FISH TRIM8 EXERTS ANTIVIRAL ROLES IN RESPONSE TO VIRUS INFECTION

Yepin Yu[1,2], Youhua Huang[1,2§], Xiaohong Huang[1,2], Ying Yang[1,2], Min Yang[1], Linli Zhou[1,2], Qiwei Qin[1,2]

1Key Laboratory of Tropical Marine Bio-resources and Ecology, South China Sea Institute of Oceanology, Chinese Academy of Sciences, 164 West Xingang Road, Guangzhou 510301, China

2 University of Chinese Academy of Sciences, Beijing, China

ABSTRACT

The tripartite motif (TRIM)-containing proteins usually exert important regulatory roles during multiple biological processes. In this study, a TRIM8 homolog from grouper, *Epinephelus coioides* (EcTRIM8) was cloned, and its effects on fish virus replication were investigated. The full-length EcTRIM8 cDNA encoded a polypeptide of 568 amino acids with 92% identity with TRIM8 homolog from large yellow croaker (*Larimichthys crocea*). Amino acid alignment analysis indicated that EcTRIM8 contained conserved RING finger, B-box and coiled-coil domain. Expression profile analysis revealed that EcTRIM8 was abundant in intestine, spleen and skin. After challenging with Singapore grouper iridovirus (SGIV) or polyinosin-polycytidylic acid (poly I:C), the EcTRIM8 transcript was differently regulated at different stage post-injection. Under fluorescence microscopy, we observed different distribution patterns of EcTRIM8 in grouper spleen (GS) cells, including punctate fluorescence evenly situated throughout the cytoplasm and bright aggregates. The ectopic expression of EcTRIM8 in vitro significantly inhibited the replication of SGIV and red spotted grouper nervous necrosis virus (RGNNV), evidenced by the delay of CPE occurrence, viral gene transcription and protein synthesis. Moreover, the transcription of the proinflammatory factors and interferon related immune factors were differently regulated by TRIM8 during SGIV or RGNNV infection. In addition, overexpression of EcTRIM8 significantly increased the transcription of IRF3 and IRF7, and enhanced IRF3 or IRF7 induced interferon-stimulated response element (ISRE) promoter activity. Together, our results firstly demonstrated that fish TRIM8 could exert antiviral function through regulated the expression of proinflammatory cytokines and interferon related transcription factors in response to fish viruses.

KEYWORDS

TRIM8; Grouper; Interferon; Antiviral; Viral replication

[§]Corresponding author. Tel.: +862089023197; Fax: +862089023197.
E-mail address: huangyh@scsio.ac.cn