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# LYMPHOCYTE ACTIVITIES IN DAIRY COWS WITH SPECIAL REFERENCE TO OUTBREAK OF MASTITIS IN PRE- AND POSTPARTUS

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It is well known that various infectious diseases occur at high frequency in dairy cows during pre-and postpartus. The purpose of the present study was to clarify lymphocyte transformation of peripheral blood lymphocytes with mitogen from primi, multiparous and mastitic cows in order to elucidate the activities of lymphocytes in these stages.

The results of the experiments are summarized as follows.

(1) The optimal doses of concentration of PHA, ConA and PWM as mitogen were determined previously for *in vitro* studies : PHA and ConA were used at a concentration of 2.5 $\mu$l/ml and PWM at a concentration of 10 $\mu$l/ml, respectively.

(2) Lymphocyte transformation with mitogen was tested in peripheral blood lymphocytes from primiparous cows and multiparous cows at 10 days before calving, and at the partus, 1, 2, 3, 4, 5 and 6 weeks after calving, respectively.

Low level of lymphocyte responses of multiparous cows was seen in the periods from the partus to 10 days after calving and from 30 to 40 days after calving. But unlike the multiparous cows, lymphocyte activities of primiparous cows were not found in low levels at the partus, while they were low in the period from 20 to 30 days after calving.

(3) The period in which mastitis frequently broke out corresponded to that of a low level of lymphocyte blastogenesis, which was seen in multiparous cows in postpartus.

(4) Lymphocyte function of cows suffering from mastitis was significantly lower than the normal level. However, the activities gradually rose to normal levels on their own with the recovery from mastitis. On the other hand, lymphocyte responses of cows with chronic mastitis maintained a high level in all stages of the disease.

(5) Dairy cows whose lower than normal lymphocyte responses to PHA and ConA are susceptible to mastitis with serious clinical signs. Multiparous cows were observed in this condition within 10 days from partus and between 30 and 40 days after calving.

(6) Acute mastitic cows with serious clinical signs caused by gram negative organisms indicated high blood levels of endotoxin concentration, and the levels of lymphocyte responses to PHA, ConA, PWM and LPS in this condition were parallel to the blood endotoxin concentration.