STUDIES ON ROTAVIRUS INFECTION OF BUFFALO CALVES IN SRI LANKA

by

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ABSTRACT

Faecal samples collected from 150 buffalo calves 1 to 150 days old were examined by the Enzyme Linked Immunosorbent Assay (ELISA) test for group A, rotavirus antigen. 27.3 per cent of these calves were having diarrhoea at the time of sampling. The rest were non-diarrhoeic, but incontact with them. Antigen was detected in 36.6 per cent of diarrhoeic animals, and in 11.9 per cent non-diarrhoeic animals. There was a significant association between the presence of antigen in faeces and diarrhoea in these animals ($P < 0.001$).

By the screening ELISA test using monoclonal antibodies the strongly positive specimens belonged to subgroup I rotavirus. The weakly positive specimens however, could not be subgrouped.

Antigen was detected in diarrhoeic calves in the age group 1 - 60 days, but none in the 61 - 150 day age group, indicating, the former group to be more susceptible to clinical disease. Apparently healthy calves, too, were infected with buffalo rotaviruses.

This is the first study establishing the presence of rotavirus in buffalo calves in Sri Lanka, and its association with diarrhoeas in these animals. Three strains of rotavirus were isolated from faecal material collected from five diarrhoeic buffalo calves in MA104 cells. For virus isolation, pretreatment with trypsin, incorporation of trypsin in the maintenance medium, and rolling of the innoculated cell cultures at 37°C was necessary.

These strains required adaptation before distinct cytopathic effects were produced. One of the isolates 11C selected for study was also known to be a group A rotavirus by ELISA, with subgroup I specificity.

Using post infection sera obtained from mothers, cattle, and buffalo a close antigenic relationship was observed between this isolate and U.K. bovine rotavirus whereas the buffalo and human subgroup II rotavirus strains were distinct. The test used to distinguish these strains was the blocking ELISA test.

Antirotaviral antibodies in the sera of buffalo calves rose to very high levels from negative levels on the 1st day of their life, subsequent to colostrum suckling as tested by the blocking ELISA test. These maternally derived antibodies declined to negativity by the 33rd to 56th day.

Five buffalo calves which were diarrhoeic and in which antigen was detected, were excreting virus in spite of having high circulating antibodies.

Virus was not detectable for more than seven days, in a natural rotavirus infection studied. In 63.4 per cent of the diarrhoeic animals rotavirus was not detected, indicating that other enteropathogens too, other than rotavirus, were associated in these diarrhoeas.