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Identification of Enantioselective Epoxide hydrolase Activity of a Newly Isolated Marine Microorganism

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A marine microorganism possessing an epoxide hydrolase (EH) activity was isolated from various sea samples. The marine EH preferentially hydrolyzed (*R*)-enantiomer and (*S*)-enantiomer remained with high enantiopurity of more than 99%, when racemic styrene oxide was used as a substrate. EH was expressed with growth-associated pattern. The effects of pH, temperature, initial substrate concentrations on the enantioselective hydrolysis activities by whole-cells were analyzed and optimized. This newly isolated microorganism is the first reported marine microorganism capable of enantiomerically hydrolyzing racemic epoxides for preparing enantiopure epoxides.

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