

## **Enzymatic Characterization of Thiosulfate Oxidation in Epsilon-*Proteobacteria* Isolated from Deep-Sea Hydrothermal Field**

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Chemolithoautotrophic epsilon-*Proteobacteria* is recognized to be ecologically significant as a primary producer in deep-sea hydrothermal environment. Epsilon-*Proteobacteria Sulfurovum* sp. strain NBC 37-1 has been isolated from a deep-sea hydrothermal field in the Iheya North, Mid-Okinawa Trough. The whole genome sequence of the strain has been determined. This bacterium uses sulfur-compounds and hydrogen gas as energy sources. In this study, we tried to characterize the energy metabolism of strain NBC 37-1, especially about thiosulfate oxidation. This strain was cultured in a 10 L-jar fermentor, and cells were harvested. Cell-extract showed thiosulfate dependent cytochrome *c* reduction activity. This activity was lost when the cell-extract was separated into a soluble fraction and a membrane fraction, and the activity was restored when both fractions were mixed. Proteins related to the activity were partially purified from each of the soluble and the membrane fraction. These proteins were identified by LC-MS, and consisted of the sulfur oxidizing enzyme complex (SOX system) and sulfide-quinone reductase (SQR). In this work, we suggest that the way of thiosulfate oxidation in this bacterium is different from the sox system reported previously.

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