牛流行熱 G 蛋白次單位疫苗之研發

製劑研究組
許愛萍　助理研究員

摘要

牛流行熱由牛流行熱病毒引起，經庫蠓等吸血節肢動物媒介，造成感染牛隻泌乳量下降致使酪農業嚴重損失。目前台灣牛流行熱免疫策略為接種組織細胞培養後不活化病毒疫苗，製程耗費大量資金、人力，然獲得病毒力價卻不高。本研究之目的為透過桿狀病毒系統開發保護效力較佳之牛流行熱 G 蛋白次單位疫苗；以帶有台灣牛流行熱病毒野外分離株 G 蛋白核酸序列片段之重組桿狀病毒感染昆蟲細胞，製造重組 G 蛋白。目前已完成架構可表現不同長度 G 蛋白之重組桿狀病毒，並利用多個多源抗體篩選出三個抗原性較佳之重組 G 蛋白，初步已分析此三個蛋白表現量。另已成功純化其中之一個重組 G 蛋白，於小鼠進行蛋白免疫原性評估中。未來亦將嘗試純化另外兩個重組 G 蛋白及免疫原性評估，以篩選最佳重組 G 蛋白於牛隻進行疫苗效力試驗。

Development of a Bovine Ephemeral Fever G Protein Subunit Vaccine

Ai-Ping Hsu

Abstract

Bovine ephemeral fever (BEF) caused by bovine ephemeral fever virus (BEFV) is an arthropod-borne disease. This febrile disease causes seriously economic damage in dairy and grazing industries through reduced milk production. Currently available killed vaccines produced by cell culture have high prime cost, require labor, and produce low-titer virus. Aim of our study is to develop a more effective vaccine product by using baculovirus expression vector system (BEVS)-- recombinant baculovirus harboring nucleic acid fragment of G protein from a BEFV wildtype isolate in Taiwan infects insect cells for recombinant protein production. In our preliminary results, recombinant baculovirus clones for expressing different length designs of G protein have been successfully constructed. Three from all the constructs have been selected based on antigenicity studies with multiple polyclonal antisera against BEFV, and expression level of these three recombinant proteins have also been analyzed. Furthermore, one from the three proteins has been purified and immunogenicity evaluation in mouse model is being carried on. In the future studies, the immunogenicity of the other two proteins after purification will also be characterized, and vaccination studies in cattle will be conducted with the most potential one of the three proteins.