

## ***Neospora* and neosporosis: achievement and perspectives in diagnosis**

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### **Abstract**

*Neospora caninum* is considered a major cause of abortion in cattle. Diagnosis of bovine neosporosis is difficult, due to the inexistence of clinical signs - other than abortion - in chronically infected cattle and the difficulty to diagnose the infection in the aborted foetus. Regarding *in vivo* diagnosis, several methods, such as: IFAT, immunoblotting and a number of ELISAs have been used to detect specific antibodies in serum, and recently in milk. Most of the tests present a high level of agreement as a recent comparison demonstrated among several European laboratories. Moreover, avidity ELISAs have been developed to differentiate between recent and chronic infection. PCR techniques have also been used to detect parasite DNA in several tissues as blood and semen. On the other hand, the foetal diagnosis of *N. caninum* infection is based in the histological examination of target organs, specially the brain, as well as detection of the parasite by immunohistochemistry (IHC) or PCR. PCR methods generally have a higher sensitivity than IHC and

also high specificity and several techniques have been developed targeting the ITS-1 region or the Nc-5 sequence. Moreover, quantitative-competitive PCR and real-time PCR have also been reported. Foetal serology could also be of use in the immunocompetent aborted foetus. In the near future, the development of new tools to diagnose infection and/or disease could help to detect animals with parasite reactivation by testing the immune response to stage-specific antigens and to develop molecular typing methods to characterise different parasite isolates. Finally, standard procedures and parameters need to be set between laboratories and countries in order to be able to compare basic epidemiological data. In this sense, as a part of an EU initiative, a guidelines book is being prepared by several European laboratories for the diagnosis of protozoal abortifacients in farm ruminants. These guidelines will contain recommendations about the diagnostic procedures to be followed by official and private institutions across Europe when dealing with neosporosis cases and could be of use for several other countries.