

牛流行熱活毒疫苗之動物實驗

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摘要

牛流行熱是由桿狀病毒所引起之急性發熱性疾病，藉由節肢動物媒介而感染，在台灣平均每 3-6 年爆發流行一次，為加強本病之預防，自日本分讓牛流行熱活毒疫苗病毒株 YHL 株用以製作活毒疫苗，並進行相關動物試驗以確定其安全性與效力。迴毒試驗中，YHL 活毒疫苗連續在牛隻繼代三代；攻毒試驗的牛隻則在免疫 YHL 活毒疫苗 2 週後，以台灣 2007 年分離之牛流行熱病毒進行攻毒，迴毒與攻毒試驗期間牛隻均無出現連續高熱及其他異狀，採集的血液進行病毒分離，結果都是陰性。腦內接種台灣 2009 年分離之牛流行熱病毒於哺乳倉鼠，接種第二代後神經症狀不明顯，所收集之腦乳劑病毒含量低，無法供攻毒使用。以小鼠做為替代動物進行牛流行熱活毒疫苗之安全與效力試驗，試驗期間小鼠無異狀，活動力正常，疫苗對小鼠之安全性應無疑慮，而免疫前與免疫後之牛流行熱抗體根據血清中和試驗結果，可揚升 2-4 倍。綜合上述結果，YHL 活毒疫苗免疫牛隻安全性高，雖攻毒模式不易建立，仍可用血清中和抗體力價評估效力。

Animal trials of bovine ephemeral fever live vaccine based on YHL strain

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Abstract

Bovine ephemeral fever (BEF) is an arthropod-borne viral disease caused by Rhabdovirus. This disease occurs once every 3-6 years in Taiwan. To improve the BEF vaccination program, we try to develop a live vaccine with YHL virus strain that came from Japan. Several animal trials had been conducted to confirm the safety and efficacy of this live vaccine. In **virulent recovering test**, the live vaccine was serially passaged thrice in calves. Other calves were challenged by BEF virus/2007 two weeks post the live vaccine vaccination. All of them remained healthy, no high fever had been observed. Using blood samples taken from these calves to isolate BEF virus, the results were all negative. To establish the challenge model, the brain tissue of baby hamsters showed neurological signs after intracerebral inoculation of the BEF virus/2009 were collected, homogenized and inoculated intracerebrally again to the other baby hamsters. The neurological signs were not obvious this time and the virus titer of the brain tissue was not high enough to proceed with the challenge test. In another study, mice were used as alternative animal model to evaluate the safety and efficacy of the YHL live vaccine. These mice were all normal and showed no side effects during the trial. The serum neutralizing antibody titers against BEF virus were 2 to 4 times higher than the pre-immune serum. According to the results mentioned above, the live vaccine based on YHL strain is safe for calves. Though it's hard to evaluate the efficacy of the live vaccine through challenge, we can still learn from the titer of the neutralizing antibodies.