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# Anti-GPX4 Rabbit Monoclonal Antibody

**Catalog Number:** M02059

## Overview

| | |
|---|---|
| Product Name | Anti-GPX4 Rabbit Monoclonal Antibody |
| Reactive Species | Human, Mouse, Rat |
| Description | Boster Bio Anti-GPX4 Rabbit Monoclonal Antibody catalog # M02059. Tested in WB, IHC, ICC/IF applications. This antibody reacts with Human, Mouse, Rat. |
| Application | IF, IHC, ICC, WB |
| Clonality | Monoclonal ACCO-7 |
| Formulation | Rabbit IgG in stabilizing components, phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.<br>*This antibody is supplied in a stabilized formulation.<br>Compatibility with conjugation reactions depends on the chemistry of the conjugation method used. For conjugation methods that are not compatible with the stabilizing components present in this formulation, a carrier-free antibody format is required. |
| Storage Instructions | Store at -20°C for one year. For short term storage and frequent use, store at 4°C for up to one month. Avoid repeated freeze-thaw cycles. |
| Host | Rabbit |
| Uniprot ID | P36969 |

## Technical Details

| | |
|---|---|
| Immunogen | A synthesized peptide derived from human GPX4 |
| Isotype | Rabbit IgG |
| Form | Liquid |
| Concentration | 0.5mg/ml |
| Purification | Affinity-chromatography |
| Suggested Dilutions | WB 1:500-2000<br>IHC 1:50-200<br>ICC/IF 1:50-200 |

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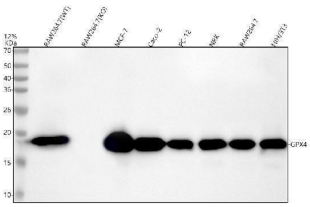
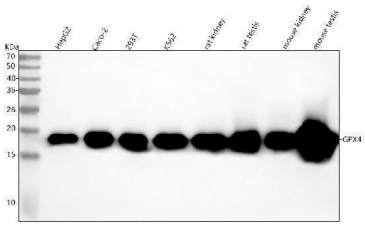
# Anti-GPX4 Rabbit Monoclonal Antibody (M02059) Images



Western blot analysis of GPX4 using anti-GPX4 antibody (M02059). Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours. The sample well of each lane was loaded with 30 ug of sample under reducing conditions. Lane 1: mouse RAW264.7(WT) whole cell lysates, Lane 2: mouse RAW264.7(KO) whole cell lysates, Lane 3: human MCF-7 whole cell lysates, Lane 4: human Caco-2 whole cell lysates, Lane 5: rat PC-12 whole cell lysates, Lane 6: rat NRK whole cell lysates, Lane 7: mouse RAW264.7 whole cell lysates, Lane 8: mouse NIH/3T3 whole cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-GPX4 antigen affinity purified monoclonal antibody (M02059) at 1:500 overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:500 for 1.5 hour at RT. The signal is developed using an Enhanced Chemiluminescent detection (ECL) kit (Catalog # EK1002) with Tanon 5200 system. A specific band was detected for GPX4 at approximately 19 kDa. The expected band size for GPX4 is at 22 kDa.



Western blot analysis of GPX4 using anti-GPX4 antibody (M02059). Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours. The sample well of each lane was loaded with 30 ug of sample under reducing conditions. Lane 1: human HepG2 whole cell lysates, Lane 2: human CACO-2 whole cell lysates, Lane 3: human 293T whole cell lysates, Lane 4: human K562 whole cell lysates, Lane 5: rat kidney tissue lysates, Lane 6: rat testis tissue lysates, Lane 7: mouse kidney tissue lysates, Lane 8: mouse testis tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-GPX4 antigen affinity purified monoclonal antibody (Catalog # M02059) at 1:500 overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:1000 for 1.5 hour at RT. The signal is developed using an Enhanced Chemiluminescent detection (ECL) kit (Catalog # EK1002) with Tanon 5200 system. A specific band was detected for GPX4 at approximately 19 kDa. The expected band size for GPX4 is at 22 kDa.

Western blot analysis of GPX4 using anti-GPX4 antibody (M02059). Electrophoresis was performed on a 5-20% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. The sample well of each lane was loaded with 30 ug

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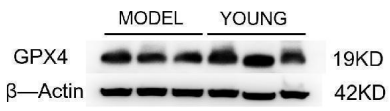
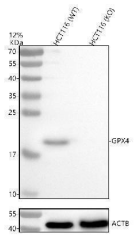
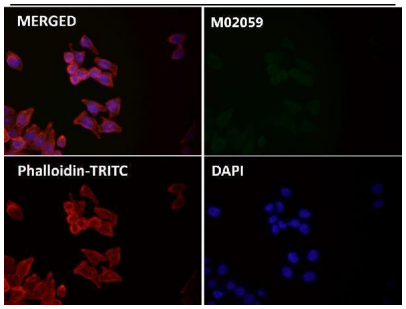


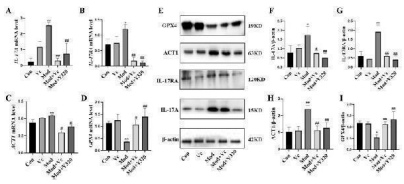

of sample under reducing conditions. Lane 1-3: model group-mouse uterine tissue lysates, Lane 4-6: young group-mouse uterine tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-GPX4 antigen affinity purified monoclonal antibody (M02059) at 1:1000 overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody (Catalog # BA1054) at a dilution of 1:5000 for 1 hour at RT. The signal is developed using an ECL Plus Western Blotting Substrate (Catalog # AR1196-200) with Tanon 5200 system. A specific band was detected for GPX4 at approximately 19 kDa. The expected band size for GPX4 is at 19 kDa.




Western blot analysis of GPX4 using anti-GPX4 antibody (M02059). Electrophoresis was performed on a 12% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. The sample well of each lane was loaded with 30 ug of sample under reducing conditions. Lane 1: human HCT116- WT whole cell lysates, Lane 2: human HCT116-GPX4 KO whole cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. Then the membrane was incubated with rabbit anti-GPX4 antigen affinity purified monoclonal antibody (M02059) at 0.5 ug/mL overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody (Catalog # BA1054) at a dilution of 1:5000 for 1.5 hour at RT. The signal is developed using an ECL Plus Western Blotting Substrate (Catalog # AR1196-200) with Tanon 5200 system. A specific band was detected for GPX4 at approximately 19 kDa. The expected band size for GPX4 is at 22 kDa.




Immunofluorescent analysis using the Antibody at 1:500 dilution.



Effects of Vitamin C intervention on the IL-17A/IL-17RA/ACT1 signaling pathway and ferroptosis in FRTL5 cells stimulated by PM2.5. (A-D) qPCR was used to detect the transcription levels of IL-17A/IL-17RA/ACT1 signaling pathway-related factors. (E-I) The protein expression levels of the IL-17A/IL-17RA/ACT1 signaling pathway were detected by western blot. The data are presented as mean ± SD; n = 3/group. Compared with the Con group, * P<0.05 or ** P<0.01; Compared with the Mod group, # P<0.05 or ## P<0.01. Con: Control group, normal medium for 24 h; Vc:

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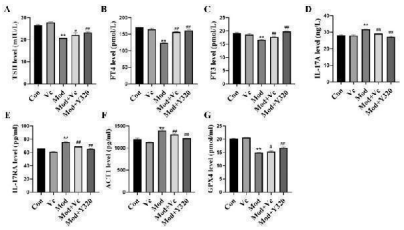
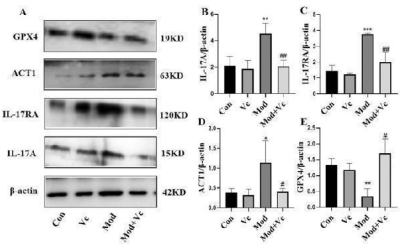
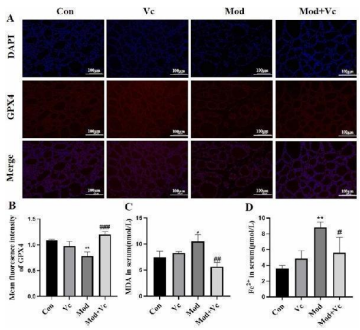
medium containing 50 umol/L Vc for 24 h; Mod: medium containing 400 ug/mL PM2.5 for 24 h; Mod + Vc: medium containing 400 ug/mL PM2.5 and 50 umol/L Vc for 24 h; Mod + Y320: medium containing 400 ug/mL PM2.5 and 0.08 umol/L Y320 for 24 h.Index in PubMed under a CC BY license. PMID: 40753780



Effect of Vitamin C on FRTL5 cell function and IL-17A signaling pathway and ferroptosis-related factors stimulated by PM2.5. (A-C) The levels of (A, TSH; B, FT4; and C, FT3) in the supernatant of FRTL5 cells were detected by ELISA. (D-G) ELISA was used to measure the levels of IL-17A (D), IL-17RA (E), ACT1 (F), and GPX4 (G) in the supernatant of FRTL5 cells. The data are presented as mean ± SD; n = 5/group). Compared with the Con group, ** P<0.01; Compared with the Mod group, # P<0.05 or ## P<0.01. Con: Control group, normal medium for 24 h; Vc: medium containing 50 umol/L Vc for 24 h; Mod: medium containing 400 ug/mL PM2.5 for 24 h; Mod + Vc: medium containing 400 ug/mL PM2.5 and 50 umol/L Vc for 24 h; Mod + Y320: medium containing 400 ug/mL PM2.5 and 0.08 umol/L Y320 for 24 h.Index in PubMed under a CC BY license. PMID: 40753780




Vitamin C regulated the protein expression levels of IL-17A signaling pathway and ferroptosis-related factors. (A) The expression levels of the IL-17A pathway (B, IL-17A; C, IL-17RA; D, ACT1) and ferroptosis (E, GPX4)-related genes in the thyroid tissues were determined by western blot (n = 3/group).The data are presented as mean ± SD. Compared with the Con group, *P<0.05, **P<0.01, or ***P<0.001; Compared with the Mod group, # P<0.05 or ## P<0.01. Con: Control group, normal environment for eight weeks; Vc: vitamin C was administered by gavage at 120 mg/kg for eight weeks; Mod: PM2.5 exposure for eight weeks; Mod + Vc: after PM2.5 exposure, vitamin C was administered by gavage at 120 mg/kg for eight weeks.Index in PubMed under a CC BY license. PMID: 40753780




Vitamin C improved PM2.5-induced female rats' thyroid ferroptosis. (A) Immunofluorescence assay was used to detect the expression of GPX4 protein in thyroid tissues. (B) Quantitative immunofluorescence analysis (n = 3/group). (C) Serum malondialdehyde (MDA) content. (D) Serum ferrous ion (Fe2+) content (n = 10/group). The data are presented as mean ± SD. Compared with the Con group, *P<0.05 or ** P<0.01; Compared with the Mod group, # P<0.05, ## P<0.01, or ### P<0.001. Con: Control group, normal environment for eight weeks; Vc: vitamin C was administered by gavage at 120 mg/kg for eight weeks; Mod: PM2.5 exposure for eight weeks; Mod + Vc: after PM2.5 exposure, vitamin C was administered by gavage at 120 mg/kg for eight weeks.Index in PubMed under a CC BY license. PMID: 40753780

Immunohistochemically stained pancreas tissue ( n = 6).

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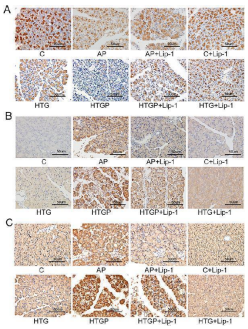
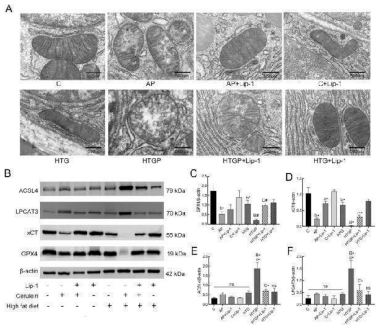
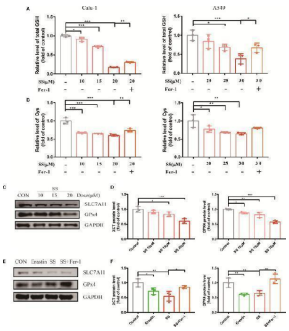


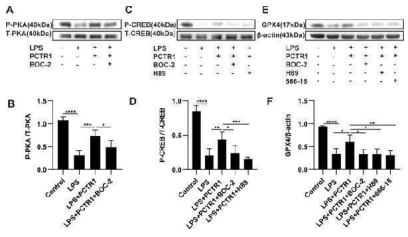
Protein levels of ( A ) GPX4, ( B ) ACSL4, and ( C ) LPCAT3 in rats (×400). GPX4, glutathione peroxidase 4; xCT, cysteine/glutamate transporter; ACSL4, acyl-CoA synthetase long-chain family member 4. Index in PubMed under a CC BY license. PMID: 38664508



Ferroptosis was observed and alleviated in the pancreas of rats ( n = 6). ( A ) Ultrastructure of the mitochondria in the pancreas obtained by TEM (×20,000); ( B – F ) Western blot analysis of ferroptosis-related proteins, GPX4, xCT, ACSL4, and LPCAT3. GPX4, glutathione peroxidase 4; xCT, cysteine/glutamate transporter; ACSL4, acyl-CoA synthetase long-chain family member 4; LPCAT3, lysophosphatidylcholine acyltransferase 3; C, control; AP, acute pancreatitis; HTG, hypertriglyceridemic; HTGP, HTG pancreatitis; *b vs. the C group, *c vs. the AP group, *B vs. the HTG group, *C vs. the HTGP group, * P



SS attenuated the oxidation resistance of LUAD cells. (A, B) GSH or Cys was detected in Calu-1 or A549 cells, which were respectively treated with 10, 15, 20 uM or 20, 25, 30 uM SS for 6 h, and pretreated with or without Fer-1 (1 uM), the data statistic was shown in a histogram (*P < 0.05, **P < 0.01, ***P < 0.001). (C) Western blot analysis was used to detect the expressions of SLC7A11 and GPX4 in Calu-1 cells, which were treated with 10, 15, 20 uM SS for 6 h. (D) Quantitative analysis of gray value of the SLC7A11 and GPX4 blots. (E) Western blotting analysis was used to detect the expressions of SLC7A11 and GPX4 in Calu-1 cells, which were treated with 20 uM SS or 4 uM erastin, with or without Fer-1 (1 uM) for 6 h. (F) Quantitative analysis of gray value of the SLC7A11 and GPX4 blots.Index in PubMed under a CC BY license. PMID: 35664792



PCTR1 activates CREB by the ALX/PKA pathway to increase GPX4 expression in vitro. BOC-2 (ALX receptor inhibitor, 10 uM), H89 (PKA inhibitor, 10 uM), 666-15 (CREB inhibitor, 1 uM) or an equivalent volume of DMSO was administered to H1299 cells for 30 min in advance, and then LPS and PCTR1 were co-administered for 48 h. A , B The protein level of P-PKA was measured by western blot. C , D The protein level of P-CREB was measured by western blot. E , F The protein level of GPX4 was measured by western blot. Data are presented as the mean ± SD, n = 5–6. * p

PCTR1 activates CREB via the ALX/PKA pathway to increase GPX4 expression in vivo. PCTR1 at a dose of 200 ng was injected into each mouse via the caudal vein 6 h after LPS (15 mg/kg, ip) administration. BOC-2 (ALX receptor inhibitor, 600 ng/kg), H89 (PKA inhibitor, 10 mg/kg), 666-15 (CREB

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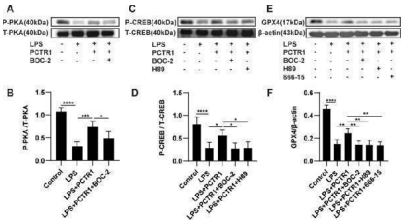
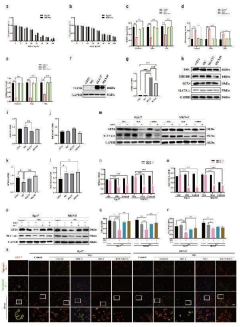
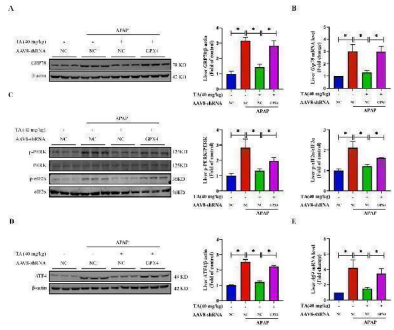


inhibitor, 10 mg/kg) or an equivalent volume of DMSO was injected into the caudal vein 1 h before PCTR1 treatment. The mice were sacrificed 24 h after LPS stimulation. A , B The protein expression level of P-PKA was determined by western blotting. C , D The protein expression level of P-CREB was determined by western blotting. E , F The protein expression level of GPX4 was determined by western blotting. Data are presented as the mean ± SD, n = 4–6. * p



M2c macrophages increase ferroptosis resistance in gastric cancer cells. a The CCK-8 method was used to detect the survival of gastric cancer cells (Hgc27 and MKN45) intervened with RSL3 for 24 h. b The CCK-8 method was used to detect the survival of gastric cancer cells (Hgc27 and MKN45) intervened with Fer-1 for 24 h. c The expression of SOD in different intervention groups. d The expression of MDA in different intervention groups. e The expression of GSH in different intervention groups. f The expression of TGFbeta1 protein WB in different cell lines. g The expression results of TGFbeta1 protein. h The expression of key ferroptosis proteins WB in different cell lines. i The expression results of FSP1 protein. j Expression results of DHODH protein. k Expression results of GPX4 protein. l SLC7A11 protein expression results. m The intervention of RSL3 on the expression of key ferroptosis protein WB in different co culture groups. n The expression results of GPX4 protein. o SLC7A11 protein expression results. p The WB expression of key proteins involved in ferroptosis in different intervention groups. q The expression results of GPX4 protein. r The expression results of SLC7A11 protein. s Fluorescence results of mitochondrial membrane potential in different intervention groups. Scale bar=50 um. *p



Liver-specific GPX4 knockdown inhibits TA-regulated ER stress in APAP-induced hepatotoxicity. (A) Western blotting assessed hepatic GRP78 expression, with beta-actin as a loading control. Band intensities were quantified using ImageJ. (B) q-PCR was conducted to evaluate the transcript levels of the Grp78 gene. (C) Western blotting assessed hepatic phosphorylated-PERK, phosphorylated-eIF2alpha, PERK, and eIF2alpha protein expressions. Band intensities were quantified using ImageJ. (D) Western blotting assessed hepatic ATF4 expression, with beta-actin as a loading control. Band intensities were quantified using ImageJ. (E) q-PCR was conducted to evaluate the transcript levels of the Atf4 gene. All data were presented as mean ± SD, n = 3 for Western blotting, n = 5 for others. * P < 0.05 vs. corresponding control.Index in PubMed under a CC BY license. PMID: 40051561

Liver-specific GPX4 knockdown abrogates the protective effect of TA against APAP-induced hepatocyte apoptosis. (A) Western blotting assessed hepatic BCL2 and BAX expression, with beta-actin as a loading control. Band intensities were quantified using ImageJ. (B) q-PCR was conducted to evaluate the transcript levels of BCL2 and BAX-related genes. (C) Hepatic caspase 3 activity was quantified

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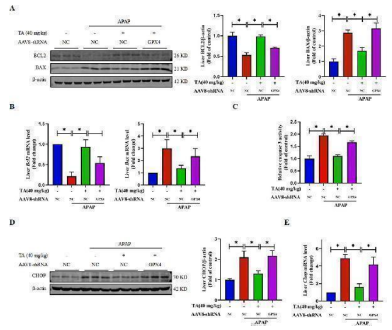
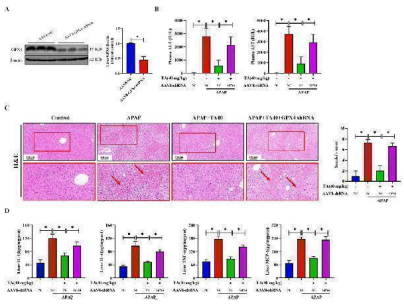
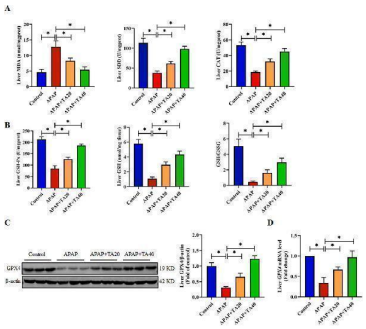


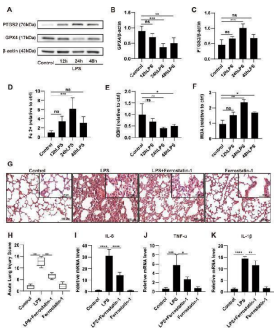
using a commercially available kit (fold of control). (D) Western blotting assessed hepatic CHOP expression, with beta-actin as a loading control. Band intensities were quantified using ImageJ. (E) q-PCR was conducted to evaluate the transcript levels of the Chop gene. All data were presented as mean ± SD, n = 3 for Western blotting, n = 5 for others. * P < 0.05 vs. corresponding control.Index in PubMed under a CC BY license. PMID: 40051561



Liver-specific GPX4 knockdown abrogates the hepatoprotective effects of TA against APAP-induced hepatotoxicity. (A) Western blotting assessed the detected hepatic GPX4 knockdown efficiency in protein levels. Hepatocyte-specific GPX4 knockdown mice were created by AAV8-mediated delivery of a TBG promoter-driven shRNA targeting GPX4. Null-vector-injected mice served as control. (B) Plasma levels of ALT and AST. (C) Liver tissues were subjected to H&E staining for histological examination. (D) Concentrations of hepatic IL-1beta, IL-6, TNF-alpha, and MCP-1 were quantified using commercially available ELISA kits. All data were presented as mean ± SD, n = 3 for Western blotting, n = 5 for others. * P < 0.05 vs. corresponding control.Index in PubMed under a CC BY license. PMID: 40051561



TA mediates the enhancement of hepatic antioxidant function by GPX4. (A) Hepatic concentrations of MDA, alongside the enzymatic activities of SOD and CAT. (B) Hepatic concentrations of GSH-Px, GSH, and the GSH redox ratio (GSH/GSSG) were determined. (C) Western blotting assessed hepatic GPX4 expression, with beta-actin as a loading control. Band intensities were quantified using ImageJ. (D) q-PCR was conducted to evaluate the transcript levels of the Gpx4 gene. All data were presented as mean ± SD, n = 3 for Western blotting, n = 6–8 for others. * P < 0.05 vs. corresponding control.Index in PubMed under a CC BY license. PMID: 40051561



Ferroptosis is induced in LPS-induced ALI and associated with lung damage. LPS (15 mg/kg) in saline or an equivalent volume of saline was intraperitoneally injected into mice, and lung tissues were collected at 0, 12, 24, and 48 h, respectively. A–C Representative western blotting and quantification analysis of GPX4 and PTGS2. D–F Relative values of Fe 2+ , GSH and MDA concentrations. Mice were pretreated with ferrostatin-1 (10 mg/kg, ip) 1h1 h before being injected with LPS (15 mg/kg, ip). Lung samples were collected 24 h after LPS injection. G Representative H&E staining of lung tissues (original magnification, ×200; inset, ×400). H Acute lung injury score of each group. I–K The relative mRNA expression levels of the inflammatory cytokines: IL-6, TNF-alpha and IL-1beta. The acute lung injury score data are presented as the median and range (25th–75th percentile), and other data are presented as the

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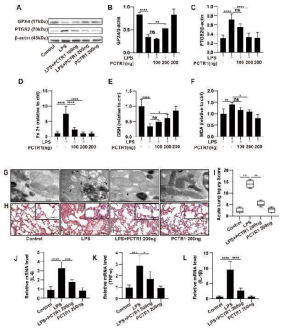
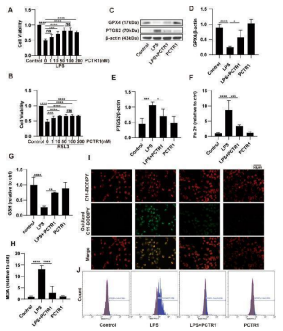
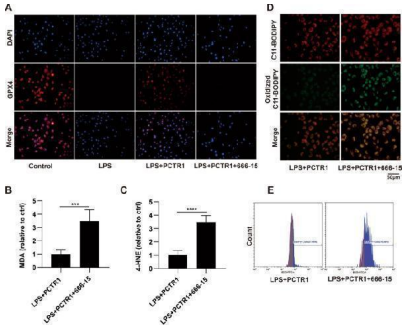
mean ± SD. n = 4–6. * p



Effects of PCTR1 on ferroptosis in LPS-induced ALI. PCTR1 (100 or 200 ng) was injected into the caudal vein of mice 6 h after LPS (15 mg/kg, ip) treatment. All lung specimens were harvested at 24 h after LPS stimulation. A–C Representative western blotting and quantification analysis of GPX4 and PTGS2. D–F Relative values of Fe 2+ , GSH and MDA concentrations. G Representative TEM images of each group. The black arrow indicates ferroptotic mitochondria. Magnification ×30,000. H Representative H&E staining of lung tissues (original magnification, ×200; inset, ×400). I Acute lung injury score. J–L The relative mRNA expression levels of the inflammatory cytokines: IL-6, TNF-alpha and IL-1beta. The acute lung injury score data are presented as the median and range (25th–75th percentile), and other data are presented as the mean ± SD. n = 4–6. * p



Effects of PCTR1 on LPS-induced ferroptosis in vitro. A H1299 cells were treated with LPS (10 ug/mL) and different concentrations of PCTR1 for 48 h. Fold change in cell viability. B H1299 cells were stimulated with RSL3 (10 nM) and different concentrations of PCTR1 for 48 h. Fold change in cell viability. C–E Representative western blotting and quantification analysis of GPX4 and PTGS2. F–H Relative levels of Fe 2+ , GSH and MDA. I The level of lipid peroxidation was determined with the C11-BODIPY 581/591 fluorescent probe (original magnification ×400). J Oxidized C11-BODIPY 581/591 probe was quantified by flow cytometry. Data are presented as the mean ± SD, n = 4–6. * p



CREB mediates the effect of PCTR1 on eliminating lipid peroxides in vitro. 666-15 (CREB inhibitor, 1 uM) or an equivalent volume of DMSO was administered to H1299 cells for 30 min in advance, and then LPS and PCTR1 were co-administered for 48 h. A Immunofluorescence staining images of GPX4 (original magnification ×400). B , C Relative expression levels of GSH, MDA and 4-HNE. D The level of lipid peroxidation was determined with the C11-BODIPY 581/591 fluorescent probe (original magnification ×400). E Oxidized C11-BODIPY 581/591 probe was quantified by flow cytometry. Data are presented as the mean ± SD, n = 5–6. * p

## 1 Publications Citing This Product

1. PubMed ID: 33600944, Zhong B,Yu J,Hou Y,Ai N,Ge W,Lu JJ,Chen X.A novel strategy for glioblastoma treatment by induction of noptosis, an NQO1-dependent necrosis.Free Radic Biol Med. 2021 Feb 15:S0891-5849(21)00094-0.doi:10.1016/j.freeradbiomed.2021.02.014.Epub ahead of print.P

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