

Table II. Metabolic networks for growth of *Saccharomyces cerevisiae*.

	Network				
	S1	S2	S3	S4	S5
C-source	Glucose	Glucose	Ethanol	Acetae	Glucose + ethanol
Transport of C-source ^a	0	0	0	0	0
Conditions	Anaerobic growth	Aerobic growth	Aerobic growth	Aerobic growth	Aerobic growth
Eff. P/O ratio	—	1.20	1.20	1.20	1.20
<i>K</i>	1.37	1.37	1.37	1.37	1.37
<i>m</i> _{ATP}	0	0	0	0	0
Biochemical reactions used to construct the network	1–3, 5–8, 10–12, 15, 18, 19, 21–24, 26–31, 43–49, 51, 58–64, 66–95, 99	1–3, 5–8, 10, 12, 15, 18–23, 26–31, 34–36, 44–49, 51, 58–64, 66–99	4–7, 13–16, 18–23, 26–30, 32–36, 43–49, 51, 58–64, 66–99	4–7, 15–23, 26–30, 32–36, 44–49, 51, 58–64, 66–99	1–8, 9, 10, 12–16, 18–23, 26–36, 43–49, 51, 58–64, 66–99
No. of biochemical reactions	70	73	74	73	81
No. of biochemical species	86	85	86	85	88
Biochemical, species with nonzero conversion rate	BIOM, CO ₂ , ETOH, GLUC, GOH, H ₂ O, H(E), NH ₄ (E), OL, PAL, Pi(E), SO ₄ (E)	BIOM, CO ₂ , GLUC, H ₂ O, H(E), NH ₄ (E), O ₂ Pi(E), SO ₄ (E)	BIOM, CO ₂ , ETOH, H ₂ O, H(E), NH ₄ (E), O ₂ (Pi(E), SO ₄ (E)	AC, BIOM, CO ₂ , H ₂ O, H(E), NH ₄ (E), O ₂ Pi(E), SO ₄ (E)	BIOM, CO ₂ , GLUC, ETOH, H ₂ O, H(E), NH ₄ (E), O ₂ , Pi(E), SO ₄ (E)
Total no. of variables	82	82	83	82	91
Matrix rank	80	79	80	79	82
Rates specified	BIOM, r_{95}	BIOM, r_{35} , r_{95}	BIOM, r_{35} , r_{95}	BIOM, r_{35} , r_{95}	GLUC, ETOH, $r_{35}r_{95}$

^aH⁺/substrate stoichiometry in proton symport (moles H⁺/mol substrate).