

## Development of a highly specific recombinant *Toxocara canis* second-stage larva excretory-secretory antigen for immunodiagnosis of human toxocariasis

### ABSTRACT

The specificity of the recombinant *Toxocara canis* antigen developed for the immunodiagnosis of human toxocariasis was compared with that of the excretory-secretory antigen from *T. canis* second-stage larvae (TES) by enzyme-linked immunosorbent assay. A total of 153 human serum samples from patients infected with 20 different helminths, including 11 cases of toxocariasis, were examined. No false-negative reactions were observed for the toxocariasis cases. When the TES was used at concentrations of 0.5 and 0.125 g/ml, cross-reactions were observed in 79 (55.6%) and 61 (43.0%) of 142 cases, respectively. In contrast, when the recombinant antigen was tested at a concentration of 0.5 g/ml, cross-reactions were observed in 19 (13.4%) of 142 cases. At a concentration of 0.125 g/ml, however, the cross-reaction rate decreased sharply to only 2.1%, corresponding to 3 of 142 cases. The cross-reactions occurred with one case each of gnathostomiasis, paragonimiasis with *Paragonimus miyazakii*, and spirometriasias, in which high antibody titers were detected. In addition, the recombinant antigen showed negative reactions with serum samples from patients infected with *Ascaris* and hookworms, which are the most common parasites in the world. These findings are also supported by experiments with animals infected with *Ascaris* and hookworm. From these results, the recombinant antigen is highly specific for toxocariasis and may provide more reliable diagnostic results than other methods.

**Keyword:** *Toxocara canis*; Toxocariasis; Recombinant antigen