

TITLE: MOLECULAR DETECTION AND CHARACTERIZATION OF BOVINE *PICOBIRNAVIRUS* IN CENTRAL-SOUTH REGION OF BRAZIL

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ABSTRACT:

Picobirnavirus (PBV) belong to the *Picobirnaviridae* family and this genus is divided into two species: *Human Picobirnavirus* and *Rabbit Picobirnavirus*. PBV are small, non-enveloped, bisegmented double-stranded RNA (dsRNA) viruses with an icosahedral capsid, being divided into two genogroups, GI and GII. The first report of this virus was in human faeces, subsequently several studies reported the presence of *Picobirnavirus*-like in many animal species, with or without diarrheal signs, and are considered emerging and opportunistic agents as well as its zoonotic potential has been suggested. This study was conducted aiming to detect and molecularly characterize bovine PBV strains of the GI and GII in feces from animals with or without diarrheal signs of different ages (calves and adults) from the following Brazilian states: São Paulo, Minas Gerais, Mato Grosso do Sul, Goiás, Rondônia, Paraná and Rio Grande do Sul. Seventy-seven fecal samples were tested by RT-PCR with primers specific for the RNA-dependent RNA polymerase (RdRp) gene of picobirnaviruses and the PCR products obtained were submitted to DNA sequencing, resulting in 18 (23.3%) positive samples for GI, including animals from the states of São Paulo, Minas Gerais and Goiás. The presence of PBV in cattle with clinical signs of diarrhea accounted for 27.8% of all analyzed animals; in terms of age, 61.1% of the positive animals were calves. There were no positive samples for GII. The nucleotide identity of samples from different municipalities shared 31.7-95.5% nt (30.3-94.3% aa), and when compared with PBV reference samples retrieved from GenBank that shared 32.2-76.7% nt (27.3-76.5% aa) identity. In phylogenetic reconstruction, three samples were grouped in the human PBV clade and only one sample was clustered in the bovine PBV clade. In conclusion, this study is the first report of the occurrence of bovine PBV GI in Minas Gerais and Goiás states, Brazil. Our results can contribute to better understanding of the PBV epidemiology and relationship to subclinical or unapparent bovine gastroenteritis in herds of cattle from the Brazilian Central-South region.

Keywords: Bovine, *Picobirnavirus*, cattle, RT-PCR detection, molecular epidemiology

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