

魚類神經壞死病毒分子特性與毒力分析

生物研究組

黃淑敏 助理研究員

摘要

神經壞死病毒(viral nervous necrosis, VNN)自 1994 年經確認後至今近 20 年,仍持續於稚魚及仔魚階段造成重大經濟損失並重創台灣石斑魚養殖產業。本試驗目的將 2005-2013 年自田間收集之 14 株神經壞死病毒株進行病毒之外膜蛋白(coat protein)全長序列分析,其結果發現:台灣所有分離株之基因型與赤點石斑神經壞死病毒(Redspotted grouper nervous necrosis virus, RGNNV)最為親近,其相似度高達 97.3%,其次為巴芬比目魚神經壞死病毒(Berfin flounder nervous necrosis virus, BFNNV),黃帶擬鰺神經壞死病毒(Striped jack nervous necrosis virus, SJNNV)及紅鰭東方魷神經壞死病毒(Tiger puffer nervous necrosis virus, TPNNV),其相似度分別為 81.7%、76.6%及 63%。另自歷年龍膽石斑(*Epinephelus lanceolatus*)所分離出來之 NNV 分離株其基因之相似度高達 97.2%,相較於其他魚種所分離到之 NNV 其基因之相似度亦高達 97.5%以上。在探討病毒培養溫度與毒力之關係發現:於 28°C 下培養的病毒毒力較高於 25°C。顯示 NNV 病毒株於台灣重要經濟魚種流行仍為同一株病毒株,且病毒於野外環境中適應良好。

關鍵字:神經壞死病毒、疫苗、石斑魚

Genetic and virulence analysis of viral nervous necrosis virus in fishes

Sue-Min Huang

Abstract

Viral nervous necrosis (VNN) was first identified in 1994 and caused large economic losses in Taiwanese fish aquaculture industry during the past 20 years. In this study, the total 14 isolates were collected from various fish species in Taiwan and open reading frames encoding the coat protein (CP) gene were used for phylogenetic analysis. The nucleotide analysis of CP gene revealed that the nervous necrosis virus (NNV) isolates in Taiwan were greater than 92.7% similar to red-spotted grouper nervous necrosis virus (RGNNV) genotype, 81% similar to barfin flounder nervous necrosis virus (BFNNV) genotype, 76.6% similar to striped jack nervous necrosis virus (SJNNV) genotype and 63% similar to tiger puffer nervous necrosis virus (TPNNV) genotype. Similarly, the CP gene of NNV isolates from giant grouper (*Epinephelus lanceolatus*) showed high nucleotide similarity (97.2%) during 2005 to 2013. The intra-species of grouper for NNV isolates showed the nucleotide similarity were 97.5%. Among the virus propagation and viral replication efficiency test showed the higher titer at temperature of 28 °C than at 25°C. This results indicated the giant grouper nervous necrosis virus (GGNNV) was slow evolution and adapted well to environment in the field.

Keyword : *viral nervous necrosis, vaccine, grouper*