

Sero-surveillance of Transmissible Gastroenteritis Virus (TGEV) and Porcine Respiratory Coronavirus (PRCV) in South Korea

Yoon-I Oh^{*}, Dong-Kun Yang, Soo-Dong Cho, Hee-Kyung Kang, Sun-Keum Choi,
Ye-Jee Kim, Bang-Hun Hyun and Jae-Young Song

*Animal, Plant and Fisheries Quarantine and Inspection Agency, Anyang, 430-757, Korea
MIFAFF, Korea*

Transmissible gastroenteritis (TGE) is sporadic in South Korea. Since porcine respiratory coronavirus (PRCV) infection was identified in South Korea in 1996, the TGE infection has decreased with the PRCV occurrence. In this study, we described the sero-surveillance of TGE/PRCV infection by using a commercially available ELISA kit. A total of 1,295 sera from slaughtered pigs and 69 sera from wild boars were collected in years 2009 and 2010 throughout the country and tested for antibodies against TGE and PRCV. Although there was no clinical sign observed for TGE and vaccination had not been done for TGEV, 4.9% of sera showed positive for antibody against TGEV. Furthermore, 63.7% of finisher and 8.7% of wild boars were positive for antibody against PRCV. Our result suggests that the TGEV infection might still be present in some farms in South Korea.

Key Words: TGE, PRCV, Differentiation of porcine coronavirus, Surveillance

INTRODUCTION

Transmissible gastroenteritis (TGE) is a highly contagious enteric disease of pigs caused by the TGE virus (TGEV), a member of the *Coronaviridae*. During an outbreak of TGE in a naïve swine herd, the TGEV spreads rapidly to pigs of all ages and causes vomiting, watery diarrhoea, dehydration, and death, particularly in pigs under 2 weeks of age (1).

A distinct respiratory variant, porcine respiratory coronavirus (PRCV) has spread throughout the world since 1984 (2~4). PRCV is considered as a mutant of TGEV with a

characteristic large deletion in the 5' region of the spike (S) protein gene, which leads to a loss of an antigenic determinant (3, 5, 6). PRCV, a deletion mutant of TGEV, showed two amino acids depletion from TGEV S protein resulting in a change from gastrointestinal to respiratory tropism (7).

TGEV multiplies in and damages the enterocytes lining the small intestine, producing villous atrophy and enteritis. The virus is mostly isolated from the intestinal tract and from faeces. By contrast, PRCV is mostly isolated from the upper respiratory tract, trachea, tonsils or the lungs.

PRCV itself does not appear to be an important primary pathogen, but it contributes to the porcine respiratory disease complex. Furthermore, the serological diagnosis of TGEV is greatly complicated since both TGEV and PRCV induce similar level of neutralizing antibody titres. Therefore, the differential diagnosis of TGEV and PRCV infection can only be accomplished by a blocking ELISA (8).

The purpose of this study was to investigate the prevalence of TGEV and PRCV antibodies throughout the country. In

Received: August 20, 2011/ Revised: August 25, 2011

Accepted: August 30, 2011

^{*}Corresponding author: Yoon-I Oh. Animal, Plant and Fisheries Quarantine and Inspection Agency, Anyang 480, Manan-gu, Anyang, 430-757, Korea.
Phone: +82-31-467-1784, Fax: +82-31-467-1797
e-mail: yoonioh@korea.kr

^{**}This work was supported financially by a grant from the Animal, Plant and Fisheries Quarantine and Inspection Agency (formerly National Veterinary Research and Quarantine Service), Ministry for Food, Agriculture, Forestry and Fisheries, Republic of Korea.