

水禽病毒性疾病三價疫苗之研發

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摘要

水禽小病毒感染症 (waterfowl parvovirus infection) 以及鴨病毒性肝炎 (duck viral hepatitis) 是雛鵝與雛鴨重要的致死性傳染性疾病。感染此疾病會造成高發病率與高死亡率，耐過之鴨隻會造成發育遲緩而導致嚴重經濟損失。本實驗室已有水禽小病毒雙價組織疫苗以及鴨病毒性肝炎活毒疫苗的開發。然而在疫苗研發上多價疫苗為一種研發趨勢及需求，抗原的比例及力價是多價疫苗需要面對的問題。本研究將水禽小病毒以及鴨病毒性肝炎病毒以組織培養方式馴化增殖，以不同比例進行混合，評估各項抗體的消長。

水禽小病毒鴨源及鵝源病毒株以鴨或鵝纖維母細胞進行馴化，鴨病毒性肝炎病毒以鴨腎細胞進行馴化。以此三病毒株以特定比例進行混合，免疫1日齡番鴨，免疫後14日水禽小病毒鵝源抗體可達血清中和抗體SN 1280倍，鴨源抗體可達SN 640倍，鴨病毒性肝炎病毒中和抗體可達中和指數NI 4.0，均可以達到現行國家檢驗標準(水禽小病毒抗體SN值大於32倍，鴨病毒性肝炎NI值大於3.0)。本項多價疫苗產品之研發提供產業使用，可以減少免疫所需要之人力成本以及多次免疫造成的鴨隻緊迫，未來可提供飼養不同種類水禽農戶更多疫苗選擇。

Development of Trivalent Live Vaccine against Waterfowl

Viral Diseases

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Abstract

Both waterfowl parvovirus infection and duck viral hepatitis are important lethal infectious diseases in goslings and ducklings. Those diseases cause high morbidity and high mortality and those recovering ducklings with stunted growth result in serious economic losses. We had completed development of bivalent waterfowl parvovirus vaccine and attenuated duck hepatitis live vaccine. However, the current trend in vaccine development is multivalent vaccine, the proportion of multiple antigens and virus titers make development a challenge. In this study both waterfowl parvovirus and duck hepatitis virus were propagated in tissue cultures and mixed with different proportions to assess the corresponding antibody titers. Muscovy duck parvovirus (MDPV) and goose parvovirus (GPV) were attenuated in duck or goose fibroblast cells while duck hepatitis virus (DHV) attenuated in duck kidney cells. Those three strain viruses mixed with a certain proportion were given to one-day-old Muscovy ducklings intramuscularly. Their serum neutralization (SN) antibody titers against GPV and MDPV have reached 1:1280 and 1:640 respectively on 14 DPI (days post inoculation). Also, the virus neutralization index (NI) has reached 4.0 against DHV. The test results have met the national assay standards for vaccines - the SN titers against MDPV or GPV > 1:32 and against DHV NI > 3.0. In conclusion, the use of multivalent vaccine can reduce repeated labor costs for handling and injection stresses on ducks. After commercialization, AHRI can provide waterfowl breeding farmers with more vaccine choices.