

牛流行熱活毒疫苗之研發

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摘要

牛流行熱在台灣平均每 3-6 年爆發流行一次，為加強本病之預防，本計畫利用日本分讓之牛流行熱活毒疫苗病毒株 YHL 株製作活毒疫苗。在安全試驗中，娟珊牛與黃牛在注射 YHL 株病毒後，不論是免疫一次或連續免疫兩次，皆未出現發熱或其他不良反應。效力試驗中，牛隻於 YHL 株注射 3 週後再注射本所生產之牛流行熱不活化疫苗，結果發現血清中和抗體力價於 4 週內上升到高峰，分別可達 128 倍跟 256 倍，於半年後再補強一次不活化疫苗，抗體又會快速上升，可達 512 倍跟 256 倍。以冷凍乾燥方式製作 YHL 活毒疫苗共三批，製造完成時成品真空度及含濕度除第三批濕度較高外，均合乎標準，力價試驗結果分別為 $10^{5.35}$ 、 $10^{6.04}$ 及 $10^{5.45}$ TCID₅₀/mL，保存期試驗目前已進行到 12 個月，可發現病毒力價隨著保存時間增加而逐漸下降，含濕度則差異不大。而在免疫 YHL 冷凍乾燥疫苗與細胞免疫功能評估方面，活毒疫苗本身誘發中和抗體的能力有限，不如活毒搭配不活化疫苗效果好。

Development of bovine ephemeral fever live vaccine based on YHL strain

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Abstract

Bovine ephemeral fever (BEF) 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. The result of safety test showed that the YHL virus didn't cause fever or adverse effects to cattle whether inoculated live YHL vaccine once or twice. After the safety of the live YHL vaccine was confirmed, immune efficiency test of cattle was performed. The calves boosted with a dose of NHRI BEF inactivated vaccine 3 weeks post YHL virus vaccination produced a rapid neutralizing antibody response against BEFV. The antibody titers against BEFV reached a peak of 1:128 and 1:256 within 3 to 4 weeks post vaccination with inactivated vaccine and then declined gradually. Then the antibody titers reached another peak of 1:512 and 1:256 after boosting a dose of NHRI BEF inactivated vaccine 6 months later. Three lots of YHL live vaccine had been prepared by lyophilized method. The vacuum degree, humidity and virus contents were then tested. All of them were qualified in vacuum degree and humidity except that the humidity of lot 3 was higher than 4%. The infectious titer were $10^{5.35}$ 、 $10^{6.04}$ and $10^{5.45}$ TCID₅₀/mL respectively. All of these vaccines were stored at 4°C for 12 months and the humidity showed almost no difference while the virus infectious titer tended to decline along with time. We also evaluated the potency and cell-mediated immune response of lyophilized YHL live vaccine. The ability of live vaccine to induce neutralizing antibody by itself was not good as followed by killed vaccine booster.