Removal of Hydrogen sulfide by photosynthetic bacteria isolated from the sediment of Ago Bay

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In recent days, the Ago Bay, Japan is increasing by contaminated with organic compounds from various sources. Due to the accumulation of organic compounds in the Ago Bay sediments, there is an increase in COD value, resulting in the production of Hydrogen sulfide in sediments. The Hydrogen sulfide is normally toxic to the aerobic plants and animals. The objective of the present research is to reduce the Hydrogen sulfide in the sediments as one of a way for the improvement of sediment of Ago Bay. The strains of Green and Purple photosynthetic bacteria were isolated from the sediment of Ago Bay using LARSEN and PFENNIG medium respectively. The whole-cell absorption spectrum of Purple photosynthetic bacteria had absorption maximum at 461, 489, 522, 593, 804 and 871 nm and Green photosynthetic bacteria had 683 nm. The Purple photosynthetic bacteria was 97~99% identical to the 16S rDNA gene sequence of Rhodomicrobium vannielii by Denaturing Gradient Gel Electrophorsis (DGGE). In the batch experiment, using Methylen Blue Spectrophotometry method, 35 mg/L hydrogen sulfide was found to be removed by Green and Purple photosynthetic bacteria within 3 days. It indicates that these bacteria will be useful to reduce the Hydrogen sulfide of sediments. This research is a part of the Ago Bay Environmental Restoration Project and supported from the program of Japan Science and Technology Agency.

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