Anthocyanin in Zooxanthellae

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Zooxanthellae is the mutualistic microorganism that lives in coral and provides nutrients for the expansion of coral with the byproducts of photosynthesis. The main photosynthetic pigment is Chlorophyll A, which is found in the chloroplasts and acts as a light absorber to power photosynthesis. Anthocyanin is one of the main categories of accessory pigments, which is absorbed through the cell sap, that also provides non-photosynthetic attributes to the organism such as protection from abiotic and biotic stresses including resistance to heat stress and pathogens. Therefore, by immersing zooxanthellae in the accessory pigment anthocyanin, hypothetically it will increase photosynthetic products aiding in coral rehabilitation and resistance towards stressed environments lowering coral bleaching events. Zooxanthellae immersed in extracted anthocyanin pigment were placed under environments of increased temperature (28?) and optimal pH (8.1), lowered pH (7.1) and optimal temperature (23?) and optimal temperature (23?) and pH (8.2). A control group was established under optimal conditions with no additional anthocyanin. The oxygen output of each group was measured for ten days. The addition of anthocyanin under optimal conditions showed an increase of oxygen output and the experimental group under an increased temperature showed comparable results to the control group. The data supports that the addition of anthocyanin to zooxanthellae could aid in coral rehabilitation and resistance towards a heat stressed environment.

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