PROSTAGLANDIN E_2 SYNTHESES BY PERITONEAL MACROPHAGES DERIVED FROM SUCKLING PIGLETS

Koji HAMADA
Department of Veterinary Internal Medicine
Faculty of Veterinary Medicine
Hokkaido University, Sapporo 060, Japan

It is well known that suckling piglets are immunodeficient because of the poor differentiation of B lymphocytes into antibody-forming cells. T lymphocytes of piglets of this age possess a suppressor function, which may be one of the major reasons for the immunodeficiency found in this stage. The present study was initiated to investigate the production of PGE_2 by macrophages in adult and suckling piglets, since this activity is considered to play an important role in immunosuppression in suckling piglets. Cells in peritoneal exudate were harvested 4 days after intraperitoneal injection of 2.4% thioglycollate medium by peritoneal lavage, the adherent cells isolated were incubated 18 hours with ^{14}C-arachidonic acid and the production of PGE_2 during the incubating period was measured. The results of the experiments are summarized as follows.

(1) PGE_2 production by mecrophages derived from four adult pigs employed in this study revealed the same trend. PGE_2 production by macrophages from adult pigs was proportional to the cell count of macrophages *i. e.*, under 50 μg of protein amount, while the production decreased over 50 μg of protein amount.

(2) PGE_2 production by macrophages from suckling piglets varied according to age and individual differentiation, a large increase in PGE_2 production was seen at 1 to 2 weeks of age, while it decreased from 2 to 3 weeks, and then increased gradually by 4 and 5 weeks.

(3) Macrophages from suckling piglest produced less PGE_2 than those from adult pigs, but no significant difference was noted in either group.

Since the PGE_2 syntheses by peritoneal macrophages were unsteady, the mechanism of PGE_2 production by macrophages and its role in immunosuppression in suckling piglets remain unclear. Further studies are needed to clarify the relationship between macrophages and lymphocytes and their effect on the immunodeficiency state of suckling piglets.