狂犬病病毒中和試驗建立及赴大陸CDC狂犬病實驗室研習報告

疫學研究組

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摘要

本所引用美國疾病控制及預防中心（CDC）檢測狂犬病病毒中和抗體方法，建立快速螢光灶抑制試驗（rapid fluorescent focus inhibition test, RFFIT），以資應用於瞭解野生動物族群狂犬病流行病學以及疫苗效應，依據 CDC 檢測流程及世界動物衛生組織（OIE）陸生動物診斷測試與疫苗手冊，利用 CVS-11 病毒株、mouse neuroblastoma (MNA) 細胞株、WHO 或 OIE 標準血清於八孔細胞培養玻片（Lab-tek chamber slides）進行 RFFIT，目前完成 CVS-11 種毒及 MNA 細胞的凍存，並挑選犬血清進行 RFFIT 初步測試，未來可應用於狂犬病血清學及野生動物流行病學監測。

103 年 6 月本所派員赴北京「中國疾病預防控制中心病毒病預防控制所腦炎病毒實驗室」研習狂犬病診斷、監測技術與研究，通過生物安全訓練及測驗後，參與狂犬病「即時定量反轉錄聚合酶鏈反應」、「病毒中和抗體檢測 RFFIT 及 FAVN 方法操作」、「抗原檢測免疫層析製備及分析技術」、「FFD_{50} 及 FFU」、「細胞病毒增殖」等實際操作，此次研習有助於提升臺灣狂犬病實驗室之檢測技術與研究，未來可應用於 RFFIT 檢測、即時定量反轉錄聚合酶鏈反應以及野生動物監測計畫，並參考大陸對蝙蝠 Lyssavirus 監測、動物實驗設計及分子流行病學等研究成果，供做臺灣未來研究野生動物狂犬病及防疫策略研擬之參考。

Establishment of Rabies virus Neutralisation Test and the Visit report to the Rabies Laboratory of Chinese Center for Disease Control and Prevention

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Abstract

For a better understanding on rabies epidemiology of wildlife populations and vaccination efficacy, the rapid fluorescent focus inhibition test (RFFIT) for determining rabies virus neutralising antibody was introduced into AHRI from US Center for Disease Control and Prevention (CDC). Based on the CDC protocol and OIE Terrestrial Manual, we performed the RFFIT on Lab-tek chamber slides by using rabies CVS-11 strain, mouse neuroblastoma (MNA) cell line, and either WHO or OIE standard sera. We have cryopreserved the CVS-11 seed virus, stock virus and MNA cells. The sera collected from dogs were used in the preliminary RFFIT. The RFFIT technique could be applied to the serology and epidemiology of wildlife rabies surveillance in the future.

Two staffs of AHRI were dispatched to go to the Department of Viral Encephalitis, Institute for Viral Disease Control and Prevention, China CDC for studying the diagnosis, surveillance techniques and research of rabies in June 2014. After passing the qualification of biosafety training, we started the practical experiment, including the real-time reverse transcription polymerase chain reaction (rRT-PCR), virus neutralisation test RFFIT and FAVN, immune-chromatographic test for rabies antigen, FFD_{50} and FFU, CVS production, etc. The visit can enhance the diagnostic techniques and researches in our rabies laboratory, such as the application of RFFIT detection, real-time RT-PCR and wildlife surveillance project. The research achievements of bat lyssavirus surveillance, the design of animal experiment and molecular epidemiology in China could be the references of wildlife animals' rabies research and the prevention and control strategy making in Taiwan in the future.