

Heat tolerance and Symbiodiniaceae profiles of acroporids in a Philippine Reef

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Abstract

Warming of the oceans is decimating coral reefs worldwide. Yet, it has been observed that a proportion of coral populations from the same general reef area, experiencing a similar thermal regime, are able to tolerate heat stress and endure. To understand the mechanisms underlying coral thermal tolerance, we subjected fragments taken from 30 colonies of *Acropora digitifera*, *A. millepora* and *A. tenuis* to 33°C (high temperature) versus 29°C (control) for about a week (~2 DHW). Our results revealed inter-individual differences in heat tolerance in all three coral species, with 70% of *A. digitifera*, 50% of *A. millepora*, and 30% of *A. tenuis* colonies showing high tolerance to elevated temperature (i.e., no bleaching). However, analysis of associated microalgal symbionts in these corals using ITS2 sequencing did not demonstrate a clear correlation between differences in heat tolerance and Symbiodiniaceae composition, suggesting that host-specific factors should also be examined.

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