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Molecular Detection of Blood parasites from Wild ruminants from Matabeleland Province, Zimbabwe

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Abstract

A number of wild ruminant species have been recognized as reservoirs for blood parasites that also affect domesticated ruminants. This has often resulted in transmission of these parasites from wild animals to domestic animals with catastrophic results being observed. Detection and molecular characterisation of blood parasites from wild ruminants from Matabeleland province, Zimbabwe was carried out. A total of 32 blood samples from hunter killed wild ruminant species including African buffalo (*Syncerus caffer*), (n=8) waterbuck (*Kobus ellipsipyrymnus*) (n=2), eland (*Taurotragus oryx*) (n=1), black wildebeest (*Connochaetes gnou*)(n=5), impala (*Aepyceros melampus*) n=12, kudu(*Tragelaphus strepsiceros*)n=2,bushbuck(*Tragelaphus scriptus*)(n=1)were collected from wildlife parks located in Hwange, Nyamandlovu and Beitbridge. Blood parasites were detected by giemsa staining and total DNA was extracted followed by PCR to detect for *Theilleria spp,Babesia spp* and *Anaplasma spp*. Of the wild ruminants sampled 68% were infected with *Thieleria spp,*67% infected with *Babesia spp* and 59 % were infected with *Anaplasma spp*. Of the 32 samples convectional PCR was done to 17 samples using primers targeting 18SrRNA of *Theileria spp* of which 88% of the samples were positive for *Thieleria spp.* Touchdown PCR was also done to 16 of the samples using primer targeting 18SrRNA of *Babesia spp* and all samples were positive for *Babesia spp.* Results showed that all of the ruminants from Nyamandlovu and Hwange were positive for blood parasites compared to 65% from Beitbridge. Comparison of microscopic examination and PCR analysis showed higher sensitivity of detection in the PCR method as 7% of the samples that previously showed negative results on the microscope were positive in the PCR method. In total 67% of the samples were positive for microscopic analysis whilst a total of 74% was detected using the PCR analysis. Findings of this study suggest that wild ruminants are indeed reservoirs of *Anaplasma spp, Babesia spp and Theilleria spp*. and could play an important role in the epidemiology and spread of blood parasites and may represent a serious threat to the livestock industry.

Keywords: Wild Ruminants ; Blood Parasites; Molecular detection

1.0 INTRODUCTION

Wild ruminants have an important role in the epidemiology of blood parasites that affect domesticated ruminants. Zimbabwe is a country that over the years has had a lot of land use changes increasing the interaction between wild animals and domestic animals. Wildlife infection rates and wildlife parasites remain poorly documented in Zimbabwe despite the tourism industry being amongst the leading economic boosters. Neitz (1935) demonstrated the susceptibility of wild ruminants to anaplasmosis. Hobday (1975) demonstrated that blood parasites consisting of protozoa and bacteria were widespread in African wildlife species.

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