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PG -15 **Studies on the effects of thermal stress, high PAR and UV on planulae of two species of *Acropora***

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This study investigated the effects of temperature on symbiotic planulae of *Acropora digitifera* and the effects of high PAR and UV on symbiotic and non-symbiotic planulae of *A. tenuis*. The first objective of this study was to examine whether thermal stress induces DNA damage on *A. digitifera* planulae. The second objective was to evaluate the hypothesis that symbiont increases DNA damage of *A. tenuis* planulae under high PAR and UV. For the first objective, planula larvae of *A. digitifera* were infected with homologous zooxanthellae. Infected larvae were exposed to two temperatures, 25°C and 31°C under normal light (70  $\mu\text{mol quanta m}^{-2}\text{s}^{-1}$ ). DNA damage of planulae was detected using a Comet Assay (single cell gel electrophoresis) method. The length of comet tail, which reflects the extent of DNA damage, was measured with 8 to 41 comets per planula sample. The comet tail length was five times higher ( $49.85 \mu\text{m} \pm 24.36$ ,  $n = 2$ ) at 31°C than at 25°C ( $10.52 \mu\text{m} \pm 6.84$ ,  $n = 2$ ). For the second objective, symbiotic and aposymbiotic planulae of *A. tenuis* were exposed to natural sunlight (high PAR and UV) at the ambient temperature of 27°C for three days. DNA damage was detected by the same method mentioned above. The comet tail length was significantly higher in symbiotic planulae ( $61.14 \mu\text{m} \pm 2.37$  ( $n = 2$ )) than non-symbiotic planulae ( $4.16 \pm 1.97 \mu\text{m}$  ( $n = 3$ )). This result suggests that symbiotic planulae are more sensitive to exposure to high PAR + UV than non-symbiotic planulae. The present results support that symbiotic algae produce toxic substances such as ROS under stress and cause DNA damage of host cells.

Key words: Coral, planula, comet assay, DNA damage