplification of the ITS-2 of the ribosomal DNA was described by Jacobs et al. (1997). These authors extracted genomic DNA either from adult worms collected from dogs, foxes and cats or from embryonated eggs collected from the uteri of female worms. Our innovation was adapting these method in the differentiation of the *Toxocara* eggs obtained from the soil, and this molecular analysis was carried out on single eggs.

We elaborated also PCR assay for detection of *Toxocara canis* larvae in the liver of experimentally infected Mongolian gerbils (*Meriones unguiculatus*).

The PCR method could be useful in detecting human infection with nematodes of the *Toxocara* genus and determining which of the two species (or both?) - *Toxocara canis* and/or *Toxocara cati*, cause the disease diagnosed in humans. Toxocariasis was recognized for the first time in the middle of the last century (Wilder 1950, Nichols 1956), but until now it is not known to which extent the two species implicate toxocariasis or produce worse symptoms.

In conclusion, the specific PCR or PCR-RFLP techniques are useful tools for diagnosis and molecular epidemiological investigations of *Toxocara* infection in humans and animals.