

# Anti-Porcine *ETEC* 987P IgY Inhibits Bacterial Growth *in vitro*

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Diarrhea in neonatal and post-weaning piglets, due to Enterotoxigenic *Escherichia coli* (ETEC) 987P, is the most common enteric colibacillosis to cause high mortality. Oral administration of antibodies (IgY) from egg yolk offers potential prophylactic and therapeutic values in controlling the disease. The use of IgY has several advantages. It is an effective and inexpensive antibody source. When used as a feed ingredient, it could eliminate the possibility of bacterial infection. Thus, the objective of this study is to evaluate the potential use of anti-porcine ETEC 987P IgY and to substantiate the inhibitory effect on the bacterial growth *in vitro* of *E. coli*.

The activity in egg yolk of IgY against porcine ETEC 987P peaked at 2 week after the first immunization and was maintained during the period of immunization (19 weeks). This result demonstrates the binding activity of the highly specific IgY against ETEC 987P. The concentration of total IgY and protein in egg yolk, analyzed by immuno-biochemical tools such as ELISA and Lowry assay, was 7.42 mg/ml and 34.48 mg/ml, respectively. The mean ratio of IgY to protein in egg yolk was 0.22 (SD=0.03). This study indicates that an egg (20 g of egg yolk) can normally contain 148.4 mg of total IgY.

IgY solution at a concentration of 90, 180, and 360 mg IgY powder/mL tryptic soy broth (TSB) was added to the same volume of ETEC 987P culture in the media. After incubation of the ETEC 987P and IgY solution, the number of bacteria in the media mixed with specific IgY was 40 times less than the number of bacteria in the control (non-specific IgY). This result demonstrates that anti-ETEC 987P IgY can inhibit the growth of bacteria *in vitro*.

## Implication:

The present results indicate the potential prophylactic and therapeutic effect of IgY on porcine diarrhea. Therefore, the egg yolk containing IgY could be applied to the swine industry to prevent infection due to enterotoxigenic *E. coli* in pigs. This research is supported by Alberta Pork and the AARI.