

水禽雷氏桿菌不活化菌苗製造與改良

製劑組

沈芷萱 助理研究員

摘要

雷氏桿菌 (*Riemerella anatipestifer*, 簡稱 RA) 感染症，又稱傳染性漿膜炎，是一種好發於幼年水禽的高傳染性細菌性疾病，常引起敗血症及明顯的生長遲緩，對水禽場造成嚴重經濟損失。自 1904 年首次發現以來，全球已鑑別出至少 21 種 RA 血清型，各型之間幾乎無交叉免疫反應，且現有疫苗僅對相同血清型具保護力。目前本病治療以抗生素為主，惟長期使用易導致抗藥性問題，疫苗接種仍為預防 RA 感染較為有效且可持續的方式。根據本所 2014 至 2023 年針對國內水禽進行的雷氏桿菌血清型調查，顯示第 11 型為目前最主要流行的血清型。然而，本所現行量產之三價疫苗僅涵蓋第 1、2 及 6 型，尚未納入第 11 型，致疫苗防護力有限。為提升疫苗效能與防疫效益，本所已針對 RA 第 11 型菌株完成初步特性分析與增殖生長曲線試驗，並運用即時定量 PCR (Real-time PCR) 進行細菌濃度分析，獲得良好結果。後續將進行動物試驗，以評估新增血清型疫苗的保護效力，期望開發涵蓋第 11 型的多價疫苗，強化國內水禽場防疫能力，降低產業損失，促進國內畜牧經濟發展。

Work Report – Production and Improvement of Inactivated

***Riemerella anatipestifer* Vaccine for Waterfowl**

Chih-Shuan Shen

Abstract

Riemerella anatipestifer (RA) infection, also known as infectious serositis, is a highly contagious bacterial disease that primarily affects young waterfowl. It often causes septicemia and significant growth retardation, leading to severe economic losses in waterfowl farms. Since it was first identified in 1904, at least 21 RA serotypes have been characterized worldwide. There is little to no cross-immunity among these serotypes, and existing vaccines provide protection only against strains of the same serotype.

Currently, treatment for this disease relies mainly on antibiotics; however, long-term use can lead to antibiotic resistance. Therefore, vaccination remains a more effective and sustainable approach for preventing RA infection.

According to our institute's serotyping survey of domestic waterfowl from 2014 to 2023, serotype 11 is currently the most prevalent strain in Taiwan. However, the trivalent vaccine currently produced at scale by our institute only covers serotypes 1, 2, and 6, and does not include serotype 11—thus limiting its protective efficacy.

To improve vaccine performance and enhance disease control, our institute has conducted preliminary characterization and growth curve analysis of RA serotype 11 strains. We have also utilized real-time quantitative PCR (qPCR) to analyze bacterial concentrations, yielding promising results. Moving forward, animal trials will be conducted to assess the protective efficacy of the updated vaccine formulations. Our goal is to develop a multivalent vaccine that includes serotype 11, thereby strengthening disease control capacity in domestic waterfowl farms, reducing industry losses, and promoting the sustainable development of the national livestock economy.