

Laboratory Infection of Swine (*Sus scrofa*) with Ingwavuma Virus

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OBJECTIVE: To determine the duration and magnitude of viremia, the antibody response, and presence of the virus in nasal secretions and feces of swine infected with Ingwavuma virus.

BACKGROUND: Previous studies in this laboratory have shown that a Simbu group arbovirus, Ingwavuma virus, commonly infects pigs in Thailand. Although this virus has frequently been isolated from the blood of domestic swine, the duration and magnitude of viremia and the routes by which the virus may be excreted are unknown.

DESCRIPTION: Four 8 month old landrace pigs lacking Ingwavuma neutralizing (N) antibody at a 1:10 dilution were chosen for this study. These pigs were housed in a mosquito—proof building throughout the study. Two animals were inoculated subcutaneously with 1000 plaque forming units (PFU) of Ingwavuma virus in 0.3 ml of solution. Titration of the amount of virus inoculated in LLC—MK2 cells was performed immediately after inoculation. The animals were closely observed for clinical signs of illness. Rectal temperatures were taken daily for 5 days before and for 7 days after inoculation. Serum was collected at 7 day intervals for 21 days following inoculation and tested for Ingwavuma N antibody by standard plaque reduction neutralization test (PRNT). Blood, nasal swabs, and feces were obtained daily from day 0 through day 7. Aliquots of these specimens were tested for the presence and titer of virus by intracranial inoculation into 1—2 day old mice and by direct and delayed plaques in LLC—MK2 cells. Isolates obtained were confirmed as Ingwavuma virus by PRNT tests using mouse hyperimmune ascitic fluid.

PROGRESS: The body temperatures of both infected and control animals remained normal throughout the study. None of the animals showed signs of clinical illness. Ingwavuma virus was isolated from undiluted plasma in one of the infected animals on days 2, 3, and 4 following inoculation. Attempts to isolate Ingwavuma virus from the other infected animal and from both control animals were unsuccessful. Ingwavuma virus was not isolated from the feces or nasal swabs of any of the animals. A primary antibody response to Ingwavuma virus was demonstrated in each infected animal, with serum titers reaching 1:3500 and 1:5120 by day 14 to 21 (Figure 1).

DISCUSSION: Subcutaneous inoculation of 2 previously unexposed pigs with Ingwavuma virus has produced a demonstrable viremia within 48 hours in one pig and a primary antibody response following inoculation in both. Viremia was short lived and low titered, lasting only 3 days, and detectable only in undiluted serum; however, a high titered antibody response was found in both pigs by day 14. Ingwavuma virus was not isolated from the feces or nasal secretions of either pig.

REFERENCES:

1. Top, F.H., Rozmiarek, H. et al: SEATO Medical Research Laboratory Annual Report, April 1973:51—52.

FIGURE 1.

INGWAVUMA ANTIBODY LEVELS

