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Identification and Molecular Characterization of Cryptosporidium Spp. in Pre-Wean Dairy Calves in Mashhad, Northeastern of Iran

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Abstract : Cryptosporidium Spp., protozoan parasites of the phylum Apicomplexa, have a wide spectrum of hosts including humans, domestic animals and wild mammals, birds, reptiles, amphibians and fish. Dairy cattle have been identified in numerous reports as a major source of environmental contamination with this pathogen. In this study, a Polymerase Chain Reaction (PCR), Restriction Fragment Length Polymorphism (RFLP) analysis of the Small-Subunit (SSU) rRNA gene was used to detect and identify Cryptosporidium Spp. in 300 fecal specimens from 1 to 30 days pre-wean calves in 10 farms in Mashhad, Iran. Eighty five (28.3%) and forty five (15%) of the specimens were positive for Cryptosporidium by microscopic and PCR examination respectively. Restriction digestion of the PCR products by VSPI and Ssp1 restriction enzymes and analysis of sequence data revealed the presence of C. parvum, bovine genotype in all isolates. Our findings suggest that cattle can be a source of Cryptosporidial infections for humans and animals in Mashhad area. This is the first published description of Cryptosporidium sub genotyping in Mashhad.

Keywords : cryptosporidium, genotype, dairy calves, 18S rRNA, Mashhad
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