

Protective Effects of Ig Y against Diarrhea in Suckling Piglets

Wen Jin, Jeong-hee Han and Kwang Jeong
 Department of Veterinary Medicine, Kangwon National University,
 Chuncheon, Korea
 E-mail: jinwen25@hanmail.net

Introduction

Porcine epidemic diarrhea (PED), transmissible gastroenteritis (TGE) are an acute viral enteritis. colibacillosis by *E. coli* is a microbial enteric disease in suckling piglets[1]. These infectious intestinal diarrheal diseases cause severe diarrhea to suckling piglets, so that lead to enormous economical loss in swine-product industries. Ig-Top (AD Biotech, Korea) is a immunomodulator with IgY the specific yolk-antibody for PED, TGE and *E. coli* and oligosaccharide.

The purpose of this study was to investigate protective effects against PED virus, TGE virus *E.coli* and in suckling piglets by oral administration of the Ig-Top.

Materials and Methods

This study was performed with 20 sucking piglets, These piglets were allocated to two groups, Ig-Top administered group and control group, respectively.

In administration group, ten suckling piglets were administered orally with 2ml of the Ig-Top for three days from one-day-old and experimentally challenged with PEDV(1.5ml, $10^{5.5}$ TCID₅₀/ml), TGEV(1.5ml, $10^{5.5}$ TCID₅₀/ml), and *E. coli*(2ml, 3×10^6 PFU/ml) at four-day-old. Control group was ten suckling piglets were administered with saline solution and challenged with PEDV(1.5ml, $10^{5.5}$ TCID₅₀/ml), TGEV(1.5ml, $10^{5.5}$ TCID₅₀/ml), and *E. coli*(2ml, 3×10^6 PFU/ml) at four-day-old. Under same environment and feeding were provided was performed by milk replacer and piglets were allowed free access to water.

Detection of PEDV and TGEV from feces was performed by reverse transcription-polymerase chain reaction (RT-PCR) daily.

To perform isolation of *E. coli*, rectal swabs were taken daily after challenge. The challenged *E. coli* was isolated and detected by inoculating the swab samples diluted with PBS(1:100,000) on *E. coli* count plates(3M petrifilm). The plates were counted on a standard colony counter. At the end of the study, two weeks of challenge,

necropsy was performed and gross finding was examined.

Results

The detection rates of TGEV in feces by RT-PCR were 24.0% and 43.8% in the administered group and control group, respectively. The detection rates of PEDV in feces by RT-PCR were 3.0% and 21.9% in the administered group and control group, respectively.

In clinical signs, piglets of the control group appeared the typical signs such as severe watery diarrhea, depression and anorexia but piglets of the IgY administered group recovered progressively. In mortality, control group showed 20%,but IgY administered group showed 0%,respectively.

In gross findings, piglets of the control group appeared the typical findings of congestion, distension of lumen filled with gas and serosa were so thin that intestinal fluid could be seen. And it appeared that congestion of mesenteric lymph node and mesenteric vessels. Cecum and colon were filled with watery fluid. But gross findings of piglets of the administered group appeared milder than them of control group.

The isolation of *E. coli* from feces showed that 6.8×10^6 PFU/ml and 2.53×10^7 PFU/ml at the administered group and control group, respectively.

Discussion

It would be concluded that oral administration of Ig Top to piglets is effective to defend infectious viral and microbial intestinal disease.

References

1. **Bertschinger H. U. and Fairbrother, J. M.** Diseases of Swine, pp.431-468. 8th ed. Iowa State University Press, Ames, 1999.
2. **Yokoyama, H.** Infect. Immun. 1992, **60**, 998-1007.