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BOVINE CORONAVIRUS DETECTION IN ADULT COWS IN BRAZIL

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ABSTRACT

Winter dysentery is a bovine coronavirus (BCV)-caused disease that affects cows reported Europe, Japan, Canada and in the USA. The existence of enteric BCV infections in cows in an outbreak of diarrhea during the winter, a fact not reported in Brazil, has been surveyed in 9 stool samples with hemagglutination / hemagglutination inhibition test and three were found positive. All 9 samples tested negative for rotavirus in PAGE. These results, the first description of BCV in adult cows in the Southern Hemisphere, show that winter dysentery also occurs in Southern, tropical areas and that BCV needs now to be considered in the aethiology of diarrheas in adult cattle in Brazil.

KEY WORDS: Winter diarrhea, coronavirus, tropical, Brazil.

RESUMO

A disenteria de inverno é uma doença causada por coronavírus bovino (BCV) que afeta vacas adultas, já relatada na Europa, no Japão, no Canada e nos EUA. A existência de infecções entéricas de BCV em vacas, um fato ainda não relatado no Brasil, foi avaliada em 9 amostras fecais em um surto de diarréia durante o inverno, através da técnica de hemaglutinação / inibição da hemaglutinação, quando 3 amostras foram positivas. Todas as 9 amostras foram negativas para rotavírus em PAGE. Estes resultados, a primeira descrição de BCV em vacas adultas no Hemisfério Sul, demonstram que a disenteria de inverno também ocorre em regiões tropicais e ao sul e que o BCV precisa ser considerado a partir de agora na etiologia das diarréias em bovinos adultos no Brasil.

PALAVRAS-CHAVE: Diarréia de inverno, coronavírus, tropical, Brasil.

Winter dysentery caused by bovine coronavirus in adult cows is a disease first described by HORNER *et al.* (1975) and reported in Europe, Japan, Canada and in the USA (JACTEL *et al.*; 1990; ALENIUS *et al.*, 1991; FUKUTOMI *et al.*, 1999; MILLANE *et al.*, 1995; CHO-KYOUNG *et al.*, 2000). This survey aimed to evaluate the existence of enteric BCV infections in cows in an outbreak of diarrhea, a fact not reported in Brazil. Nine fecal samples where collected from adult cows with symptomatic diarrhea in a outbreak in a dairy farm from São Paulo State, Southeastern Brazil, during the winter month of June. Fecal suspensions were prepared in PBS 0,01M / BSA 0,1% pH 7,2 to a 1:4 final dilution, centrifugated under 12,000xg / 30' and the supernatant was used to bovine coronavirus detection. Fecal suspensions were diluted 2-fold in PBS 0,01M / BSA 0,1% pH 7,2 in 96 wells U-plates to a 25 µL final volume / dilution, adding 25 µL of a 0,4% hamster red cells suspension in PBS 0,01M / BSA 0,1% pH 7,2 to each well. BCV Kakegawa strain growth in HmLu-1 cells was used as positive control and PBS 0,01M / BSA 0,1% pH 7,2 as negative control. After 2 hours at room temperature, end point titers were read as the inverse of the last dilution in which hemagglutination (HA) could be found. Those samples with HA titers >4 where tested in hemagglutination inhibition test (HI) in 96 wells V-plates, diluting fecal suspensions 2-fold in PBS 0,01M / BSA 0,1% pH 7,2 to a 25 µL final volume / dilution; in the next step, 25 µL of a caolim-treated hiperimmune anti-BCV ovine serum withd 8 hemagglutination inhibition units were added. After a 1-hour incubation at 37 ºC, 25 µL, of a 0,4% hamster red cell suspension in PBS 0,01M / BSA 0,1% pH 7,2 to each well and the plates where incubated for 2 hours at room temperature, end point titers were read as the inverse of the last last dilution in which hemagglutination could be found. Samples where considered positive if a at least 4-fold fall in titer was found (SATO *et al.*,1977).

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Three out nine samples were positive to bovine coronavirus in HA / HI test. All samples tested negative for rotavirus in PAGE (HERRING *et al*., 1982).

The finding of bovine coronavirus in stool of cows with clinical symptoms of diarrhea during a winter month shows that BCV-led winter diarrhea, formerly thought as restricted to the Northern hemisphere, occurs also in Southern, tropical areas and bovine coronavirus needs now to be considered in the aethiology of diarrheas in adult cattle in Brazil.

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