

禽類沙門氏菌症之病原監控及抗藥性研究

生物研究組

官南綾 助理研究員

摘要

禽類感染沙門氏菌引起急性或慢性疾病，在家禽產業引起重大的經濟損失，例如造成雞白痢 (Pullorum Disease; PD) 的 *Salmonella Pullorum*，及造成家禽傷寒 (Fowl typhoid; FT) 的 *Salmonella Gallinarum*。現場使用抗生物質進行細菌疾病的治療或是預防性投予，可能造成高抗藥性盛行率及多重抗藥性菌株出現，是獸醫及公共衛生的重要議題。Integron 是一種細菌產生抗藥性的機制，為可移動的 DNA 組成，其上攜帶的抗藥性基因片匣可能影響細菌的抗藥性，本次試驗目的在檢測禽類沙門氏菌抗藥性與 integron 之間的關聯。目前共分離得 25 株沙門氏菌，包含 21 株 *Salmonella Pullorum* 及 4 株 *Salmonella sp.*。其中 60% (15/25) 沙門氏菌株測得 integron，其大小為 721bp、1000bp、1600bp 及 1900bp。Integron 所攜帶的基因片匣種類包含 2 種 aminoglycosides 抗藥性基因 (*aadA1* 及 *aadA2*)；3 種 trimethoprim 抗藥性基因 (*dhfrA12*、*dhfrA25* 及 *dhfrI*)。7 株帶有 *dhfr* 基因之菌株對於 trimethoprim/sulfamethoxazole 皆有抗藥性，14 株帶有 *aadA* 基因之菌株其對於 streptomycin 的最小抑制濃度 (minimum inhibitory concentration; MIC) 則有明顯上升的情形，顯示菌株的抗藥性與 integron 的帶有的抗藥性基因卡匣有關。然而，抗藥性基因卡匣的種類僅包含部分菌株的抗藥性，顯示還有其他抗藥機制存在。

Prevalence of Antimicrobial Resistance of Avian

Salmonella

Nan-Ling Kuan

Abstract

Avian *Salmonella* infections cause acute or chronic diseases in poultry, which are responsible for large economic losses in the poultry industry worldwide. The etiological agent of pullorum disease and fowl typhoid is *Salmonella enterica* subsp. *enterica* serovar Gallinarum, which is divided into two distinct biovars, Pullorum and Gallinarum. Drug resistant strains might be caused by increasing use of antimicrobial agents for disease treatment or prevention. As an important mechanism of antimicrobial resistance, integrons refer to mobile DNA elements, which may contain one to several resistant gene cassettes. In this study, 21 isolates of *Salmonella* Pullorum and 4 isolates of *Salmonella* sp. from poultry were included. The results revealed that 60% (15/25) of isolates carried integrons with various sizes: 721 bp, 1,000 bp, 1,600 bp and 1,900 bp. These integrons contained gene cassettes encoding resistance to aminoglycosides (*aadA1* and *aadA2*) and trimethoprim (*dhfrA12*, *dhfrA25* and *dhfrI*). All of the 7 *dhfr*-positive isolates were resistant to trimethoprim/sulfamethoxazole; the 14 *aadA*-positive isolates were increased in the minimum inhibitory concentration of streptomycin. The results indicated that types of resistant gene cassettes reflected the relevant resistances in *Salmonella* isolates.