豬瘟病毒 E2 醣蛋白抗原性差異對豬瘟疫苗效力之影響

豬瘟研究組

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摘要

豬瘟(Classical swine fever)是由豬瘟病毒所造成之高傳染性與高致死性豬隻疾病。豬瘟防治策略主要靠撲殺或使用疫苗控制。活毒疫苗與 E2 醣蛋白次單位疫苗相比，雖可提供豬隻較早及較完全之保護性，但活毒疫苗之缺點為無法區別感染與免疫之動物。本實驗為瞭解豬瘟病毒 E2 醣蛋白抗原性差異對豬瘟疫苗效力之影響，將不同基因型(subgroups 1.1、2.1 及 3.4)豬瘟病毒分別感染豬隻所得之抗血清，與表現不同基因型(subgroups 1.1、2.1 及 3.4)豬瘟病毒之 E2 醣蛋白分別免疫豬隻產生之抗體，再與不同基因型豬瘟病毒進行交叉中和試驗。結果顯示不同基因型病毒間有抗原性的差異，其中同源性病毒株之中和抗體力價顯著高於異源性病毒株。然而不同基因型病毒株間之抗原性差異並不會顯著影響活毒疫苗之保護效力，但對 E2 醣蛋白次單位疫苗之效力則扮演著重要的角色。因此使用 E2 醣蛋白次單位疫苗時，需評估疫苗株與田間病毒株之抗原性差異，以在田間應用上能提供良好的保護效力。

Antigen variation of E2 glycoprotein among different genotypes CSFV influence the efficacy of the CSFV vaccines

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Abstract

Classical swine fever (CSF) is an economically important, highly contagious disease of swine worldwide. CSF is caused by classical swine fever virus (CSFV), and circulates in domestic pigs and wild boars. There are two main strategies to control CSF, including systematic prophylactic vaccination and non-vaccination stamping-out policy. Although modified live vaccines (MLV) provide earlier and more complete protection than E2 subunit vaccines, it has the drawback of not allowing differentiation between infected and vaccinated animals (DIVA). The aim of the study is to investigate whether the antigenic variations among various genotypes of CSFV influence the efficacy of the MLV and E2 subunit vaccines. The cross-neutralization antibodies were analyzed against CSFV strains of genotypes 1.1, 2.1 and 3.4 using (1) CSFV genotype-specific antisera from pigs experimentally infected with genotype 1.1, 2.1 or 3.4 strain and (2) E2 genotype-specific antisera from pigs immunized with recombinant E2 protein of genotype 1.1, 2.1 or 3.4 strain. The results indicated that antibodies raised by either live virus or E2 protein which neutralize genotypically homologous strains better than heterologous ones. However, although this is not a major concern for MLV as the induced immune responses can protect pigs against the challenge of various genotypes of CSFVs, it is critical for E2 subunit vaccines. It is thus necessary to evaluate whether the E2 subunit vaccine can completely protect against the current prevalent strains in the field.