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Microbial electrosynthesis of acetate from CO_2 in three-chamber cells with gas diffusion biocathode under moderate saline conditions

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Supplementary material

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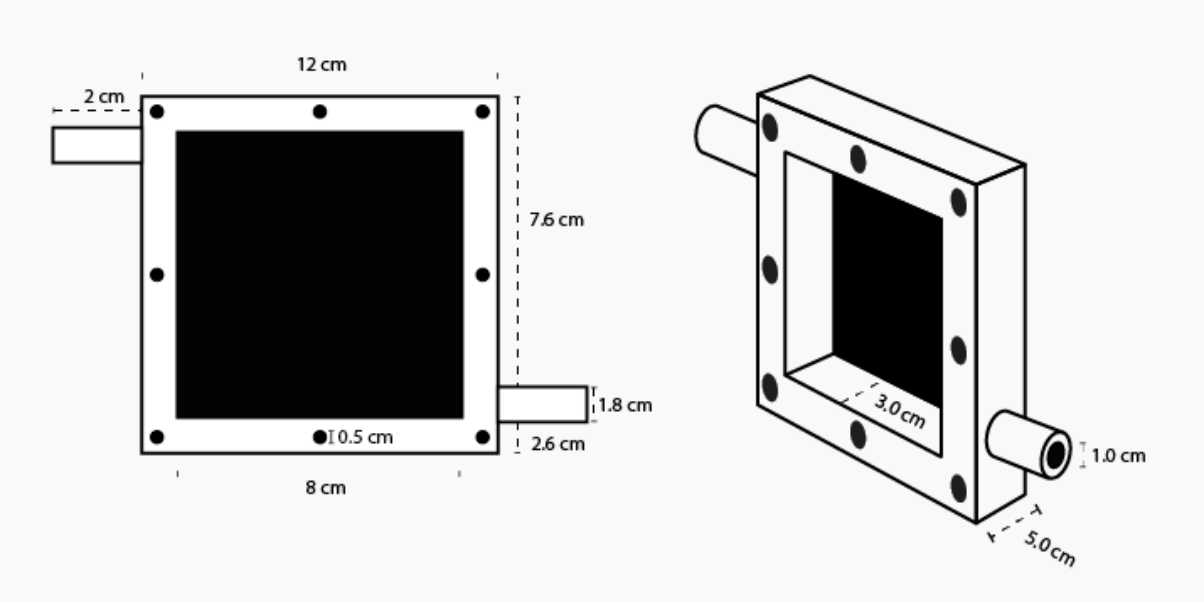

Figure S1. Blueprint of the three-chamber cell used in this study.

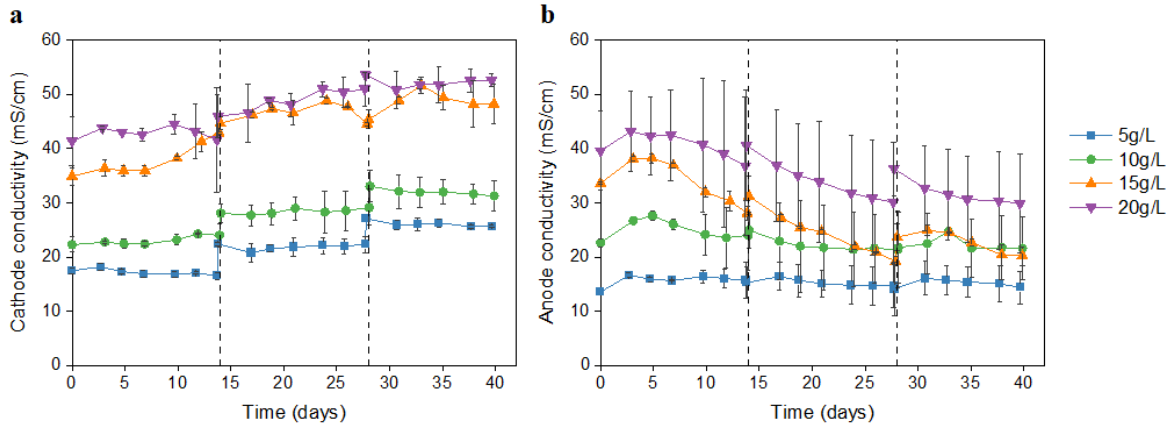

Figure S2. Conductivity profiles of the catholyte (a) and anolyte (b) in the H-type MES cells at different initial NaCl concentrations.

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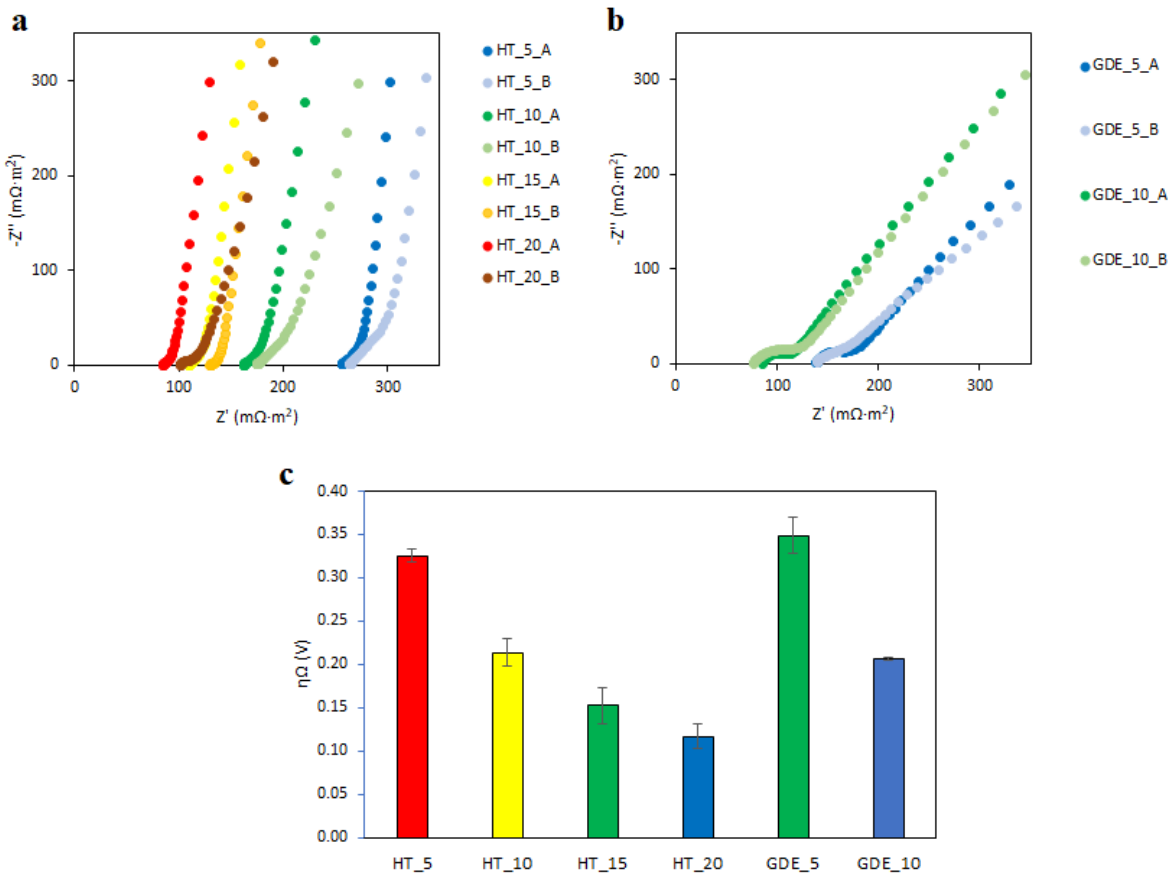

Figure S3. Two-electrode EIS analysis of the H-type (a) and three-chamber (b) cells under abiotic conditions. Results are normalised to the electrochemically active cathode surface; ohmic overpotential calculated at the beginning of the experiments for the H-type and three-chamber cells at an applied current of 0.25 mA/cm^2 (3 and 16 mA, respectively) (c).

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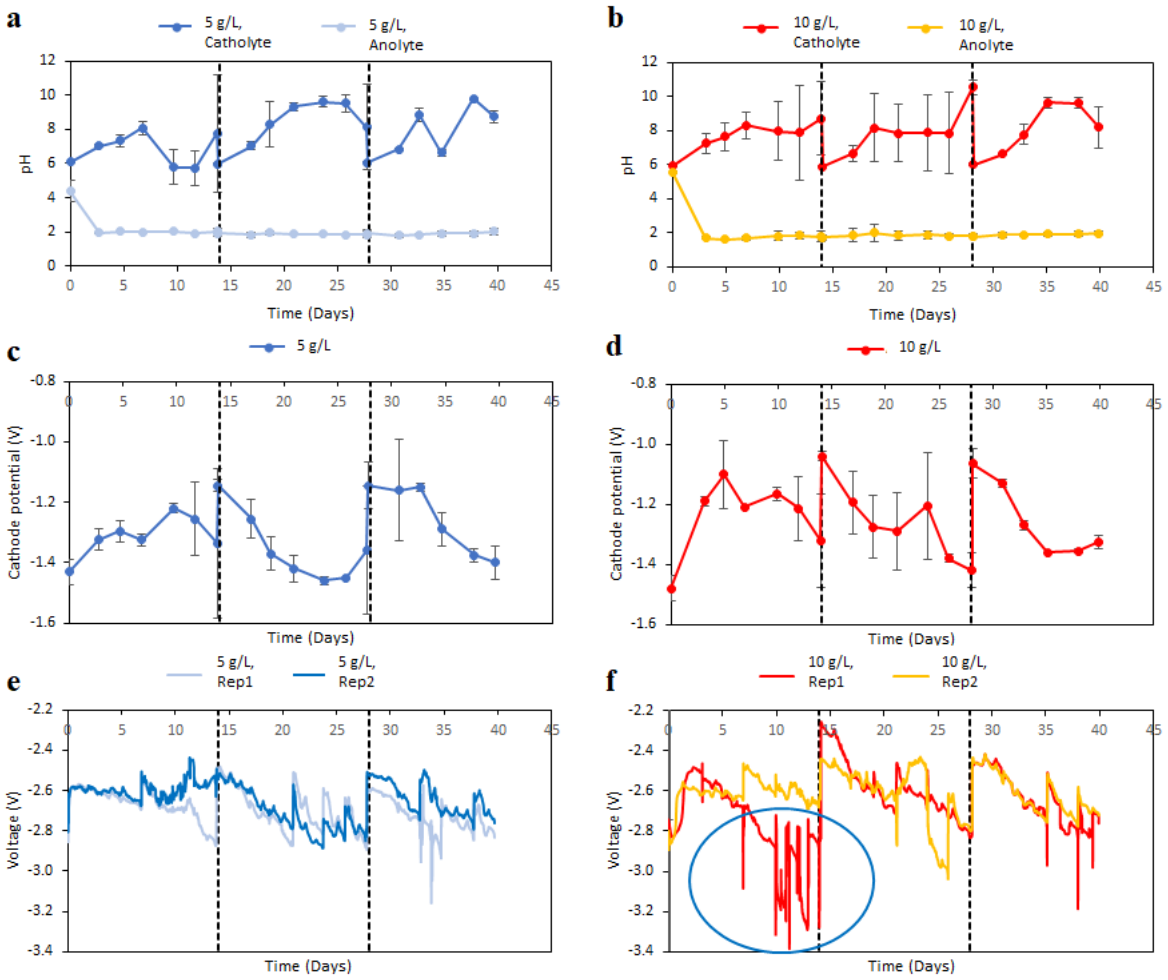

Figure S4. Catholyte and anode pH (a,b), cathode potential (c,d) and voltage (e,f) profiles of the H-type MES cells at different initial NaCl concentrations. The pH and cathode potential data is shown as average of duplicate cells, whereas voltage profiles of each cell are represented separately. The pH was adjusted back to 6 at the beginning of each fed-batch cycle, and every time it exceeded the value 9. Data marked in the blue circle (f) was contaminated by a contact problem in the anode electrode, and thus was excluded from the data presented in Table 1 in the manuscript.

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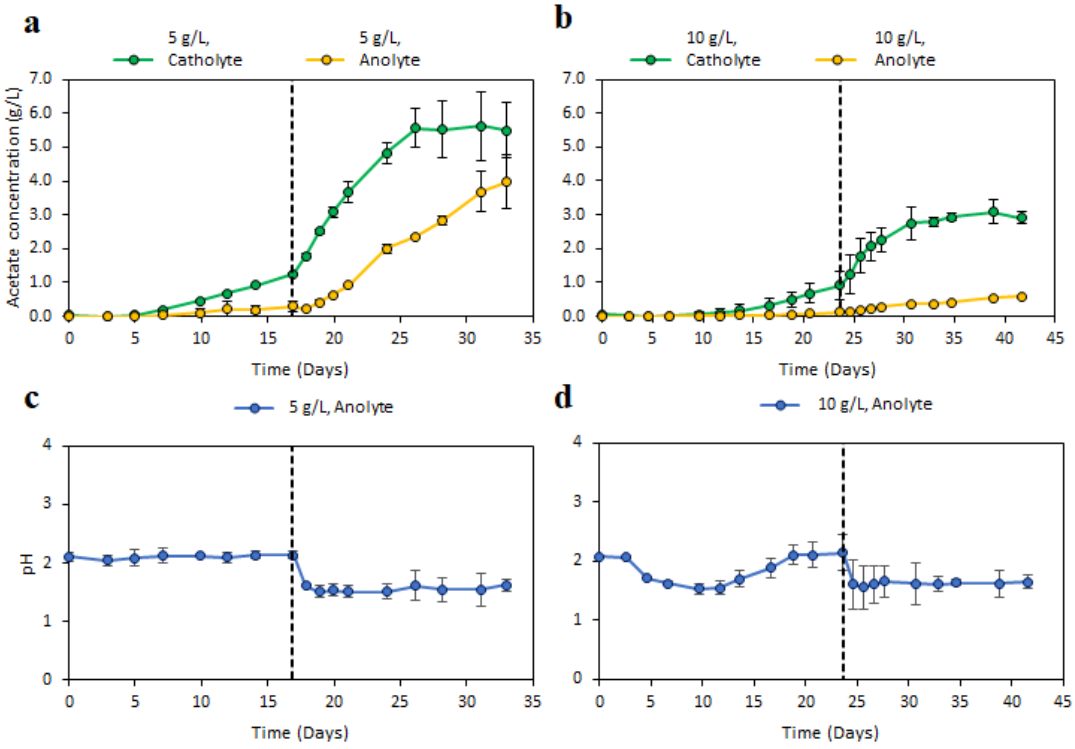

Figure S5. Acetate concentration in the catholyte and anolyte (a, b) and anode pH profiles (c, d) of the three-chamber cells with an initial NaCl concentration of 5 g/L or 10 g/L.

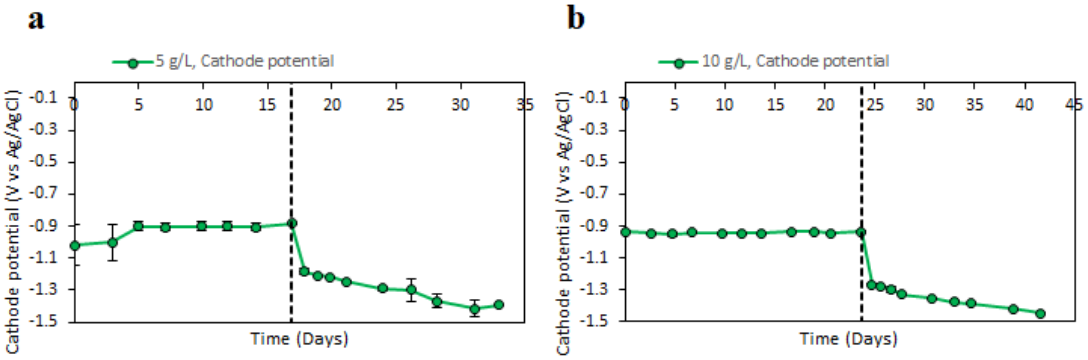

Figure S6. Cathode potential over time in the three-chamber cells with an initial NaCl concentration of 5 g/L (a) or 10 g/L (b).

This is the supplementary data of the article: Dessì, Paolo; Buenaño-Vargas, Claribel; Martínez-Sosa, Santiago; [et al.]. «Microbial electrosynthesis of acetate from CO2 in three-chamber cells with gas diffusion biocathode under moderate saline conditions». Environmental science and ecotechnology, Vol. 16 (October 2023), art. 100261. DOI 10.1016/j.ese.2023.100261

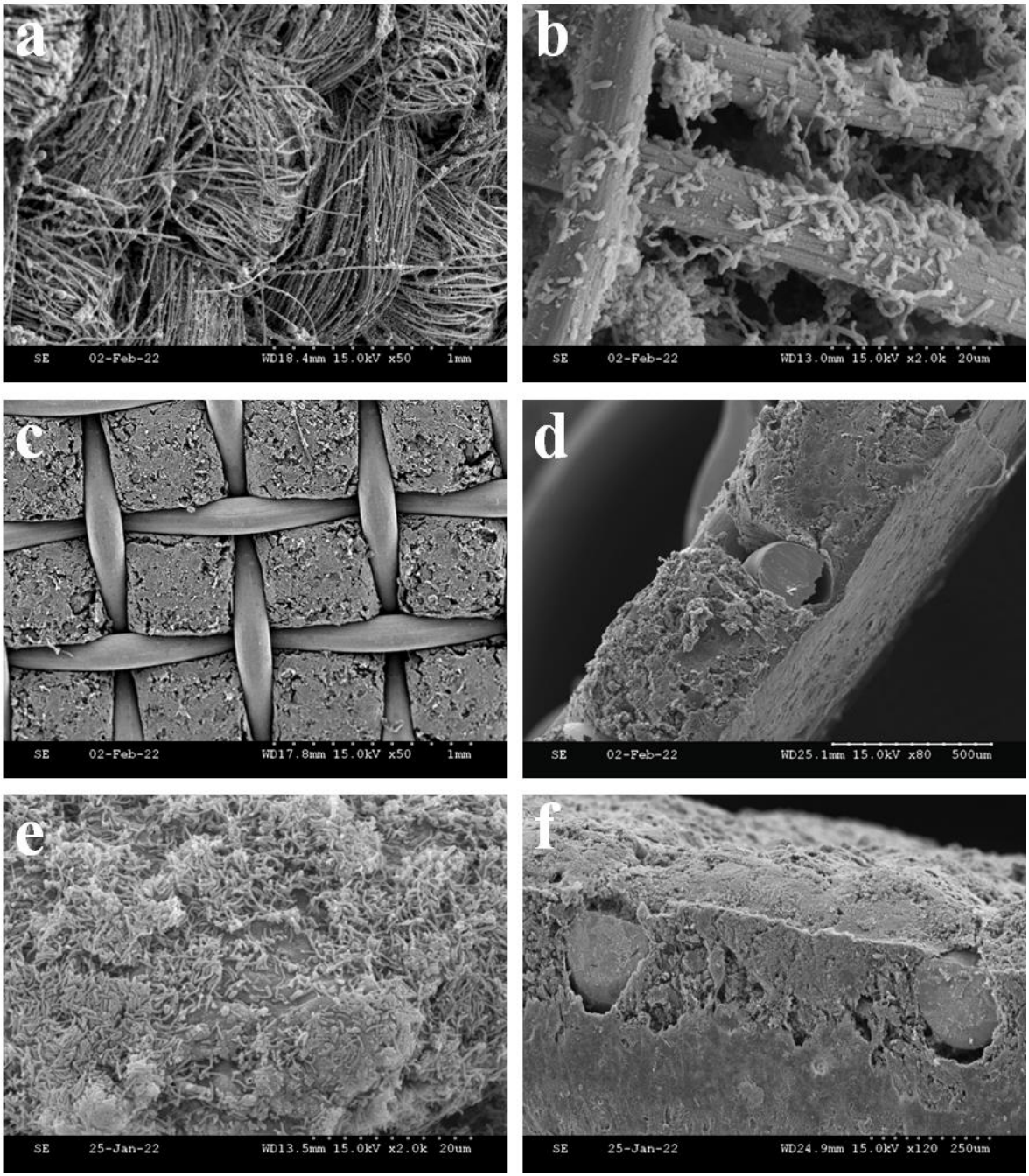

Figure S7. SEM micrographs of the colonised carbon cloth (a, b), unused GDE (c, d) and colonised GDE (e, f). Micrographs d and f have been taken transversally to the GDE sample.

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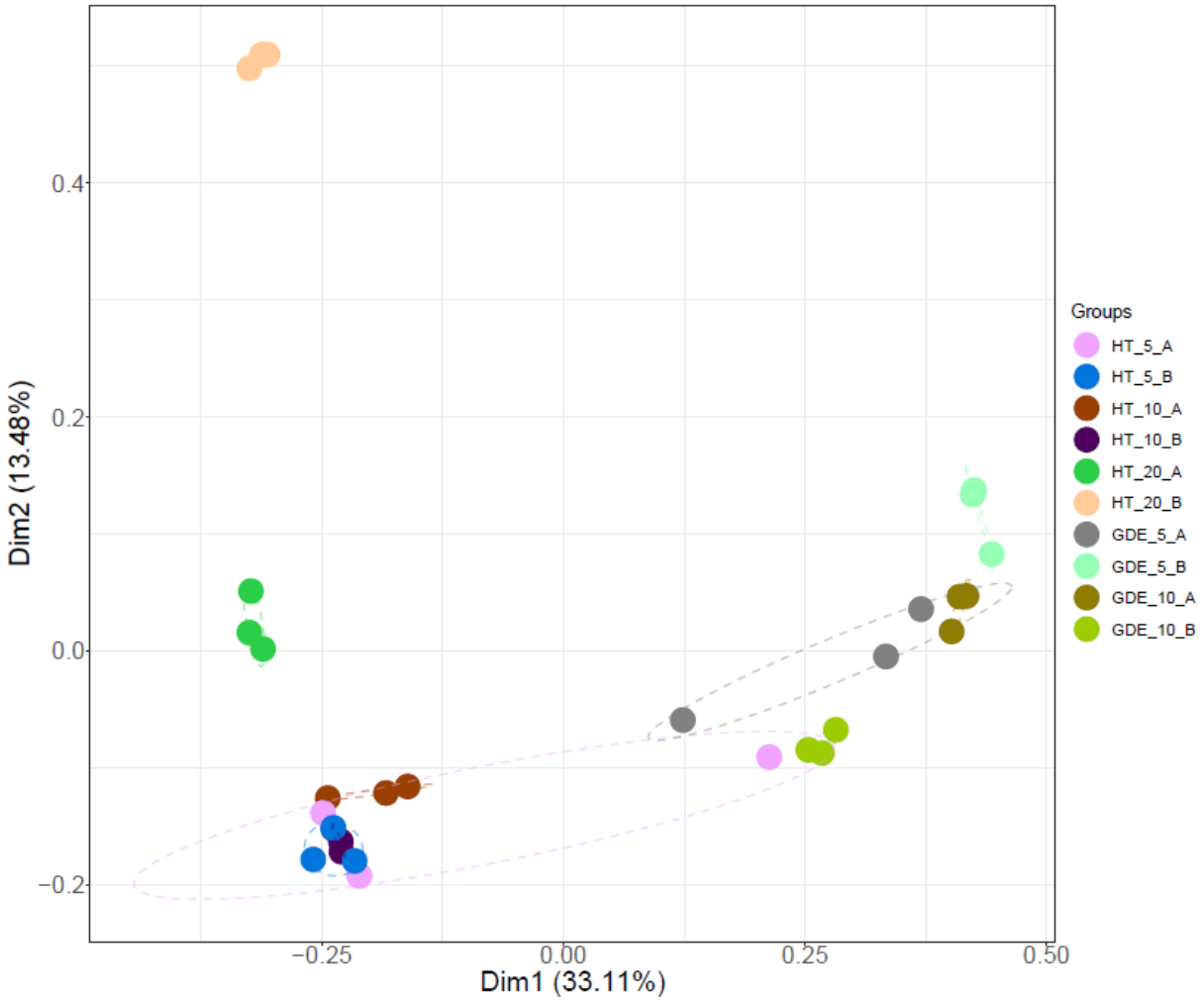

Figure S8. Principal coordinate analysis (PCoA) using Bray-Curtis distance of the cathodic communities developed in the H-type and three-chamber cells at different NaCl concentrations. The ellipses represent 95% confidence interval of the standard error for each category.