

## Current state of diagnosis of *Neospora caninum* infection in cattle in Israel

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### Abstract

*Neospora caninum* is considered a globally prevalent pathogen associated with abortions in cattle. The fluorescent antibody test (IFA) based on the NC-1 isolate is currently the principal assay used in Israel for the antemortem serodiagnosis of *N. caninum* infection in cattle. Nested PCR has been introduced for the detection of the parasite in brain samples of aborted fetuses. A total of 8 417 post-abortion dam sera samples collected from dairy cows kept exclusively on zero-grazing were tested by the IFA. Forty percent of the samples were positive at a cut-off titer of 1:200, while 14% seropositivity was observed in examination of 853 fetal fluid samples with a cut-off value of 1:80. A total of 216 fetal brain samples were examined by a nested PCR (nPCR) for *N. caninum* infection, and the results compared to those obtained by the IFA serology of the fluid samples from the same fetuses. Complete agreement was found in 78% of samples (17% PCR and IFA positive, and 61% negative by both assays). Thirty nine percent of all the paired samples tested

were positive by at least one of the assays applied. Specific amplification in nPCR was obtained in 16% of brain samples, while the corresponding fetal fluids were negative by the IFA. On the other hand, there were 6% PCR negative but positive by the IFA. There were 32% and 22.6% positives by only PCR or IFA, respectively. One hundred and twenty fetal fluids tested by a commercial bovine *Neospora* antibody ELISA kit showed comparable results with the IFA, 84% and 86% were found negative by the IFA and Immunocomb, respectively. At dilutions of fetal fluid of 1: 640 and higher, out of 12 positive samples (10%) by IFA, only 4% showed comparable reactivity in the Immunocomb. Immunocompetence of the fetus is present from about 150 days; in early abortions antibodies might not be detected. On the other hand, brain sampling may not pinpoint the exact location of the parasite within the brain. Therefore, a combination of various diagnostic procedures is required for the accurate determination of *Neospora* infection in dams or the aborted fetuses.