

## Response of deep-sea *Shewanella violacea* to acid stress

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*Shewanella violacea* is isolated from deep-sea sediments and its response to high pressure and high salinity has been investigated. In this study, the effects of acidic pH on *S. violacea* physiology were examined, aiming at further understanding of its stress response mechanism. *S. violacea* could grow at initial pH of 5.0–7.0 without pH adjustment and the pH of culture initially adjusted to pH 5.0 rose to pH ~ 7.0. When *S. violacea* cells were grown at the fixed pH of 5.0, about five times higher concentrations of butyric and isovaleric acids were produced than at pH 7.0. The expression level of the genes encoding three enzymes for isovaleric acid synthesis from L-leucine was also found to be upregulated in *S. violacea* cells grown at the fixed pH of 5.0 compared to pH 7.0 through RNA-seq analysis. Therefore, *S. violacea* at least produces isovaleric acid in its response to acid stress, which further deepens our understanding of the stress response mechanism inherent in this bacterium.

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