

Table III. Unbalanced (calculated from the raw measurement data) uptake and secretion rates, q_s expressed per Cmol of biomass (mmol/CmolX/h) of the steady state aerobic carbon-limited chemostat cultivations of *E. coli*, carried out at different dilution rates with different substrates.

Chemostat	D (h ⁻¹)	C_x (g DW/L)	q_x	$-q_s$	$-q_{O_2}$	q_{CO_2}	q_{lysis}	Carbon recovery	Redox recovery
glu1	0.102	2.90 ± 0.27	115.2 ± 2.7	30.6 ± 3.1	88.09	81.59	13.0 ± 1.4	107.0	115.3
glu2	0.099	2.63 ± 0.05	113.7 ± 2.3	32.6 ± 1.3	97.09	87.54	14.53 ± 0.59	102.8	112.0
glu3	0.314	2.99 ± 0.22	362.8 ± 8.1	93.6 ± 7.8	211.49	196.41	48.5 ± 4.1	99.5	105.4
glu4	0.049	2.47 ± 0.10	58.8 ± 1.3	16.99 ± 0.90	61.46	51.05	9.38 ± 0.71	107.7	123.3
glu5	0.025	1.96 ± 0.09	33.70 ± 0.78	10.73 ± 0.61	42.63	37.16	8.45 ± 0.54	110.1	123.8
gly1	0.102	2.91 ± 0.06	113.8 ± 2.3	60.3 ± 2.5	98.22	69.53	11.83 ± 0.46	101.4	104.6
gly2	0.099	3.05 ± 0.09	110.2 ± 2.5	56.3 ± 2.6	94.70	65.83	11.1 ± 1.1	104.2	108.1
ace1	0.097	1.44 ± 0.26	117.7 ± 4.5	176 ± 32	229.48	224.29	20.7 ± 3.9	97.2	101.2
glu6	0.100	5.34 ± 0.07	114.1 ± 2.6	32.50 ± 1.2	88.69	87.30	14.0 ± 1.3	103.3	108.4
glu7	0.102	10.24 ± 0.15	119.4 ± 2.6	33.55 ± 1.3	92.94	92.57	17.5 ± 1.3	105.3	109.9

q_x , biomass formation rate; q_s , substrate consumption rate; q_{O_2} , oxygen consumption rate; q_{CO_2} , carbon dioxide production rate; q_{lysis} biomass lysis rate. Carbon and redox recoveries are given in %.

Table I. Overview of the conditions (substrate, substrate concentration in the feed vessel ($C_{S,in}$), and dilution rate (D)) and the purpose of the chemostat experiments carried out.

Chemostat name	Substrate	$C_{S,in}$ (mM)	D (h ⁻¹)	Purpose
glu1	Glucose	37.9	0.102	P
glu2	Glucose	37.9	0.099	B, P
glu3	Glucose	37.9	0.314	B, P
glu4	Glucose	37.9	0.049	B, P
glu5	Glucose	37.9	0.025	P
gly1	Glycerol	75.8	0.102	P
gly2	Glycerol	75.8	0.099	P
ace1	Acetic acid	113.6	0.097	P
glu6	Glucose	75.8	0.100	B
glu7	Glucose	151.5	0.102	B

B, determination of the biomass composition; P, parameter estimation and flux analysis.