Supporting Information

A DLVO approach to the flocculability of a photosynthetic H_2-producing bacterium *Rhodopseudomonas acidophila*

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4 pages, 1 table

1. ζ potential measurement

The ζ potential of the bacterial suspensions was measured in various solutions and at different pH values using a electrophoresis technique by a zeta meter (Nano- Zetasizer, Malvern Co., UK). After centrifugation, the cell pellets were re-suspended in NaCl solutions with varied ion strengths. The appropriate bacterial concentration was selected as 0.002% to 0.005% of dry weight, based on an optical density at 650 nm in a range of 0.03 to 0.08. Zeta potentials were calculated with the electrophoretic mobility data obtained from Smoluchowski's equation. One sample was measured in triplicate. The standard deviation of the mean ζ potential values was ±1.5 mV.

2. EPS extraction method

The EPS of *R. acidophila* was extracted using ethylene diamine tetraacetic acid disodium (EDTA). This method was found to be better than other extraction methods including heating, alkaline, sulfuric acid, and high speed centrifugation, because of its higher extraction efficiency and lower cell lysis (Sheng et al. 2005a). The cell solution was harvested and washed twice with 0.9% NaCl solution. Later, the cell pellets were resuspended in 0.9% NaCl solution. Then, 2% EDTA was added and placed at 4°C for 3 h. Thereafter, the solution was centrifuged at 12,000 rpm for 30 min to remove remaining cells. After filtrated through 0.45-μm cellulose acetate membranes and dialyzed against double distilled water for 1 day, the supernatant was used as the EPS

fraction for chemical analyses. The extraction process was performed in duplicate.

3. EPS contents of *R. acidophila*

In order to quantitatively describe the EPS component, the main contents in EPS of *R. acidophila*, including proteins, carbohydrates, nucleic acids, were measured. The contents of carbohydrates, proteins and nucleic acids were determined with the anthrone method, Lowry method and UV absorbance methods, respectively (Frolund et al. 1996; Sheng et al., 2005). The measurement results are given in Table 1S.

Table S1. EPS contents of *R. acidophila* (mg g^{-1} dry cells)

Carbohydrates	Proteins	Nucleic acids	Total EPS
6.2 ± 0.35	8.3 ± 0.14	1.6 ± 0.09	16.1 ± 0.58