

PRODUCT INFORMATION



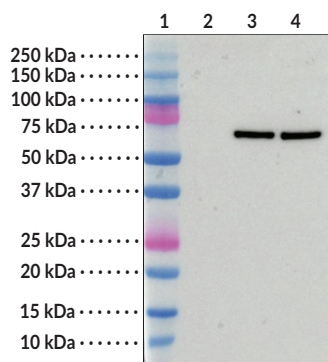
4-hydroxy Nonenal Monoclonal Antibody (HNEJ-1/Clone IG10) - HRP Conjugated

Item No. 45025

Overview and Properties

Contents:	This vial contains 100 µg of HRP-conjugated protein G-purified monoclonal antibody.
Synonym:	4-HNE
Immunogen:	4-HNE-modified KLH
Cross Reactivity:	(+) 4-HNE-modified proteins
Species Reactivity:	(+) Species Independent
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥2 years
Storage Buffer:	PBS, pH 7.2, with 50% glycerol, 0.05% ProClin™ 300, and proprietary stabilizers
Clone:	IG10
Host:	Mouse
Isotype:	IgG1
Applications:	Western blot (WB); the recommended starting dilution is 1:500. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Image



Lane 1: MW Markers

Lane 2: BSA (200 ng)

Lane 3: 4-HNE-BSA (Item No. 44081) (100 ng)

Lane 4: 4-HNE-BSA (Item No. 44081) (200 ng)

SDS-PAGE Analysis of 4-hydroxy Nonenal Monoclonal Antibody (HNEJ-1/Clone IG10) - HRP Conjugated. Protein samples were run on SDS-PAGE (reducing conditions) and transferred to nitrocellulose followed by blocking with non-fat dry milk and probing with the 4-hydroxy Nonenal Monoclonal Antibody (HNEJ-1/Clone IG10) - HRP Conjugated (Item No. 45025) at 1:500.

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
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

Copyright Cayman Chemical Company, 03/17/2026

CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA

PHONE: [800] 364-9897
[734] 971-3335

FAX: [734] 971-3640

CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

PRODUCT INFORMATION



Description

4-hydroxy Nonenal (4-HNE) is a lipid peroxidation product that reacts with lysine, cysteine, or histidine residues in proteins.¹ It is found in all tissues and serum, and the formation of 4-HNE-modified proteins is associated with oxidative stress. 4-HNE can ligate to and inactivate cytosolic and mitochondrial proteins, leading to mitochondrial dysfunction, loss of cell proliferation and differentiation, increased intracellular calcium levels and production of pro-inflammatory cytokines, and apoptosis. 4-HNE levels are negatively regulated by aldehyde dehydrogenases (ALDHs), glutathione S-transferases (GSTs), and aldo-keto reductases (AKRs). Increased levels of 4-HNE protein adducts are found at the cell membrane, in the mitochondria, and in the cytosol during ferroptosis *in vitro*.² 4-HNE reduces mitochondrial oxygen consumption and membrane potential, as well as increases intracellular levels of reactive oxygen species (ROS), *in vitro*.³ 4-HNE protein adducts increase in an age-related manner in the kidney, spleen, ovary, and uterus, but not the liver, in rats.² 4-HNE protein adducts are increased and GST levels are decreased in the brain of older mice in a Tg2576 mouse model of Alzheimer's disease, and increased levels of 4-HNE-modified proteins, including manganese superoxide dismutase (Mn-SOD), α -enolase, and malate dehydrogenase, are found in the inferior parietal lobule in postmortem brain from patients with early Alzheimer's disease.^{4,5} HNEJ-1 has high affinity for 4-HNE modifications at lysine, cysteine, or histidine residues, whereas HNEJ-2-5 have varying affinities for lysine and cysteine adducts.⁶ Cayman's 4-hydroxy Nonenal Monoclonal Antibody (HNEJ-1/Clone IG10) - HRP Conjugated can be used for Western blot (WB) applications.

References

1. Breitzig, M., Bhimineni, C., Lockey, R., *et al.* 4-Hydroxy-2-nonenal: A critical target in oxidative stress? *Am. J. Physiol. Cell Physiol.* **311**(4), C537-C543 (2016).
2. Zheng, H., Jiang, L., Tsuduki, T., *et al.* Embryonal erythropoiesis and aging exploit ferroptosis. *Redox Biol.* **48**, 102175 (2021).
3. Galam, L., Failla, A., Soundararajan, R., *et al.* 4-hydroxynonenal regulates mitochondrial function in human small airway epithelial cells. *Oncotarget* **6**(39), 41508-41521 (2015).
4. Benedetti, E., D-Angelo, B., Cristiano, L., *et al.* Involvement of peroxisome proliferator-activated receptor β/δ (PPAR β/δ) in BDNF signaling during aging and in Alzheimer disease: Possible role of 4-hydroxynonenal (4-HNE). *Cell Cycle* **13**(8), 1335-1344 (2014).
5. Reed, T.T., Pierce, W.M., Markesbery, W.R., *et al.* Proteomic identification of HNE-bound proteins in early Alzheimer disease: Insights into the role of lipid peroxidation in the progression of AD. *Brain Res.* **1274**, 66-76 (2009).
6. Ozeki, M., Miyagawa-Hayashino, A., Akatsuka, S., *et al.* Susceptibility of actin to modification by 4-hydroxy-2-nonenal. *J. Chromatogr. B Analyt. Technol. Biomed. Life Sci.* **827**(1), 119-126 (2005).