World Academy of Science, Engineering and Technology
International Journal of Animal and Veterinary Sciences
Vol:14, No:05, 2020

Identification of Babesia ovis Through Polymerase Chain Reaction in Sheep and Goat in District Muzaffargarh, Pakistan

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Abstract : Babesiosis is a haemoparasitic disease due to the multiplication of protozoan's parasite, Babesia ovis in the red blood cells of the host, and contributes numerous economical losses, including sheep and goat ruminants. The early identification and successful treatment of Babesia Ovis spp. belong to the key steps of control and health management of livestock resources. The objective of this study was to construct a polymerase chain reaction (PCR) based method for the detection of Babesia spp. in small ruminants and to determine the risk factors involved in the spreading of babesiosis infections. A total of 100 blood samples were collected from 50 sheep and 50 goats along with different areas of Muzaffargarh, Pakistan, from randomly selected herds. Data on the characteristics of sheep and goats were collected through questionnaires. Of 100 blood samples examined, 18 were positive for Babesia ovis upon microscopic studies, whereas 11 were positive for the presence of Babesia spp. by PCR assay. For the recognition of parasitic DNA, a set of 500bp oligonucleotide was designed by PCR amplification with sequence 18S rRNA gene for B. ovis. The prevalence of babesiosis in small ruminant's sheep and goat detected by PCR was significantly higher in female animals (28%) than male herds (08%). PCR analysis of the reference samples showed that the detection limit of the PCR assay was 0.01%. Taken together, all data indicated that this PCR assay was a simple, fast, specific detection method for Babesia ovis species in small ruminants compared to other available methods.

Keywords : Babesia ovis, PCR amplification, 18S rRNA, sheep and goat
Conference Title : ICAGAR 2020 : International Conference on Animal Genetics and Animal Reproduction
Conference Location : Dublin, Ireland
Conference Dates : May 07-08, 2020