

TITLE: CONCURRENT SHEDDING OF BOVINE CORONAVIRUS IN NASAL SECRETIONS AND FECES FROM A DAIRY CATTLE HERD FROM PARANÁ

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ABSTRACT:

Bovine coronavirus (BCoV) is a RNA virus globally widespread in domestic livestock. Its main role as a primary biological agent in neonatal calf diarrhea and winter dysentery in adult cows is well understood. Besides, BCoV has been associated to respiratory infections in young and adult cattle. However, few studies in Brazil describe the BCoV concurrent shedding in fecal and nasal samples, in the same animal. Most of the researches reports only the enteric BCoV epidemiology. The purpose of this study was to detect the concurrent shedding of BCoV in nasal secretions and feces of naturally infected cattle, from a dairy herd with enteric and respiratory issues, located in the city of Ouro Verde do Oeste, Paraná. Nasal and fecal samples were collected from 11 animals of 1 to 5 months of age, by using nasal swabs and rectal palpation technique, respectively. Samples were submitted to nucleic acid extraction, which was performed using a combination of the phenol/chloroform/isoamyl alcohol and silica/guanidine isothiocyanate methods. To detect BCoV, the Semi-Nested PCR technique was used to partially amplify the highly conserved N gene, with a predicted product of 454 bp and 251 bp in the first and second round of amplification, respectively. Of 11 animals, 11 obtained amplification in nasal secretions samples and 6 in fecal samples, showing that 6 animals had concurrent shedding of BCoV in both samples. Those animals that amplified already in the first round of amplification, show high viral excretion. However, new analysis to genetically compare BCoV isolates from different elimination routes are needed. Studies suggests that at the beginning of the infection, BCoV replicates first in the respiratory tract and later is spread to the gastrointestinal tract, being eliminated by fecal route. The low frequency of detection in fecal samples compared to nasal secretions in this study may be explained by this reason. On the other hand, there are studies that suggests a difference between BCoV isolates from feces and nasal secretions. On this, new molecular studies will be conducted to compare the isolates, including specifically the hypervariable region of the S glycoprotein of BCoV, responsible for adsorption in cell receptors.

Keywords: bovine enteric coronavirus, bovine respiratory coronavirus, molecular diagnosis

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