

## EFFECTS OF "EUTROPHICATION" ON THE SIZE AND NUCLEUS OF SYMBIOTIC ZOOXANTHELLAE

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### ABSTRACT

*Zooxanthellae (Symbiodinium sp) from the giant clams, Tridacna maxima, were monitored for their responses to ammonium and phosphate addition in the field. Nutrient was added into ponded microatolls at every low tide using Nutrient Dispersal Units (NDUs) moored outside the atolls to reach final concentrations of 10µm for ammonium and 2µm of phosphate. Transmission electron micrograph showed that zooxanthellae size (as the maximum diameter) from nitrogen-treated clams was significantly than those from other treatments (P<0.05). However, the cross-sectional area of the nucleus was not significantly affected by the treatment smaller (P>0.05). The result suggests that the condition of zooxanthellae, such as the size of zooxanthellae from giant clams is influenced by relatively small changes in the concentration of nitrogen in the water column.*

**Key words : zooxanthellae, giant clams, nutrient enrichment**

### I. Introduction

Despite known as highly productive environment, coral reef ecosystem is also considered as environment with low concentration of nutrient. Therefore, the occurrence of eutrophication, which becomes an important problem world wide, would give significant impact not only to the corals, but also to the other organisms living in this habitat, such as giant clams. In the last few years, several scientists had attempted to investigate the effects of nutrient

addition on the clams in the laboratory. The growth rate of clam, *Hippopus hippopus*, was about three times faster under nutrient enrichment (Solis *et al.*, 1988). Similarly, Braley *et al.* (1992) reported that the growth of two different classes of *Tridacna gigas*, were significantly improved by addition of dissolved inorganic nitrogen (DIN) into the surrounding waters. Ammonium and phosphate elevation also influences the biomass and shell calcification of giant clams. The total zooxanthellae density from *T. gigas* was significantly higher in