



Effect of feeding and light on the nitrogen isotopic composition of a zooxanthellate coral

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Experiments were performed in laboratory, under controlled conditions, in order to investigate the effect of light and feeding on the $\delta^{15}\text{N}$ composition of zooxanthellae and animal tissue of *Stylophora pistillata*, a zooxanthellate coral. One group of corals was fed twice a week with freshly collected zooplankton and compared to a starved control group. Each group was also cultivated under three light levels (80, 200 and 300 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$). $\delta^{15}\text{N}$ value of the zooplankton was measured (6.75 permil) during the course of the experiment. Results obtained showed that $\delta^{15}\text{N}$ values of coral tissue were significantly heavier than those of zooxanthellae: 7.65 ± 0.09 permil vs. 6.46 ± 0.10 permil, for all culture conditions. The $\delta^{15}\text{N}$ of coral tissue measured in each light condition was not different within each group of fed (ANOVA, $P=0.9$) or starved colonies (ANOVA, $P=0.6$). When pooling data obtained under the 3 light levels, the $\delta^{15}\text{N}$ of fed coral tissue (7.36 ± 0.11 ‰) was lighter than the $\delta^{15}\text{N}$ of starved coral tissue (7.88 ± 0.12 permil). We also observed a significant effect of feeding on $\delta^{15}\text{N}$ of zooxanthellae (ANOVA, $P<0.0001$). The mean value was 5.95 ± 0.12 permil for fed and 7.00 ± 0.11 permil for starved colonies. We confirmed that $\delta^{15}\text{N}$ can be used as a proxy in identifying trophic status of corals.