SANTA CRUZ BIOTECHNOLOGY, INC.

PRX V (B-7): sc-133073

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The peroxiredoxin (PRX) family comprises six antioxidant proteins, PRX I, II, III, IV, V and VI, which protect cells from reactive oxygen species (ROS) by preventing the metal-catalyzed oxidation of enzymes. The PRX proteins primarily utilize thioredoxin as the electron donor for antioxidation, although they are fairly promiscuous with regard to the hydroperoxide substrate. In addition to protection from ROS, peroxiredoxins are also involved in cell proliferation, differentiation and gene expression. PRX I, II, IV and VI show diffuse cytoplasmic localization, while PRX III and V exhibit distinct mitochondrial localization. The human PRX I gene encodes a protein that is expressed in several tissues, including liver, kidney, testis, lung and nervous system. PRX II is expressed in testis, while PRX III shows expression in lung. PRX I, II and III are overexpressed in breast cancer and may be involved in its development or progression. Upregulated protein levels of PRX I and II in Alzheimer's disease (AD) and Down syndrome (DS) indicate the involvement of PRX I and II in their pathogenesis. The human PRX IV gene is abundantly expressed in many tissues. PRX IV exists as a precursor protein, which is only detected in testis, and a processed secreted form. PRX V also exists as two forms, designated long and short. Like PRX IV, the long form of PRX V is highly expressed in testis. The short form of PRX V is more widely expressed, with high expression in liver, kidney, heart and lung. PRX VI, α1-Cys peroxiredoxin (also known as antioxidant protein 2 or AOP2), is highly expressed in most tissues, particularly in epithelial cells. Localized to the cell cytosol, PRX VI functions independently of other peroxiredoxins and antioxidant proteins, specializing in antioxidant defense, lung phospholipid metabolism and protection of keratinocytes from cell death induced by reactive oxygen species.

REFERENCES

1. Iwahara, S., et al. 1995. Purification, characterization and cloning of a heme-binding protein (23 kDa) in rat liver cytosol. Biochemistry 34: 13398-13406.
2. Butterfield, L.H., et al. 1999. From cytoprotection to tumor suppression: the multifactorial role of peroxiredoxins. Antioxid. Redox Signal. 1: 385-402.
3. Mizusawa, H., et al. 2000. Peroxiredoxin I (macrophage 23 kDa stress protein) is highly and widely expressed in the rat nervous system. Neurosci. Lett. 283: 57-60.
4. Noh, D.Y., et al. 2001. Overexpression of peroxiredoxin in human breast cancer. Anticancer Res. 21: 2085-2090.

CHROMOSOMAL LOCATION

Genetic locus: PRDX5 (human) mapping to 11q13.1.

SOURCE

PRX V (B-7) is a mouse monoclonal antibody raised against amino acids 1-214 representing full length PRX V of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

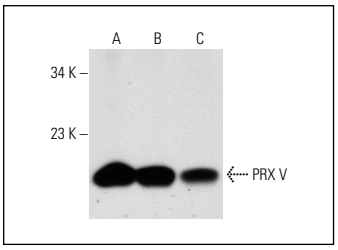
PRX V (B-7) is recommended for detection of PRX V of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PRX V siRNA (h): sc-40837, PRX V shRNA Plasmid (h): sc-40837-SH and PRX V shRNA (h) Lentiviral Particles: sc-40837-V.

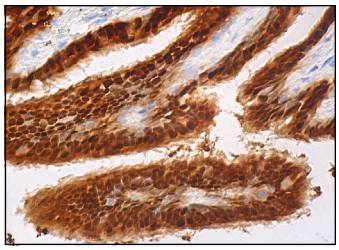
Molecular Weight of PRX V: 17 kDa.

Positive Controls: SHP-77 whole cell lysate, Hep G2 cell lysate: sc-2227 or HeLa whole cell lysate: sc-2200.

DATA



PRX V (B-7): sc-133073. Western blot analysis of PRX V expression in HeLa (**A**), SHP-77 (**B**) and Hep G2 (**C**) whole cell lysates.



PRX V (B-7): sc-133073. Immunoperoxidase staining of formalin fixed, paraffin-embedded human bronchus tissue showing cytoplasmic and nuclear staining of respiratory epithelial cells.

SELECT PRODUCT CITATIONS

1. Mueller, S.K., et al. 2019. Noninvasive exosomal proteomic biosignatures, including cystatin SN, peroxiredoxin-5, and glycoprotein VI, accurately predict chronic rhinosinusitis with nasal polyps. Int. Forum Allergy Rhinol. 9: 177-186.
2. Xie, D.P., et al. 2020. Anti-tumor properties of *Picrasma quassioides* extracts in H-Ras^{G12V} liver cancer are mediated through ROS-dependent mitochondrial dysfunction. Anticancer Res. 40: 3819-3830.
3. Jin, Y.Z., et al. 2021. Peroxiredoxin V silencing elevates susceptibility to doxorubicin-induced cell apoptosis via ROS-dependent mitochondrial dysfunction in AGS gastric cancer cells. Anticancer Res. 41: 1831-1840.

STORAGE

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

RESEARCH USE

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