

**SUPPLEMENTARY MATERIAL**

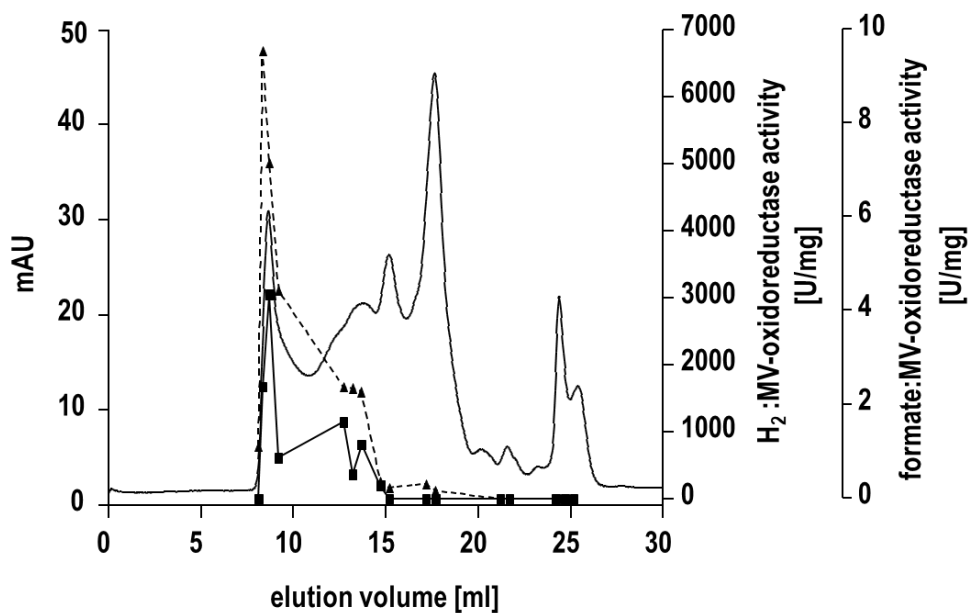
**Journal: Applied Microbiology and Biotechnology**

**Capture of carbon dioxide and hydrogen by engineered  
*Escherichia coli*: hydrogen-dependent CO<sub>2</sub> reduction to formate**

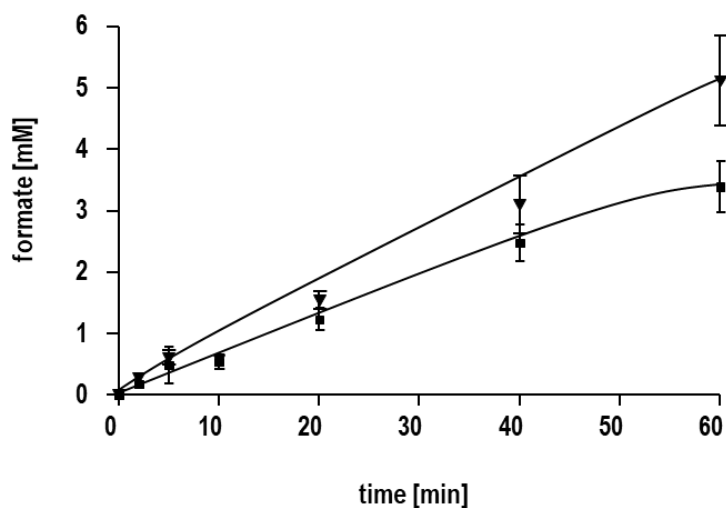
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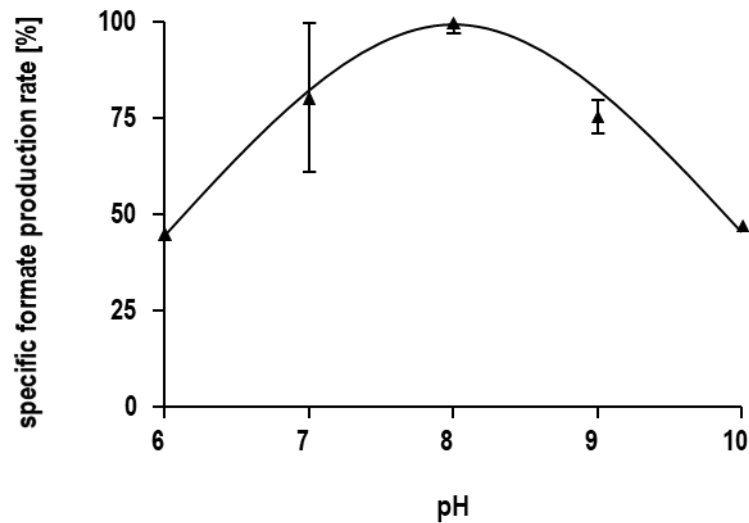
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**Figure S1. Gel filtration of the purified HDCR complex.** 616  $\mu\text{g}$   $\text{Ni}^{2+}$ -NTA purified HDCR produced in *E. coli* BL21(DE3)  $\Delta\text{iscR}$  were separated on a Superose 6 10/300 GL prepacked gelfiltration column under anoxic conditions. The majority of HDCR activity was found in the void volume revealing a molecular mass  $>5$  MDa. The artificial electron acceptor methylviologen was used to detect the catalytic subunits.  $\text{H}_2$ :methylviologen-oxidoreductase activity (triangles) and formate:methylviologen-oxidoreductase activity (squares) was mainly measured in the void volume.



**Figure S2. Effect of potassium bicarbonate on formate formation by recombinant *E. coli* BL21(DE3)  $\Delta$ iscR whole cells with H<sub>2</sub> + CO<sub>2</sub> as substrate.** Resting cells of recombinant *E. coli* JM109(DE3) (5 mg/ml) were incubated with H<sub>2</sub> + CO<sub>2</sub> (80:20%,  $1 \times 10^5$  Pa overpressure) without KHCO<sub>3</sub> (squares) and 250 mM KHCO<sub>3</sub> (triangles).



**Figure S3. pH profile of hydrogen-dependent carbon dioxide reduction by whole cells of *E. coli* BL21(DE3)  $\Delta$ iscR producing HDCR.** Shown is the pH profile for the specific formate production at the given pH using cells of *E. coli* BL21 DE3  $\Delta$ iscR (5mg/ml) incubated with H<sub>2</sub> + CO<sub>2</sub> (80:20%,  $1 \times 10^5$  Pa overpressure). 100% of the activity correspond to  $0.39 \text{ mmol g}_{\text{CDW}}^{-1} \text{ h}^{-1}$ . All data points are mean  $\pm$  SD, N = 2.