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NOTE

Effects of temperature and salinity on diatom cell lysis by DNA and RNA viruses

Kei Kimura^{1,**}, Yuji Tomaru^{2,*,**}

¹Institute of Lowland and Marine Research, Saga University, Honjo-machi 1, Saga 840-8502, Japan

²National Research Institute of Fisheries and Environment of Inland Sea, Japan Fisheries Research and Education Agency, 2-17-5 Maruishi, Hatsukaichi, Hiroshima 739-0452, Japan

*Corresponding author: tomaryu@affrc.go.jp**The authors contributed equally to this work

ABSTRACT: In estuarine and coastal environments, microbes are exposed to significant changes in the environment within short time periods. To examine the effects of water temperature and salinity on host-virus interactions, we used 2 strains of the marine planktonic diatom *Chaetoceros tenuissimus* and 4 viruses that exhibit contrasting host specificities. We found that the time necessary for a given virus to lyse half the diatoms within a culture (CR₅₀), measured as the number of days required for chlorophyll a fluorescence intensity of host cells to decrease by >50%, was significantly affected by changes in both water temperature and salinity. In several host-virus combinations, environmental suitability for the growth of the host and the CR₅₀ of the virus were significantly correlated, but no correlation was observed for other combinations. The CR₅₀ values for different viral strains varied significantly depending on the combination of temperature and salinity tested. Moreover, optimum conditions for host cell lysis were highly diverse among virus species and isolates. The varied environmental optima of viruses might allow them to partition use of the same host species in natural environments.

KEY WORDS: Water temperature · Water salinity · Host-virus interactions · Diatom lysis

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