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Author(s)	NAKAJIMA, Ryohei
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STUDIES ON PROTECTION AGAINST
YERSINIA ENTEROCOLITICA 03 INFECTION IN MICE

Ryohei NAKAJIMA

*Department of Public Health
Faculty of Veterinary Medicine
Hokkaido University, Sapporo, 060, Japan*

The present studies were done in order to know the protective mechanisms against *Yersinia enterocolitica* infection in mice. Normal ICR mice were infected intraperitoneally with 10^7 cells of 03 strain. On day 3 post-infection, approximately 10^3 cells were detected in all spleens and livers tested, and bacteremia was found in 7 out of 9 mice. Fecal excretion of 03 strain was observed for more than 14 days in all mice. On the other hand, in mice immunized subcutaneously with killed vaccine of 03 strain, the bacteria were not detected from the spleen and liver on day 3 after the intraperitoneal challenge with 10^7 cells of homologous strain, and no fecal excretion was observed in these mice. These results suggest that serum antibody could protect the parenteral infection with 03 strain in mice.

When mice immunized orally with live or killed vaccine were challenged with the same strain by the intraperitoneal route, serum antibody developed immediately, and the number of bacteria in the spleen and liver were markedly reduced on day 3 after the challenge. Spleen and mesenteric lymph node (MLN) cells derived from inbred C57BL/6 mice immunized orally with live vaccine of 03 strain were transferred into normal syngeneic mice. These recipient mice were challenged orally with homologous 03 strain, and fecal excretion of the organism was examined. It was found that the term of fecal excretion was shortened by transfer of immune spleen or MLN cells. From these results, it was suggested that cell-mediated immunity was provided during oral infection with *Yersinia enterocolitica*.