The Use of ELISA in Classical Swine Fever Virus Antibody Monitoring in Taiwan


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ABSTRACT The aim of this study was to establish a quantitative classical swine fever virus (CSFV) antibody monitoring system in Taiwan. First, we used a set of serum samples from vaccinated pigs to correlate antibody titers against CSFV between a virus neutralization (VN) test and a blocking enzyme-linked immunosorbent assay (ELISA). A good correlation ($r = 0.892$) was found between the VN and the ELISA results. To establish a reference serological profile for groups with good vaccination efficacy, 300 serum samples from 14 pig farms that displayed good immune responses with lapinized Chinese C (LPC) vaccination were used in this assay. The mean ELISA antibody inhibition value (%) was 104.6% in these pigs. To evaluate the interference of maternal antibody, three- and six-week-old pigs with different levels of maternal antibody were vaccinated with LPC vaccine, and the antibody response was assayed six weeks later. Seroconversion of the piglets displayed a quadratic regression correlation against maternal antibody levels. Serum samples of LPC-vaccinated pigs and of pigs infected with the CSFV could be differentiated by the blocking ELISA kit if the serum samples were diluted 20-fold. In conclusion, the commercially available CSFV ELISA kit results have a high correlation with the VN test results and can be used in the quantitative assessment of levels of CSFV antibody in Taiwan. [Sheu YT, Chien MS, Wang CS, Lin CC, Liao JW, Liu CI, *Lee WC. The use of ELISA on classical swine fever virus antibody monitoring in Taiwan. Taiwan Vet J 32 (4): 248-257, 2006. *Corresponding author TEL: 886-4-2284 0894, FAX: 886-4-2286 2073, E-mail: wclee@dragon.nchu.edu.tw]

Key words: use, classical swine fever, ELISA antibody, monitoring

INTRODUCTION

Classical swine fever (CSF) is a highly contagious disease of pigs caused by infection with a Pestivirus, classical swine fever virus (CSFV). In acute CSF, pigs develop high fever, leukopenia and extensive hemorrhagic lesions of skin and vital organs, while chronic infection is less specific and clinical signs are often complicated with secondary infections [3, 18]. CSF has become an endemic disease in most infected regions. For years, lapinized Chinese C (LPC) strain vaccine has been used to prevent the disease in endemic areas. Although the epidemic situation can be effectively controlled by vaccination, it is difficult to eradicate it by live vaccines due to multiple factors such as proper implementation of vaccination regimens, interference of maternal antibody with vaccination and virus persistence [1, 5, 8, 9]. In CSFV vaccinated pig farms, CSFV infection is often found in a chronic form with decreased incidence of CSFV pat-