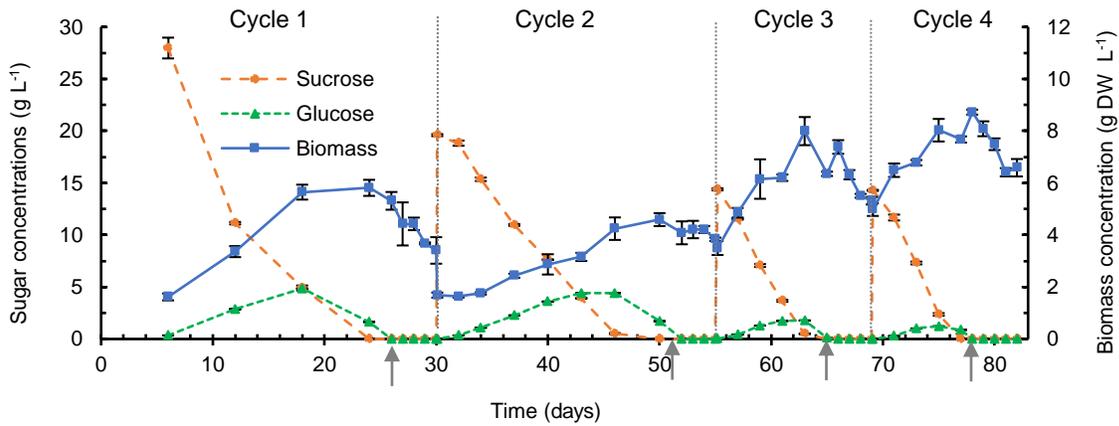
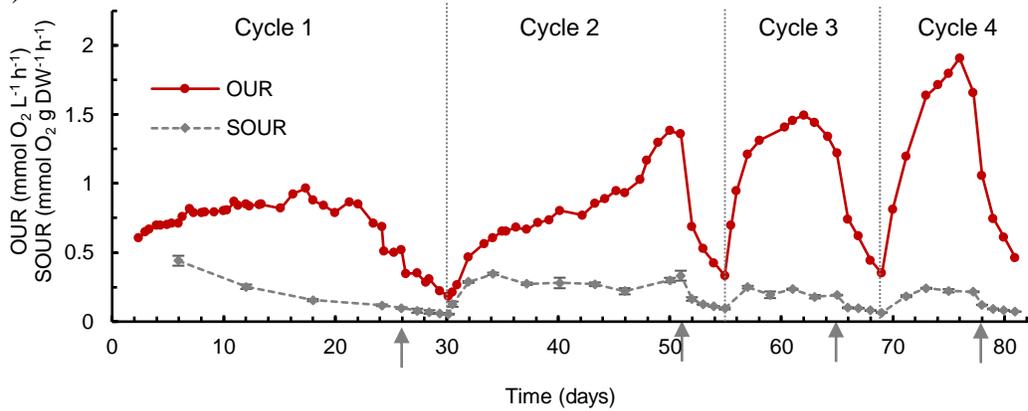


FIGURE 1

(a)



(b)



(c)

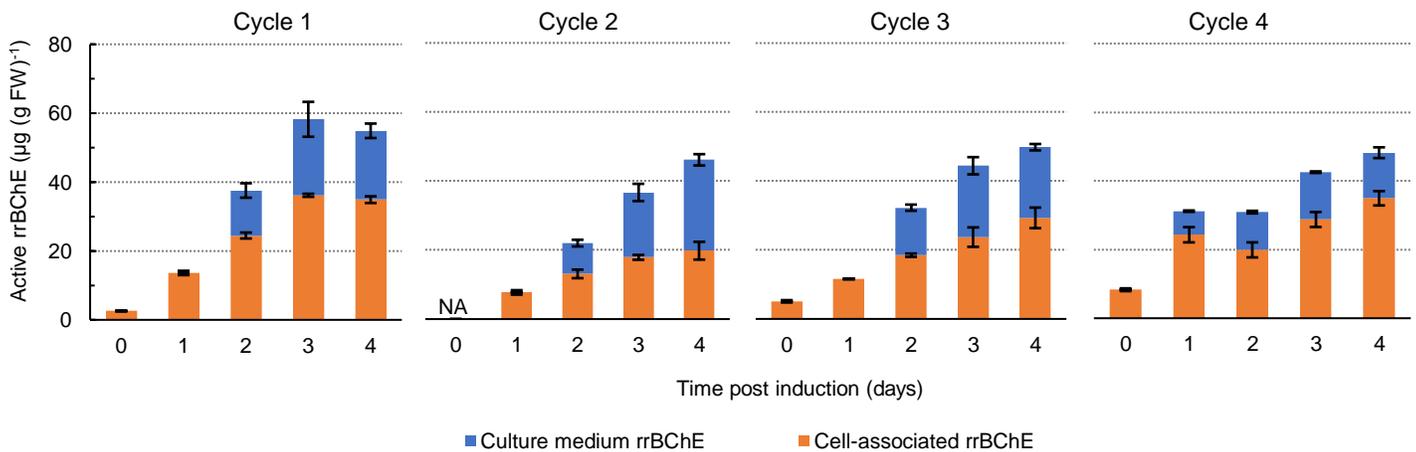


FIGURE 1 Transgenic rice cell suspension cultures grown in a 40-L stirred tank bioreactor (STB) using single-stage, cyclical semicontinuous culture operation: (a) growth profiles and sugar consumption, (b) oxygen uptake rate (OUR) and specific oxygen uptake rate (SOUR), and (c) active rrBChE production levels. Gray arrows indicate the time of induction, and vertical black dotted lines indicate the time of media exchange to start a new cycle. Error bars represent one SD from three replicate measurements. NA, not available.

FIGURE 2

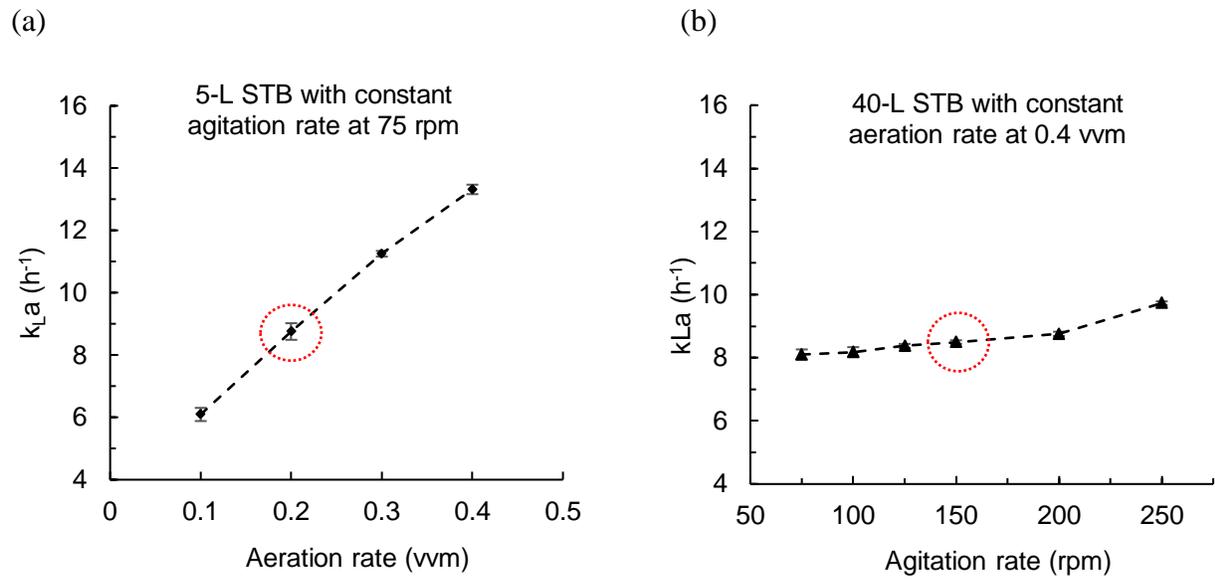


FIGURE 2 The volumetric oxygen mass transfer coefficient (k_{La}) using deionized water at 27°C in stirred tank bioreactors (STB) without baffles: (a) k_{La} from a 5 L STB with a constant agitation rate at 75 rpm and different aeration rates and (b) k_{La} from a 40-L STB with a constant aeration rate at 0.4 vvm and different agitation rates. Red-dotted circles represent equivalent k_{La} values in the two bioreactors. Error bars indicate SD from three replicates.

FIGURE 3

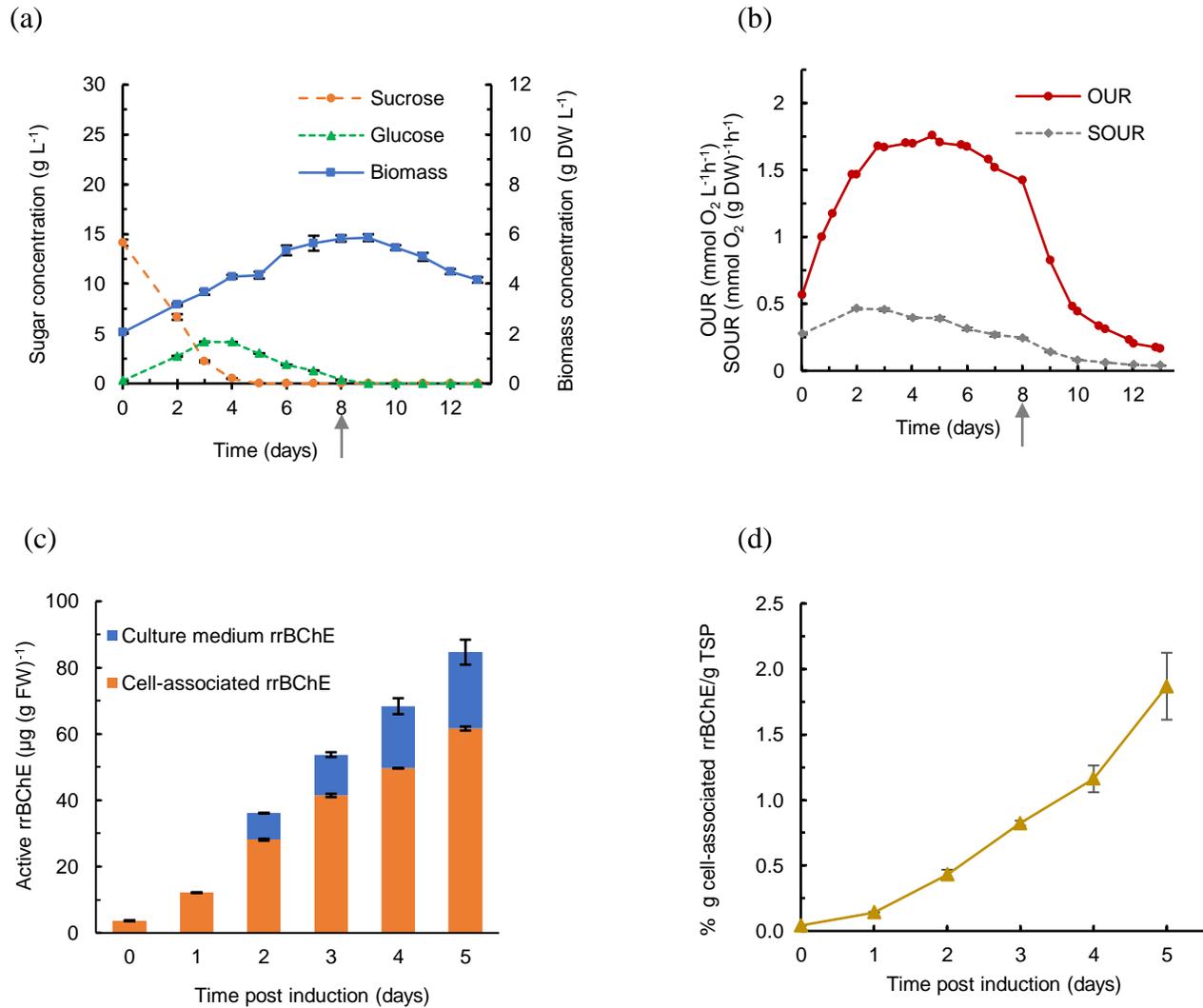


FIGURE 3 Transgenic rice cell suspension cultures grown in a 40-L stirred tank bioreactor (STB) with a single-stage, batch culture operation using $k_L a$ as a scaling-up parameter: (a) growth profiles and sugar consumption, (b) oxygen uptake rate (OUR) and specific oxygen uptake rate (SOUR), (c) active rrBChE production levels and (d) rrBChE purity as percentage of total soluble protein (TSP). Arrows indicate time of natural induction. Error bars represent one SD from three replicate measurements.

FIGURE 4

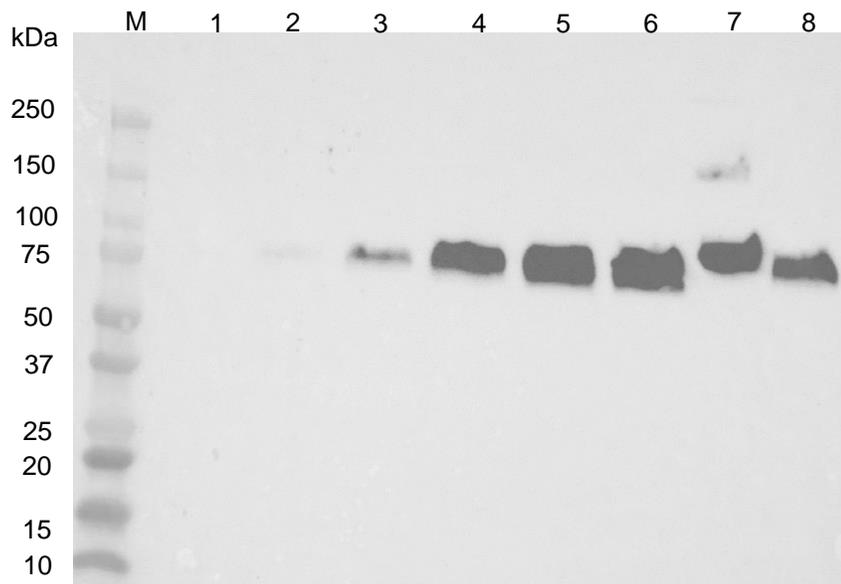


FIGURE 4 Western blot analysis under reducing conditions of rice-made recombinant butyrylcholinesterase (rrBChE) from a 40-L stirred tank bioreactor (STB) batch culture. Lane M, molecular weight standard proteins; lane 1-6, 20 μ L of rice cells extract at day 0-5 post induction, respectively (~70, ~240, ~530, ~830, ~990 and ~1,230 ng active cell-associated rrBChE, respectively); lane 7, ~2,400 ng of plasma-derived human BChE as control; lane 8, 30 μ L of 45X concentrated culture medium at day 5 post induction (~1,340 ng active rrBChE).