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# Characterization of Giant Grouper (*Epinephelus lanceolatus*) Interferon Regulatory Factor 9 Modulated by Temperature Stresses in Response to Antiviral Immune Activity

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## Résumé

Giant grouper, *Epinephelus lanceolatus*, is highly economic valuable, and a well-known victim of lethal infection of neuron necrosis virus (NNV). Recent studies demonstrated that significant elevating expression levels of type I interferon and its receptor were induced by NNV infection in larval and juvenile groupers and further mediated the expression of giant group interferon regulatory factor 9 (ggIRF9). To evaluate the potential NNV inducing modulation on ggIRF9, the differential expression of *ggIRF9* mRNA was profiled by reverse transcription-coupled quantitative real-time poly-chain reaction (RT-qPCR). The relative abundance of *ggIRF9* mRNA was shown significantly promoted at three to six hours post stimulating with immune stressors and NNV infection. Dual-luciferase assays were conducted to examine the effects of ggIRF9 mediating transcriptions of interferon stimulated genes. Our findings suggested that the activity of Mx1 promoter is 2-folds upregulated by the overexpression of ggIRF9 in NNV infected GF-1 cell line. In addition, temperature modulatory effects were verified in the current study. Cold and hot stresses were introduced to giant groupers by exposure to 20 oC and 36 oC, respectively. Via RT-qPCR, temperature stresses inducing differential mRNA level of *ggIRF9* was measured, and the findings indicated that the relative abundance of *ggIRF9* mRNA is suppressed by cold stress but stimulated by hot stress. Our results suggest that ggIRF9 is a critical bio-regulator of innate antiviral immune activity in different temperature and may inform development of novel approaches on improving prevention of viral infectious diseases in grouper aquaculture.

**Mots-Clés:** IRF9, grouper, NNV

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