Supporting Information for

Selective Synthesis of Furfuryl Alcohol from Biomass-Derived Furfural Using Immobilized Yeast Cells

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Materials

Poly(vinyl alcohol) (PVA 1788, 87-89% hydrolyzed) was purchased from Aladdin Industrial Co. (Shanghai, China). Gelatin was purchased from Kermel Chemical Reagent Co. Ltd. (Tianjing, China). Dibutyl phthalate (>98.5%), and carrageenan were bought from Macklin Biochemical Co. Ltd. (Shanghai, China); Agar was from Biofroxx Co. (Germany).

Preparation of gel beads

Agar beads were prepared according to a previous method [1], with some modifications. Agar of 2 g was dissolved in 100 mL deionic water under heating. Then warm agar solution (50°C) was dropped into the cooled dibutyl phthalate with gentle stirring for solidification. After solidification for 12 h at 4°C, agar beads were washed thoroughly with Tris-HCl buffer (100 mM, pH 8.0).

Preparation of gelatin beads was performed according to a previous method [2], with some modifications. Gelatin of 15 g was dissolved in 100 mL deionic water under heating. Then warm gelatin solution (50°C) was dropped into the cooled dibutyl phthalate with gentle stirring for solidification. After solidification for 1 h at 4°C, gelatin beads were transferred into 10% glutaraldehyde solution for crosslinking. After 1 h, the beads were washed thoroughly with Tris-HCl buffer (100 mM, pH 8.0).

Carrageenan beads was prepared according to He's method [3], with some modifications. Briefly, carrageenan of 3 g was dissolved in 100 mL 0.9% physiological saline under heating. Then warm solution (50°C) was dropped into the cooled dibutyl phthalate with gentle stirring for solidification. After solidification for 1 h at 4°C, gel beads were transferred into cooled 2% KCl solution (4°C), followed by incubation for 4 h. Then the beads were crosslinked by 5%

glutaraldehyde. After 1 h, the beads were washed thoroughly with 2% KCl solution.

PVA beads was prepared according to a previous method [4], with some modifications. PVA of 5 g and sodium alginate of 0.25 g were dissolved in 50 mL deionic water under heating. Then warm solution (50°C) was dropped into a mixed solution of saturated boric acid and 100 mM calcium chloride with gentle stirring, followed by incubation of 2 h. The formed PVA beads were washed thoroughly with Tris-HCl buffer (100 mM, pH 8.0).

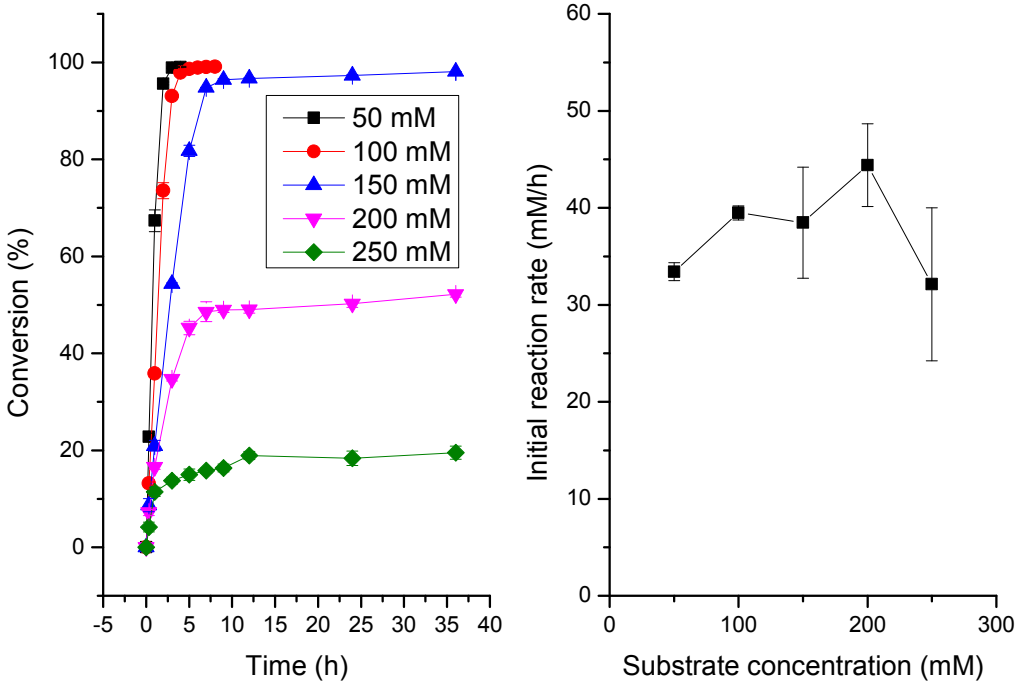

Figure S1 Time courses of substrate conversion in the reduction of furfural. The reaction conditions are the same as those in Figure 1d.

References

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