S4 Table: Table of Model Reaction Parameters

Table S4: Kinetic Model Reaction Parameters

Reaction	Reaction Parameters		Experimental Conditions		Value Status	Reference
	Parameter	Value	pH	Temp. (°C)		
PTS	K_a1	1.0 * 0.5097	Unknown	Unknown	Estimated	Estimated[1]
	K_a2	0.01 * 1.4791	7	37	Taken	Notley-McRobb (1997)[1]
	K_a3	1.0 * 0.8550	Unknown	Unknown	Estimated	Estimated[1]
	K_g6p	0.5 * 0.5158	6.6	Unknown	Taken	Kaback (1969)[1]
	N	4 * 0.5644	Unknown	Unknown	Estimated	Estimated[1]
PGMT	K_eq	0.142 * 1.0478	7.4	25	Taken	Lawry, Passonneau (1969)[1]
	K_g6p	0.02 * 0.8489	7.4	25	Taken	Lawry, Passonneau (1969)[1]
	K_g1p	0.008 * 0.9104	7.4	25	Taken	Lawry, Passonneau (1969)[1]
	Ki_accoa	0.0917 * 1.1575	7.4	25	Calculated	Duckworth (1973)[1]
	Ki_succoa	0.1494 * 1.4585	7.4	25	Calculated	Duckworth (1973)[1]
	Ki_coa	0.1025 * 1.0296	7.4	25	Calculated	Duckworth (1973)[1]
PGI	Specific Activity	212.6	7.4	22	Taken	BRENDA
	K_g6p	2.46	8	65	Taken	Takama and Nosoh (1980)
	K_f6p	0.2	7.65	37	Taken	Dykhuizen and Hartl (1983)
	K_eq	0.43	7	Unknown	Taken	Pettersson (1990)
	K_6pginh_g6p	0.19	8	28	Taken	Schreyer and Bock (1980)
	Ki_6pginh_f6p	0.19	8	28	Taken	Schreyer and Bock (1980)
PFK	K_pep	3.26 * 0.6670	Unknown	Unknown	Estimated	Estimated[1]
	K_adp_b	0.25 * 0.8933	Unknown	Unknown	Taken	Rizzi (1997)[1]
	K_amp_b	0.1 * 0.9036	Unknown	Unknown	Taken	Rizzi (1997)[1]
	K_adp_a	239 * 1.2577	Unknown	Unknown	Taken	Rizzi (1997)[1]
	K_amp_a	8.74 * 1.4871	Unknown	Unknown	Taken	Rizzi (1997)[1]
	K_atp_s	0.16 * 1.2429	8.2	28	Taken	Deville-Bonne (1991)[1]
	K_adp_c	0.36 * 1.4444	8.2	28	Taken	Deville-Bonne (1991)[1]
	K_f6p_s	0.14 * 1.5189	8.2	28	Taken	Deville-Bonne (1991)[1]
	L	4000000 * 1.5322	Unknown	Unknown	Taken	Diaz Ricci (1999)[1]
	n	4 * 0.6372	Unknown	Unknown	Taken	Diaz Ricci (1999)[1]
FBA	k_cat	10.5	Unknown	30	Taken	BRENDA
	K_fdp	0.133 * 1.7525	7.6	30	Taken	Babul (1993)[2]
	K_g3p	0.088 * 1.9036	7.6	30	Taken	Babul (1993)[2]
	K_dhap	0.088 * 1.4949	7.6	30	Taken	Babul (1993)[2]
	K_inh_g3p	0.6 * 1.3178	7.6	30	Taken	Babul (1993)[2]
	K_eq	0.14 * 0.5	7.6	30	Taken	Babul (1993)[2]
	V_blf	2 * 0.5	7.6	30	Taken	Babul (1993)[2]
TPI	k_cat	9000	Unknown	30	Taken	BRENDA
	K_eq	0.04 * 1.6902	7.6	30	Taken	Babul (1993)
	K_dhap	2.8 * 1.2219	7.6	30	Taken	Babul (1993)
	K_g3p	0.3 * 1.9113	7.6	30	Taken	Babul (1993)
GAPDH	k_cat	268	7.3	22	Taken	Eyschen (1999)
	K_eq	0.63 * 1.7642	7	Unknown	Taken	Pettersson (1990)[2]
	K_g3p	0.15 * 0.8375	Unknown	25	Taken	Bakker (1997)[2]
	K_pgp	0.1 * 0.5292	Unknown	25	Taken	Bakker (1997)[2]
	K_nad	0.45 * 1.9370	Unknown	25	Taken	Bakker (1997)[2]
	K_nadh	0.02 * 0.8014	Unknown	25	Taken	Bakker (1997)[2]
PGK	Specific Activity	480	8.2	Unknown	Taken	Fifis (1978)
	K_eq	1800 * 0.7628	Unknown	Unknown	Taken (Erythrocyte)	Ni and Savageau (1996)[2]
	K_adp	0.18 * 1.0170	7.5	20	Taken	Molnar and Vas (1993)[2]
	K_atp	0.24 * 0.6045	7	37	Taken	Fifis and Scopes (1978)[2]
	K_13dpg	0.006 * 1.9082	Unknown	Unknown	Taken (Rat Liver)	Lavoinne (1983)[2]
	K_3pg	0.17 * 1.8192	Unknown	Unknown	Taken (Yeast)	Schmidt (1995)[2]
PGM	v_PGM_maxr	33.6089			Estimated	Estimated
	K_3pg	0.2	7	37	Taken	Fraser (1999)
	K_2pg	0.19	7	37	Taken	Fraser (1999)
ENO	Specific Activity	180	8.1	30	Taken	Spring (1971)
	K_eq	6.7	8.1	30	Taken	Spring and Wold (1971)
	K_2pg	0.1	8.1	30	Taken	Spring and Wold (1971)
	K_pep	0.135	Unknown	Unknown	Taken	Duggleby (1994)
PYK	K_pep	0.31 * 1.5800	7	25	Taken	Bioteax (1983)[1]
	n	4 * 0.8465	7	25	Taken	Bioteax (1983)[1]
	L	1000 * 0.9705	7	25	Taken	Bioteax (1983)[1]
	K_atp	22.5 * 1.2049	7	25	Taken	Bioteax (1983)[1]
	K_fdp	0.19 * 0.5306	7	25	Taken	Bioteax (1983)[1]
	K_amp	0.2 * 2.2524	7	25	Taken	Bioteax (1983)[1]
	K_adp	0.26 * 0.5167	7	25	Taken	Bioteax (1983)[1]

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Table S4 ... continued: Kinetic Model Reaction Parameters

Reaction	Reaction Parameters		Experimental Conditions		Value Status	Reference
	Parameter	Value	pH	Temp. (°C)		
PDH	Specific Activity	28.5	Unknown	Unknown	Taken	BRENDA
	Ki	46.4 * 1.5155	6.5	30	Taken (L.lactis)	Hoefnagel (2002)[2]
	K_pyr	0.3 * 1.6721	7.6	25	Taken	Bisswanger (1981)[2]
	K_nad	0.4 * 1.8722	6	37	Taken (L.lactis)	Snoep (1992)[2]
	K_coa	0.014 * 1.2495	6.5	30	Taken (L.lactis)	Hoefnagel (2002)[2]
	K_nadh	0.1 * 1.7999	6.5	30	Taken (L.lactis)	Hoefnagel (2002)[2]
	K_accoa	0.008 * 1.3667	7.6	25	Taken (A.vinelandii)	Bresters (1975)[2]
	Ki_glx	0.5 * 1.3688	7.6	25	Taken	Bisswanger (1981)[2]
PTAr	Enzyme Conc.	0.7207 mg/gDCW	8	30	Taken	Ishii (2007)
	Enzyme Weight	463.032 g/mmol	8	30	Taken	EcoCyc
	K_accoa	0.0449 * 1.4584	8	30	Taken	Campos-Bermudez (2010)[2]
	K_pi	2.1 * 0.7918	8	30	Taken	Campos-Bermudez (2010)[2]
	H_accoa	1.3 * 1.6313	8	30	Taken	Campos-Bermudez (2010)[2]
	Ki_nadh_f	0.0696 * 1.7572	8	30	Calculated	Campos-Bermudez (2010)[2]
	Ki_atp_f	0.2667 * 1.7697	8	30	Calculated	Campos-Bermudez (2010)[2]
	Ka_pep	0.0479 * 1.2347	8	30	Calculated	Campos-Bermudez (2010)[2]
	Ka_pyr	1.0642 * 1.3458	8	30	Calculated	Campos-Bermudez (2010)[2]
	v_pep	1.2051 * 1.7360	8	30	Calculated	Campos-Bermudez (2010)[2]
	v_pyr	1.3965 * 1.8486	8	30	Calculated	Campos-Bermudez (2010)[2]
	kcat_rev	227.6 * 33.6638	8	30	Taken	Campos-Bermudez (2010)[2]
	K_coa	0.0672 * 1.0468	8	30	Taken	Campos-Bermudez (2010)[2]
	K_actp	0.9 * 1.5456	8	30	Taken	Campos-Bermudez (2010)[2]
	H_coa	1.7 * 0.5666	8	30	Taken	Campos-Bermudez (2010)[2]
	Ki_nadh	0.1091 * 1.5116	8	30	Calculated	Campos-Bermudez (2010)[2]
	Ki_atp	0.239 * 1.3285	8	30	Calculated	Campos-Bermudez (2010)[2]
	Ki_pep	2.5333 * 1.8283	8	30	Calculated	Campos-Bermudez (2010)[2]
	Ki_pyr	36.7241 * 1.0574	8	30	Calculated	Campos-Bermudez (2010)[2]
ACKr	Enzyme Conc.	0.9666 mg/gDCW	8	30	Taken	Ishii (2007)
	SpecActivity_f	2000 * 11.5280	7.4	21	Taken	Fox (1985)[2]
	alpha	2/35 * 0.5605	7	25	Calculated	Janson (1974)[2]
	K_atp	0.35 * 1.0332	7	25	Calculated	Janson (1974)[2]
	K_ac	101.5 * 0.7185	7	25	Calculated	Janson (1974)[2]
	Ki_actp	0.715 * 1.8123	7	25	Calculated	Janson (1974)[2]
	SpecActivity_r	2600	7.4	21	Taken	Fox (1985)
	Ki_adp	0.05 * 0.6447	7	25	Taken	Janson (1974)[2]
	K_actp	0.34 * 1.4746	7	25	Taken	Janson (1974)[2]
	K_adp	0.36 * 1.0877	7	25	Taken	Janson (1974)[2]
CS	kcat	81	Unknown	Unknown	Taken	BRENDA
	K_Hd1	1e-5 * 1.1188	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_Hd2	2e-4 * 1.0097	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_daccoa	0.1 * 1.1475	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_moaa	0.04 * 0.9656	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_maccoa	0.18 * 1.6688	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_iatp	0.58 * 0.9938	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_i1akg	0.015 * 0.9859	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_i1nadh	3.3e-4 * 1.1324	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_i2akg	0.256 * 0.9926	7	Unknown	Taken	Mogilevskaya (2009)[2]
	K_i2nadh	8.4e-3 * 1.0013	7	Unknown	Taken	Mogilevskaya (2009)[2]
ACONTb	SpecActivity_f	10.71	7.5	Unknown	Taken	Tsuchiya (2009)
	SpecActivity_r	3.628	7.5	Unknown	Taken	Tsuchiya (2009)
	n_f	1.229	7.5	Unknown	Taken	Tsuchiya (2009)
	K_df	11.1	7.5	Unknown	Taken	Tsuchiya (2009)
	n_r	0.727	7.5	Unknown	Taken	Tsuchiya (2009)
	K_dr	0.741	7.5	Unknown	Taken	Tsuchiya (2009)
ICDHyr	Specific Activity	54.8294	7.1	Unknown	Calculated	Ogawa (2007)
	Km_icit	0.029	7.1	Unknown	Taken	Ogawa (2007)
	Ki_pep	0.31	7.1	Unknown	Taken	Ogawa (2007)
	Km_nadp	0.005	7.1	Unknown	Calculated	Ogawa (2007)
	L	0.3709	7.1	Unknown	Calculated	Ogawa (2007)
	N	1.0048	7.1	Unknown	Calculated	Ogawa (2007)
AKGDH	k_cat	49	Unknown	Unknown	Taken (E.coli)	Waskiewicz (1984)
	K_nad	0.07 * 0.8378	Unknown	Unknown	Taken (D.discoideum)	Wright (1992)[2]
	K_coa	0.002 * 1.8842	Unknown	Unknown	Taken (D.discoideum)	Wright (1992)[2]
	K_akg	0.1 * 0.9096	8	25	Taken	Gupta (1980)[2]
	K_z	1.5 * 0.8534	Unknown	Unknown	Taken (D.discoideum)	Wright (1992)[2]
	Ki_succoa	0.004 * 1.2453	Unknown	Unknown	Taken (D.discoideum)	Wright (1992)[2]
	Ki_nadh	0.018 * 1.7608	Unknown	Unknown	Taken (D.discoideum)	Wright (1992)[2]
	Ki_akg	0.75 * 1.5148	Unknown	Unknown	Taken (D.discoideum)	Wright (1992)[2]
	Ki_glx	1.7 * 1.5554	8	25	Taken	Gupta (1980)[2]

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Table S4 ... continued: Kinetic Model Reaction Parameters

Reaction	Reaction Parameters		Experimental Conditions		Value Status	Reference
	Parameter	Value	pH	Temp. (°C)		
SUCOAS	Enzyme Conc.	3.5296	7	30	Taken	Ishii (2007)
	Enzyme Weight	142.34	Unknown	Unknown	Taken	EcoCyc
	K_adp	0.012 * 0.9361	Unknown	Unknown	Taken	Boyer (The Enzymes V.10)
	K_succoa	0.0077 * 1.3790	Unknown	Unknown	Taken	Boyer (The Enzymes V.10)
	K_pi	2.6 * 1.7161	Unknown	Unknown	Taken	Boyer (The Enzymes V.10)
	kcat_r	44.73 * 0.8294	Unknown	Unknown	Taken	BRENDA
	K_atp	0.02 * 1.0388	7.2	25	Taken	Moffet (1970)
	K_coa	0.0015 * 1.0351	7.2	25	Taken	Moffet (1970)
	K_succ	0.1 * 1.6713	7.2	25	Taken	Moffet (1970)
SUCDi	K_succ	0.26 * 0.8556	7.7	30	Taken	Hirsch (1963)[1]
FUM	SpecActivity_r	340	8	30	Taken	Ueda (1990)
	Enzyme Conc.	1.7678	7	30	Taken	Ishii (2007)
	K_fum	0.39 * 1.5333	Unknown	Unknown	Taken	BRENDA, Woods (1988)[1]
	K_mal	2.94 * 1.0252	Unknown	Unknown	Taken	BRENDA, Woods (1988)[1]
MDH	Enzyme Conc.	0.7724 mg/gDCW	8	30	Taken	Ishii (2007)
	Enzyme Weight	64.674 g/mmol	Unknown	Unknown	Taken	EcoCyc
	kcat_malform	900 * 0.6989	7.5	25	Taken	Muslin (1995)[2]
	Km_nad	0.26 * 0.8351	7.5	25	Taken	Muslin (1995)[2]
	Km_mal	2.6 * 0.7938	7.5	25	Taken	Muslin (1995)[2]
	Km_nadh	0.061 * 1.8867	7.5	25	Taken	Muslin (1995)[2]
	Km_oaa	0.049 * 1.9522	7.5	25	Taken	Muslin (1995)[2]
PPC	a	8.2	7.3	30	Calculated (Fig.1)	Izui (1981)
	b	4.5014	7.3	30	Calculated (Fig.1)	Izui (1981)
	c	12.9	7.3	30	Calculated (Fig.1)	Izui (1981)
	d	8.0988	7.3	30	Calculated (Fig.1)	Izui (1981)
	e	0.5731	7.3	30	Calculated (Fig.1)	Izui (1981)
	Km_pep	15	7.3	30	Taken	Izui (1981)
	n1	1.2	7.3	30	Taken	Izui (1981)
	Ka_accoa	0.001	7.3	30	Calculated (Fig.1)	Izui (1981)
	Ka_fdp	2.4540	7.3	30	Calculated (Fig.1)	Izui (1981)
	Ki_mal	2.2	8.5	30	Taken	Izui (1983)
PPCK	Specific Activity	32.3333	7	37	Taken	Yang (2003)
	Ki_atp	0.04	7	37	Taken	Yang (2003)
	Km_oaa	0.67	7	37	Taken	Yang (2003)
	Km_atp	0.06	7	37	Taken	Yang (2003)
	Ki_pep	0.06	7	37	Taken	Yang (2003)
	Ki_adp	0.04	7	37	Taken	Yang (2003)
	Km_pep	0.07	7	37	Taken	Yang (2003)
	KI_atp	0.04	7	37	Taken	Yang (2003)
	KI_oaa	0.45	7	37	Taken	Yang (2003)
ME1	n1	1.3	7.2	25	Taken	Yamaguchi (1974)
	Ki_nad	0.3317	7.2	25	Calculated (Fig6)	Wang (2006)
	K_nad	0.097	7.2	25	Taken	Wang (2006)
	K_mal	0.420	7.2	25	Taken	Wang (2006)
	n2	1.1974	7.9	30	Calculated (Fig8)	Yamaguchi (1974)
	L	0.14899	7.9	30	Calculated (Fig8)	Yamaguchi (1974)
	Ki	0.016205	7.9	30	Calculated (Fig8)	Yamaguchi (1974)
G6PDH	Specific Activity	5.7	8.0	Unknown	Taken	Sanwal (1970)
	Ki_nadh	0.22081 * 1.5693	7.5	Unknown	Calculated (Fig7)	Sanwal (1970)[2]
	n	1.7847 * 1.9514	7.5	Unknown	Calculated (Fig7)	Sanwal (1970)[2]
	Ki_nadph_nadp	0.01 * 1.9529	7.5	Unknown	Taken	Sanwal (1970)[2]
	Ki_nadph_g6p	0.69684 * 1.9993	7.5	Unknown	Calculated (Fig7)	Sanwal (1970)[2]
	Ki_nadp	0.07 * 0.5110	7.5	Unknown	Taken	Sanwal (1970)[2]
	K_g6p	0.07 * 0.5022	7.5	Unknown	Taken	Sanwal (1970)[2]
	K_nadp	0.015 * 0.5016	7.5	Unknown	Taken	Sanwal (1970)[2]
GND	Specific Activity	32	Unknown	Unknown	Taken	BRENDA
	K_6pgc	0.1	7.5	25	Taken	DeSilva (1979)
	Ki_fdp	0.025	7.5	25	Taken	DeSilva (1979)
	K_nadp	0.028	7.5	25	Taken	DeSilva (1979)
	Ki_nadph	0.01	7.5	25	Taken	DeSilva (1979)
	Ki_atp	3	7.5	25	Taken	DeSilva (1979)
RPE	K_eq	1.4	5	30	Taken (Yeast)	Chassagnole (2002)
RPI	K_eq	4	5	30	Taken (Yeast)	Chassagnole (2002)

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Table S4 ... continued: Kinetic Model Reaction Parameters

Reaction	Reaction Parameters		Experimental Conditions		Value Status	Reference
	Parameter	Value	pH	Temp. (°C)		
TKT1	Specific Activity	50.4	8.5	30	Taken	Sprenger (1995)
	K_eq	1.2 * 0.5306	Unknown	Unknown	Taken	Chassagnole (2002)[2]
	K_r5p	1.4 * 1.8394	8.5	30	Taken	Sprenger (1995)[2]
	K_xu5pD	0.16 * 1.7982	8.5	30	Taken	Sprenger (1995)[2]
	K_g3p	2.1 * 1.1312	8.5	30	Taken	Sprenger (1995)[2]
	K_s7p	4 * 1.3003	8.5	30	Taken	Sprenger (1995)[2]
TKT2	Specific Activity	50.4	8.5	30	Taken	Sprenger (1995)
	K_eq	10 * 1.2310	Unknown	Unknown	Taken	Chassagnole (2002)[2]
	K_e4p	0.09 * 0.8301	8.5	30	Taken	Sprenger (1995)[2]
	K_f6p	1.1 * 1.8585	8.5	30	Taken	Sprenger (1995)[2]
	K_xu5pD	0.16 * 1.6282	8.5	30	Taken	Sprenger (1995)[2]
	K_g3p	2.1 * 1.0284	8.5	30	Taken	Sprenger (1995)[2]
TALA	Specific Activity	60	8.5	30	Taken	Sprenger (1995)
	K_eq	1.05 * 1.2148	Unknown	Unknown	Taken	Chassagnole (2002)[2]
	K_g3p	0.038 * 0.5	8.5	30	Taken	Sprenger (1995)[2]
	K_e4p	0.09 * 1.4350	8.5	30	Taken	Sprenger (1995)[2]
	K_s7p	0.285 * 0.5002	8.5	30	Taken	Sprenger (1995)[2]
	K_f6p	1.2 * 0.9578	8.5	30	Taken	Sprenger (1995)[2]

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