

發病魚隻分離鏈球菌之藥物感受性與基因分型

生物研究組

黃子鳴 助理研究員

摘要

鏈球菌感染症為水生動物常見疾病，主要引起腦膜炎、眼炎（panophthalmitis）、腹水、腹膜炎、與體表出血等病變，造成水產養殖業嚴重的經濟損失。常見的水產動物分離鏈球菌有 *Streptococcus iniae*、*S. agalactiae*、與 *Lactococcus garvieae* 等。鏈球菌症的防治方法有投予抗微生物製劑或使用疫苗，但使用抗微生物製劑會促使抗藥性菌株出現，而目前在台灣又沒有合法的魚鏈球菌疫苗上市。本試驗的目的為調查近期水生動物分離鏈球菌的藥物感受性，以及利用分子生物學技術對分離株做基因分型，並以金目鱸接種測試分離株的毒力，以期能挑選出毒力表現較強的菌株做為疫苗研發之用。以紙錠擴散法（disc diffusion assay）檢測發現，*S. iniae* 對歐索林酸（oxolinic acid）有抗藥性，*S. agalactiae* 對歐索林酸與磺胺劑有抗藥性，而 *L. garvieae* 則歐索林酸、磺胺劑與四環黴素類抗微生物製劑有抗藥性。以隨機擴增片段多形性（Randomly Amplification of Polymorphic DNA, RAPD）檢測 *S. iniae* 分離株，發現其基因型相似，具有相關性。金目鱸接種試驗顯示，*S. iniae* 分離株間的毒力表現不同，需腹腔接種 10^9 CFU 才能達到 50% 以上的死亡率。目前的結果顯示，水生動物分離之鏈球菌中，以 *L. garvieae* 的抗藥性較為嚴重，而 *S. iniae* 分離株的毒力表現有差異，需要高劑量接種才能達到過半的死亡率。

Antimicrobial Susceptibility and Genotyping of *Streptococcus iniae* Isolated from Diseased Fish

Tzu-Ming Huang

Abstract

Streptococcosis is a common disease in aquatic animals. It causes meningitis, panophthalmitis, ascites, peritonitis, and scattered hemorrhage. Streptococcal infections are responsible for significant economic losses in aquaculture. *Streptococcus iniae*, *S. agalactiae*, and *Lactococcus garvieae* are commonly isolated from fish streptococcoses. The prevention and control of fish streptococcosis includes administration of antimicrobial and vaccination. However, usage of antimicrobial agent causes the emergence of drug resistance, and fish *Streptococcus* vaccine is not available in Taiwan. The objectives of the present study were to investigate the antimicrobial susceptibility of recent *Streptococcus* isolates, genotyping by molecular technology, and virulence expression in sea bass experiment. The results of disc diffusion assay revealed that *S. iniae* was resistant to oxolinic acid, *S. agalactiae* was resistant to oxolinic acid and sulfonamides, and *L. garvieae* was resistant to oxolinic acid, sulfonamides, and tetracyclines. The genotypes of *S. iniae* isolates were similar and associated by randomly amplification of polymorphic DNA (RAPD) analysis. The sea bass experiments showed that the virulence expressions among *S. iniae* isolates were different, and the dose of more than 50% mortality needed 10^9 CFU by intraperitoneal inoculation. In general, the preliminary results indicated that among the collected *Streptococcus* and *Lactococcus* isolates, *L. garvieae* showed poor antimicrobial susceptibility, and the virulence expression of *S. iniae* was different, high dose of inoculation could reach more than 50% mortality.