

# PRODUCT INFORMATION



## GPX1 (human, recombinant)

Item No. 39629

### Overview and Properties

**Synonyms:** Glutathione Peroxidase 1, GPXD, GSHPX1  
**Source:** Active recombinant human GPX1 expressed in *E. coli*  
**Amino Acids:** 203 residues  
**Storage:** -20°C (as supplied)  
**Stability:** ≥1 year  
**Purity:** ≥95% estimated by SDS-PAGE  
**Supplied in:** 25 mM Tris-HCl, pH 8.0, with 250 mM potassium chloride, 2 mM 2-mercaptoethanol, and 10% glycerol

### Protein

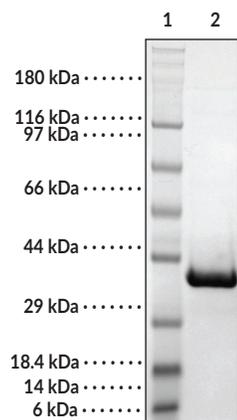
**Concentration:** 1 mg/ml

**Unit Definition:** One unit is defined as the amount of enzyme required to consume 1 μmol GSH per minute in a glutathione reductase-coupled GPx assay with 1 mM GSH, 0.5 mM cumene hydroperoxide, 15 mM human glutathione reductase, and 0.3 NADPH in TE buffer (50 nM Tris-HCl, 2 mM EDTA, pH 7.5)

**Special Conditions:** Centrifuge tube briefly before opening

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Image



Lane 1: MW Markers  
Lane 2: GPX1

Coomassie stained SDS-PAGE Analysis  
of 10 μg GPX1.

WARNING  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY  
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## Description

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Glutathione peroxidase 1 (GPX1) is a selenocysteine-containing glutathione peroxidase with antioxidant activity.<sup>1</sup> It is ubiquitously expressed and localizes to both the cytosol and mitochondria.<sup>2</sup> GPX1 catalyzes the reduction of hydrogen peroxide, hydroperoxy fatty acids, and hydroperoxy lysophosphatides to water or their corresponding non-toxic lipid alcohols, respectively, by converting glutathione (GSH) to oxidized glutathione (GSSG), thereby reducing intracellular oxidative stress.<sup>1-3</sup> GPX1 levels are increased in renal cell carcinoma tumors compared with non-tumor renal tissue and correlated with decreased overall patient survival.<sup>4</sup> Plasma levels of GPX1 are decreased in asthmatic patients and GPX1 SNPs are associated with an increased risk of the development of asthma.<sup>5</sup> Cardiac GPX1 levels and whole blood GPX1 activity are decreased in patients with Keshan disease, an endemic cardiomyopathy associated with low selenium levels in the soil and food supply.<sup>6</sup> Cayman's GPX1 (human, recombinant) protein can be used for enzyme activity assays.

## References

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1. Zhao, Y., Wang, H., Zhou, J., et al. Glutathione peroxidase GPX1 and its dichotomous roles in cancer. *Cancers (Basel)* **14(10)**, 2560 (2022).
2. Brigelius-Flohé, R. and Maiorino, M. Glutathione peroxidases. *Biochim. Biophys. Acta* **1830(5)**, 3289-3303 (2013).
3. Lubos, E., Loscalzo, J., and Handy, D.E. Glutathione peroxidase-1 in health and disease: From molecular mechanisms to therapeutic opportunities. *Antioxid. Redox Signal.* **15(7)**, 1957-1997 (2011).
4. Cheng, Y., Xu, T., Li, S., et al. GPX1, a biomarker for the diagnosis and prognosis of kidney cancer, promotes the progression of kidney cancer. *Aging (Albany NY)* **11(24)**, 12165-12176 (2019).
5. Iorio, A., Velocci, M., Graziano, M.E., et al. GPX1\*Pro198Leu AND GPX3 rs2070593 as genetic risk markers for Italian asthmatic patients. *Clin. Exp. Pharmacol. Physiol.* **43(2)**, 277-279 (2016).
6. Handy, D.E. and Loscalzo, J. The role of glutathione peroxidase-1 in health and disease. *Free Radic. Biol. Med.* **188**, 146-161 (2022).

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