The pathophysiology of dry period MASTITIS due to *Staphylococcus aureus* (SA) infection has not been extensively examined in cattle. Consequently, providing an accurate prognosis is difficult as the success of treatment is largely influenced by the inflammatory phase of the MASTITIS. The cytokine interleukin-8 (IL-8) is a mediator of neutrophil chemotaxis and activation, and is thought to be involved in the development of mastitic symptoms. As a part of study to seek which reactions were peculiar to the various inflammatory phases of MASTITIS, we examined IL-8 induction and the subsequent inflammatory responses during dry-period MASTITIS induced by SA inoculation.

MASTITIS was induced in 5 cows at dry-off by intramammary infusion of SA. Three cows were infused with 65 colony forming units (cfu) of SA suspended in sterile saline into the left-front teat cistern, and the same volume of sterile saline was infused into the right-front teat cistern. The 2 remaining cows were similarly infused with 5 cfu of SA and saline. Following the challenge, mammary secretions were collected at various time intervals and SA were isolated and counted. In addition, somatic cell counts (SCC), IL-8 concentrations, and the activity of elastase released from activated neutrophils were examined. Immunoblot analysis revealed the presence of 22 and 23 kDa peptides derived from lactoferrin digestion with elastase. After the final sampling (18-41 days after the MASTITIS crisis), mammary tissues were subjected to pathologic examination. The study showed following:

(1) From a day post infusion (dpi), SA was recovered from all of the udders infused with 65 cfu of SA and apparent increases in SCC were also detected.

Marked increases in IL-8 concentrations and elastase activities were observed from 3 or 6 dpi to the day of final sampling. Pathologic examination of the mammary tissue revealed the MASTITIS to be in the subacute or chronic phase.

(2) SA was also isolated from the mammary glands infused with 5 cfu of SA from 6 or 36 dpi.

Except for the incubation period of SA, the changes observed in udders infused with 5 cfu of SA were similar to those in the udder infused with 65 cfu.

(3) In the control, udders infused with saline only, changes in SCC, IL-8 levels and elastase activity were similar to those normally observed during the dry period.

In conclusion, it was shown that an inflammatory reaction mediated by IL-8 was induced as the MASTITIS progressed from being subacute to chronic.