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Neosporosis and Toxoplasmosis in South American Camelids from Peru

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Abstract

High abortion and neonatal mortality rates have been described as major production constraints in llamas and alpacas from the Andean region of South America; yet little is known regarding infectious or parasitic agents involved with abortions in such species. Thus far, *Neospora caninum* and *Toxoplasma gondii* infections have been reported in adult alpacas, llamas (Chávez-Velásquez *et al.*, 2004. J Parasitol 90:864-866) and vicunas (Wolf *et al.*, 2005. Vet Parasitol 130:81-87; Chávez-Velásquez *et al.*, 2005. Vet Parasitol 130:93-97) from Peru, while recent studies suggest that *Neospora* species may infect llamas and alpacas and cause abortion (Serrano-Martínez *et al.*, 2004. Vet Rec 155:748-749). In order to elucidate the significance of Neosporosis and Toxoplasmosis, two different studies were accomplished. Sera from llamas (n=1845), alpacas (n=2845) and vicunas (n=509) were collected from agrarian cooperatives (n=3), research institutes (n=5) and andean communities (n=13) located in the central and southern regions of Peru. Sera collected were tested and titrated by an indirect immunofluorescence antibody test (IFAT) using 1:100 as cut-off. Serological analysis revealed that while 153 llamas (8.3%), 425 alpacas (14.8%) and none vicuna exhibited antibodies against *N. caninum*, 460 llamas (24.9%), 706 alpacas (24.6%) and 60 vicunas (11.8%) reacted against *T. gondii*. On the other hand, identification of parasitic agents abortion-associated in foetuses of South American camelids was carried out. Brain tissues from 50 aborted foetuses (32 alpacas and 18 llamas) were examined by histopathology (H-E), and samples with lesions consistent with protozoal infection were analysed by immunohistochemistry (IHC) and PCR for both *Neospora* (ITS1) and *Toxoplasma* (28s rRNA and B1) detection. *Neospora* infection was confirmed in 13 foetuses by histopathology, in 12 foetuses by IHC and in 8 foetuses by PCR, *Toxoplasma* parasites were not detected in any of the samples, though. Our results confirm the presence of Neosporosis and Toxoplasmosis in adult South American camelids. Nonetheless, it has only been possible to associate *Neospora* infection with abortion. Epidemiological significance of these findings will be further discussed during the meeting.