New powerful platform bacterial host for brown-macroalgae biorefinery; Vibrio sp. dhg

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Although brown macroalgae has an great potential as an alternative feedstock for fermentation process, its utilization has been limited in conventional microbial platforms due to the inability to metabolize one of the major sugars, alginate. Vibrio sp. dhg, a novel fast-growing bacterium that can efficiently assimilate alginate was isolated. Based on systematic characterization of Vibrio sp. dhg, a genetic toolbox was established for its engineering, and its ability to rapidly produce a broad spectrum of chemicals (ethanol, 2,3-butanediol, and lycopene) from brown macroalgae sugar mixtures with a high productivity was demonstrated. Collectively, the Vibrio sp. dhg was expected to be a powerful platform for the conversion of brown macroalgae sugars whose usage will dramatically accelerate the production of value-added bio-chemicals.