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## Cryptosporidiosis in cattle and sheep in Duhok Governorate, Kurdistan region, Iraq

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The current study is the first one that is performed to detect the oocysts of *Cryptosporidium* in animals in Duhok Governorate, Kurdistan region of Iraq by examining 348 fecal samples of cattle and 280 fecal samples of sheep using modified Ziehl Neelsen method (MZN). All fecal samples were concentrated using formalin-ether method before staining. A total of 233 fecal samples were randomly chosen to detect *Cryptosporidium* by enzyme linked immunosorbent assay (ELISA) and polymerase chain reaction (PCR) test and 129 fecal samples from cattle and 104 fecal samples from sheep were taken. By MZN, the prevalence of *Cryptosporidium* oocysts was 26.15% in cattle and 11.07% in sheep. The prevalence rates were 28.99% and 24.29% in diarrheic and non-diarrheic groups of cattle, respectively. While in sheep the prevalence rates were 23.26% and 5.67% in diarrheic and non-diarrheic groups, respectively. Out of the 129 fecal samples of cattle of which 31(24.03%), 37 (28.68%) and 57(44.19%) were positive by MZN, ELISA and PCR, respectively. A total of 104 fecal samples of sheep of which 23 (22.12%), 24 (23.08%) and 45 (43.27%) were positive by MZN, ELISA and PCR, respectively. The highest prevalence rate by MZN, ELISA and PCR was among the age group 1-2 months in diarrheic cattle and sheep, while in non-diarrheic cattle and sheep it was among 3-6 months age group. This study indicated that infection was accompanied with diarrhea in both the animal species and it decreased with increasing of age, as well as the asymptomatic infection was common. In present study, the results of sequences analyzing of PCR products showed identical to the *Cryptosporidium* sequences in the GenBank. In this study, ELISA was more sensitive and specific than MZN which were 82.5% and 90.91% respectively. Also PCR was more sensitive and specific than MZN which were 97.5% and 73.82% respectively.

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