豬生殖與呼吸綜合症病毒中和抗體檢測技術之建立與運用

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摘要

豬生殖與呼吸綜合症病毒(porcine reproductive and respiratory syndrome virus；PRRSV)為引起豬隻呼吸與繁殖障礙之主要病原，並對全球養豬業構成重大威脅。該病毒之培養與增殖主要以非洲綠猴腎臟株化細胞(African green monkey kidney cells; MARC-145)為宿主細胞，為了提高病毒增殖力價以利後續之試驗研究，因此將 MARC-145 細胞進行限制性篩選(limiting dilution and cell cloning)，以篩選出可增殖較高病毒力價之 MARC-14 子代細胞。新篩選與未篩選之 MARC-145 細胞分別接種 PRRSV 病毒後，其增殖病毒力價分別為 10^8 和 10^6 $TCID_{50}$/mL。新篩選之 MARC-145 細胞增殖病毒力價明顯較高。將新篩選 MARC-145 細胞進一步開發血清中和抗體檢測法(serum neutralization test)用以檢測 537 頭不同年齡豬隻血清 PRRSV 中和抗體。檢測結果發現豬隻血清 PRRSV 中和抗體於 7 至 9 週齡降至最低，而於 12 週齡時 PRRSV 中和抗體開始陽轉且力價上升。

Development and Application of Serum Neutralization Test for Porcine Reproductive and Respiratory Syndrome Virus

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Abstract

The porcine reproductive and respiratory syndrome virus (PRRSV) is most important swine viral pathogen. Several different cell populations, high and low permissive cell clones to porcine reproductive and respiratory syndrome (PRRS) virus, were derived from (MARC-145) cell line (parent cell: P) by cell cloning. Maximum virus yields in MARC-145 of high permissive and P clones were 10^8 and 10^6 tissue culture infective dose 50 ($TCID_{50}$)/mL, respectively. These results indicated that the MARC-145 cells of high permissive will be useful for PRRS virus replication. In addition, a PRRSV serum neutralization test (SNT) based on MARC-145 cells of high permissive was developed for detected neutralizing antibodies to PRRSV. A total of 537 porcine sera were tested using SNT, and the titer of anti-PRRSV neutralizing antibodies was lowest between 7 and 9 weeks old and was raised significantly after 12 weeks old.