Pathogenic and antigenic characterization of *Neospora hughesi*

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(ABSTRACT)

Neospora hughesi is a recently described cause of equine protozoal myeloencephalitis (EPM). In the present study, we examined the susceptibility of BALB/c γ-interferon gene knockout (γ-INFKO), BALB/c, CD-1, and C57BL/6 strains of mice and gerbils to infection with tachyzoites of the Nh-A1 strain of *N. hughesi*. Only the γ-IFNKO mice developed severe clinical disease following infection with *N. hughesi*. The most severe lesions were in the hearts of these mice. Two dogs fed the brains of mice, shown to contain *N. hughesi* tissue stages by cell culture and γ-IFNKO mouse bioassay, did not shed *N. hughesi* oocysts over a 23 day observation period.

We report important differences between the nucleotide and deduced amino acid sequences of the dense granule proteins GRA6 and GRA7 of *N. hughesi* and *N. caninum.* The newly defined proteins of *N. hughesi* are referred to as NhGRA6 and NhGRA7. From analysis of the sequences we found that there is a 14.8% difference in deduced amino acid sequence between NhGRA7 and NcGRA7, and a 4% difference between NhGRA6 and NcGRA6 in areas that could be compared.

This thesis supports the identification of *N. hughesi* as a separate species from *N. caninum* and describes novel methods of distinguishing between the two.