SUPPORTING INFORMATION

Enzyme Architecture: The Activating Oxydianion Binding Domain for Orotidine 5'-Monophophate Decarboxylase.

Krisztina Spong, Tina L. Amyes, and John P. Richard*

Department of Chemistry, University at Buffalo, Buffalo, New York 14260

Table S1. Kinetic parameters for the turnover of **EO** by OMPDC in the presence of oxydianions at pH 7, 25 ˚C and I = 0.14 maintained with NaCl.[a]

Dianion X^{2-}	$[X^{2-}]$ mM	$(k_{cat}/K_m)_{obsd}$ [b] $M^{-1}\ s^{-1}$	K_d [c] mM	$(k_{cat}/K_m)_{E\bullet X}$ [d] $M^{-1}\ s^{-1}$
HPO_3^{2-} [e]	2.5	30	140	1600
	5.0	61		
	7.5	88		
	10	120		
	15	180		
	20	220		
	30	310		
	40	390		
HPO_4^{2-} [f]	8.4	0.043	25	0.11
	17	0.056		
	34	0.070		
SO_3^{2-} [g]	2.2	66	27	920
	4.4	120		
	8.9	230		
	18	370		
	25	450		
	36	520		
SO_4^{2-} [h]	2.3	0.13	55	3.1
	5.1	0.28		
	7.4	0.38		
	10	0.47		
	15	0.65		
	20	0.86		
	30	1.1		
	42	1.3		
$S_2O_3^{2-}$ [i]	2.7	0.14	14	0.87
	5.4	0.24		
	11	0.39		
	16	0.50		
	20	0.55		
	32	0.62		
	43	0.64		
AsO_4^{2-} [j]	33	1.1×10^{-2}		
NO_3^- [k]	115	1.6×10^{-2}		

[a] Reactions were monitored by UV spectroscopy at 283 nm (HPO_3^{2-}, SO_3^{2-}) or by HPLC (other anions), as described in earlier work.[1,2] [b] Observed second-order rate constant for turnover of EO by OMPDC at the specified concentration of X^{2-}. [c] Dissociation constant for binding of X^{2-} to the free enzyme. [d] Limiting second-order rate constant for turnover of EO by OMPDC that is saturated by X^{2-}. [e] Self-buffered at pH 7.0 by phosphite (80% free base). [f] Buffered at pH 7.1 by phosphate (70% free base) and 10 mM MOPS 50% free base. [g] Buffered at pH 7.1 by sulfite (70% free base) and 5 mM MOPS 53% free base. [h] Buffered at pH 7.1 by 5 mM MOPS 50% free base. [i] Buffered at pH 7.1 by 10 mM MOPS 50% free base. [j] Buffered at pH 7.1 by 25 mM MOPS 50% free base. [k] Buffered at pH 7.1 by 50 mM MOPS 50% free base.

References

(1) Toth, K.; Amyes, T. L.; Wood, B. M.; Chan, K. K.; Gerlt, J. A.; Richard, J. P. *Biochemistry* **2009**, *48,* 8006-8013.

(2) Amyes, T. L.; Richard, J. P.; Tait, J. J. *J. Am. Chem. Soc.* **2005**, *127,* 15708-15709.