

Supplementary Table 1 Comparison of Kinetic Parameters of Non-SeCys-type GPx from Various Sources

Glutathione system						Thioredoxin system						Reference/Source
Sc Gpx1	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Sc Gpx1	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	This study.
H ₂ O ₂	2.98	141	578	4.10×10 ⁶	2.11 × 10 ⁻²	H ₂ O ₂	0.739	120	143	1.19×10 ⁶	6.16 × 10 ⁻³	<i>S. cerevisiae</i>
t-BHP	0.579	75	112	1.49×10 ⁶	7.72 × 10 ⁻³	t-BHP	1.25	223	242	1.09×10 ⁶	5.6 × 10 ⁻³	
Sc Gpx2	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Sc Gpx2	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Tanaka <i>et al.</i> (2005)
H ₂ O ₂	0.27	170	99.4	5.85×10 ⁵	1.59 × 10 ⁻³	H ₂ O ₂	2.6	20	957	4.79×10 ⁷	0.13	<i>J. Biol. Chem.</i> 280, 42078-42087.
t-BHP	0.295	313	109	3.48×10 ⁵	9.42 × 10 ⁻⁴	t-BHP	1	62.5	368	5.89×10 ⁶	0.016	<i>S. cerevisiae</i>
At GPX1	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	At GPX1	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Iqbal <i>et al.</i> (2006)
At GPX1	ND	—	—	—	—	At GPX1	0.262	17.1	830	4.9×10 ⁶	1.53 × 10 ⁻²	<i>FEBS J.</i> 273, 5589-5597.
At GPX2	ND	—	—	—	—	At GPX2	0.218	15.3	690	4.5×10 ⁶	1.42 × 10 ⁻²	<i>Arabidopsis thaliana</i>
At GPX5	ND	—	—	—	—	At GPX5	0.247	25.4	780	3.1×10 ⁶	9.72 × 10 ⁻³	
At GPX6	ND	—	—	—	—	At GPX6	0.269	14	850	6.1×10 ⁶	1.92 × 10 ⁻²	
Cr GPx	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Cr GPx	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Fischer <i>et al.</i> (2009)
H ₂ O ₂	ND	—	—	—	—	H ₂ O ₂	—	54	7.4	1.37×10 ⁵	—	<i>Plant Mol. Biol.</i> 71, 569-583.
t-BHP	ND	—	—	—	—	t-BHP	—	732	11.3	1.6×10 ⁴	—	<i>Chlamydomonas reinhardtii</i>
CuOOH	ND	—	—	—	—	CuOOH	—	63	8.9	1.41×10 ⁵	—	
GPX1e1	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	GPX1e1	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Herbette <i>et al.</i> (2002)
H ₂ O ₂	ND	—	—	—	—	H ₂ O ₂	0.153	13.7	—	—	1.12×10 ⁻²	<i>Eur. J. Biochem.</i> 269, 2414-2420.
t-BHP	0.037	128	—	—	2.94×10 ⁻⁴	t-BHP	0.147	16.6	—	—	8.85×10 ⁻³	<i>Lycopersicon esculentum</i>
LAOOH	0.027	39.3	—	—	6.98×10 ⁻⁴	LAOOH	0.147	8.6	—	—	1.7×10 ⁻²	
PCOOH	0.019	24.9	—	—	7.63×10 ⁻⁴	PCOOH	0.108	14.4	—	—	7.5×10 ⁻³	
GPXha2	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	GPXha2	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Herbette <i>et al.</i> (2002)
H ₂ O ₂	ND	—	—	—	—	H ₂ O ₂	0.147	13.9	—	—	1.06×10 ⁻²	<i>Eur. J. Biochem.</i> 269, 2414-2420.
t-BHP	0.0271	95.3	—	—	2.84×10 ⁻⁴	t-BHP	0.161	14.1	—	—	1.14×10 ⁻²	<i>Helianthus annuus</i>
LAOOH	0.0424	82.7	—	—	5.16×10 ⁻⁴	LAOOH	0.169	16.2	—	—	1.05×10 ⁻²	
PCOOH	0.0158	12.1	—	—	1.31×10 ⁻³	PCOOH	0.126	9.44	—	—	1.34×10 ⁻²	
PHCC-TPx	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	PHCC-TPx	V_{max}	K_m	k_{cat}	k_{cat}/K_m	V_{max}/K_m	Jung <i>et al.</i> (2002)
H ₂ O ₂	ND	—	—	—	—	H ₂ O ₂	17.2	4.9	—	—	3.5	<i>J. Biol. Chem.</i> 277, 12572-12578.
t-BHP	ND	—	—	—	—	t-BHP	7.6	5.5	—	—	1.4	Chinese cabbage
CuOOH	ND	—	—	—	—	CuOOH	14.3	11.7	—	—	1.2	

Each kinetic parameter of Sc Gpx1 was obtained from the average of two independent experiments.

In all At GPxs, H₂O₂ was used as a substrate.

ND	The enzyme activity was not detected.
—	The kinetic parameter was not determined.
t-BHP	<i>tert</i> -Butyl hydroperoxide
LAOOH	Linoleic acid hydroperoxide
PCOOH	Phosphatidylcholine di linoleoyl hydroperoxide
CuOOH	Cumene hydroperoxide