

GPx-1 (H-19): sc-22146

BACKGROUND

Glutathione peroxidase (GPx) enzymes are generally a selenium-containing tetrameric glycoprotein that helps prevent lipid peroxidation of cell membranes. GPx enzymes reduce lipid hydroperoxides to alcohols and reduce free hydrogen peroxide to water. GPx members are of the few proteins known in higher vertebrates to contain selenocysteine, which occurs at the active site of glutathione peroxidase and is coded by the nonsense (stop) codon TGA. GPx-1 plays an important role in the antioxidant defense of the vascular wall and neural cells in response to oxidative stress. GPx-2 is the major isoform in the lungs; its basal or inducible expression is dependent on Nrf2. GPx-3 is under regulation by hypoxic stress. The expression and deficiency of GPx-3 is associated with cardiovascular disease and stroke. GPx-5 is selenium-independent and is bound to the acrosome of sperm, where it may protect sperm from premature acrosome reaction in the epididymis.

REFERENCES

1. Chu, F.F., et al. 1997. Expression and chromosomal mapping of mouse GPx-2 gene encoding the gastrointestinal form of glutathione peroxidase, GPx-GI. *Biomed. Environ. Sci.* 10: 156-162.
2. Bilodeau, J.F., et al. 1999. Increased resistance of GPx-1 transgenic mice to tumor promoter-induced loss of glutathione peroxidase activity in skin. *Int. J. Cancer* 80: 863-867.
3. Mork, H., et al. 2000. Inverse mRNA expression of the selenocysteine-containing proteins GI-GPx and SeP in colorectal adenomas compared with adjacent normal mucosa. *Nutr. Cancer* 37: 108-116.
4. Crack, P.J., et al. 2001. Increased infarct size and exacerbated apoptosis in the glutathione peroxidase-1 (GPx-1) knockout mouse brain in response to ischemia/reperfusion injury. *J. Neurochem.* 78: 1389-1399.
5. Nasr, M.A., et al. 2004. GPx-1 modulates Akt and P70S6K phosphorylation and GADD 45 levels in MCF-7 cells. *Free Radic. Biol. Med.* 37: 187-195.

CHROMOSOMAL LOCATION

Genetic locus: GPX1 (human) mapping to 3p21.31; Gpx1 (mouse) mapping to 9 F2.

SOURCE

GPx-1 (H-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of GPx-1 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-22146 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

GPx-1 (H-19) is recommended for detection of GPx-1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

GPx-1 (H-19) is also recommended for detection of GPx-1 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for GPx-1 siRNA (h): sc-40646, GPx-1 siRNA (m): sc-40647, GPx-1 shRNA Plasmid (h): sc-40646-SH, GPx-1 shRNA Plasmid (m): sc-40647-SH, GPx-1 shRNA (h) Lentiviral Particles: sc-40646-V and GPx-1 shRNA (m) Lentiviral Particles: sc-40647-V.

Molecular Weight of GPx-1 monomer: 23 kDa.

Molecular Weight of GPx-1 homotetramer: 92 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Vieira, R.P., et al. 2011. Airway epithelium mediates the anti-inflammatory effects of exercise on asthma. *Respir. Physiol. Neurobiol.* 175: 383-389.
2. Ghosh, S., et al. 2011. Altered glutathione homeostasis in heart augments cardiac lipotoxicity associated with diet-induced obesity in mice. *J. Biol. Chem.* 286: 42483-42493.
3. Toledo, A.C., et al. 2012. Aerobic exercise attenuates pulmonary injury induced by exposure to cigarette smoke. *Eur. Respir. J.* 39: 254-264.
4. Abasi, M., et al. 2012. The synergistic effect of β-boswellic acid and Nurr1 overexpression on dopaminergic programming of antioxidant glutathione peroxidase-1-expressing murine embryonic stem cells. *Neuroscience* 222: 404-416.
5. Kumar, K.H. and Khanum, F. 2013. Hydroalcoholic extract of cyperus rotundus ameliorates H₂O₂-induced human neuronal cell damage via its anti-oxidative and anti-apoptotic machinery. *Cell. Mol. Neurobiol.* 33: 5-17.

RESEARCH USE

For research use only, not for use in diagnostic procedures.