Anti-CPO Rabbit Polyclonal Antibody

Carboxypeptidase O, CPO, EC 3.4.17.-,

Gene: CPO **UniProt:** Q8IVL8 **Host:** Rabbit **Clonality:** Polyclonal (pAb)

Product Image

Image placeholder — Western Blot

— Western Blot

Suggested image: Western blot of relevant cell or tissue lysates under reducing conditions, probed with the domain-specific antibody. Include a positive-control lane and empty-vector or knockout negative control. Loading: 10–20 µg/lane on 7.5–10% SDS-PAGE.

Key Product Facts

Supplier	Triple Point Biologics, Inc. (Sudbury, Ontario, Canada)
Product Name	Anti-CPO Rabbit Polyclonal Antibody
Gene Symbol	CPO
Alternative Names	Carboxypeptidase O, CPO, EC 3.4.17.-,
UniProt ID	Q8IVL8
Host Species	Rabbit
Clonality	Polyclonal (pAb)
Isotype	IgG
Concentration	1mg/ml
Purity	Affinity purified
Pack Size	100ug
Validated Application	WB
Recommended Dilution	WB-1/1000
Species Reactivity	Validated- Human Potential-
Immunogen Type	Synthetic Peptide from Uniprot Sequence
Conjugation	none
Buffer / Preservatives	Sodium Chloride 500 mM, Sodium Phosphate 10 mM, Potassium Phosphate 1.8 mM, Potassium Chloride 2.7 mM, Glycerol 50% (v/v)
Website	triplepointbiologics.com/anti-carboxypeptidase-o-rabbit-polyclonal-antibody

Available Domain-Specific Variants

Triple Point Biologics produces antibodies to defined structural domains of CPO. Each variant is directed at a specific structural region of the protein. Exact peptide sequences are proprietary; each variant is validated for the applications listed.

Domain / Variant	Epitope Region (approx. residues)	Cat. No.	Availability

amino end of the catalytic domain	**49–89** Region within the amino-terminal portion of the M14-type catalytic domain of human CPO, proximal to the signal peptide cleavage site and upstream of the conserved zinc-binding HExxH motif, within the core beta-sheet framework that defines the M14 fold	RP1CarboxypeptidaseO	In catalog
carboxy end of the catalytic domain	**304–344** Region spanning the carboxy-terminal portion of the M14 catalytic domain of human CPO, distal to the HExxH zinc-binding motif and the S1′ substrate-specificity pocket, in the segment that forms the closing structural elements of the carboxypeptidase fold prior to any transmembrane or membrane-anchoring region	RP2CarboxypeptidaseO	In catalog
carboxyterminal end	**302–352** Region at the extreme C-terminus of human CPO, downstream of the catalytic domain, corresponding to the short cytoplasmic or membrane-proximal tail segment that follows the predicted transmembrane/membrane-anchoring region and may contribute to apical targeting in polarized epithelial cells	RP3CarboxypeptidaseO	In catalog
—	**21–352** Broad region spanning the majority of the mature human CPO protein, encompassing the full M14 catalytic domain from its amino-terminal boundary through the carboxy-terminal membrane-proximal region, suitable for detecting multiple epitopes across the protein's primary structure	RP-CarboxypeptidaseO	In catalog

Applications & Recommended Dilutions

App.	Species	Dilution Range	Notes
WB	Validated-Human Potential-	1:1000	Optimal dilution should be determined per laboratory and lot.

Optimal dilutions should be determined by each laboratory for each application. Triple Point Biologics antibodies include a peptide-neutralized negative control aliquot for specific-signal confirmation.

Storage & Handling

Short-term Storage	+4°C (1–2 weeks)
Long-term Storage	Aliquot and store at -20°C

Shipping Conditions	Shipped in styrofoam cooler on blue ice
Hazard Warning	Product may contain Sodium Azide — POISONOUS AND HAZARDOUS. Handle by trained personnel only.
Shelf Life	12 months from date of receipt under recommended conditions

Target Background

Family & General Biology

Carboxypeptidase O (CPO; EC 3.4.17.-) is a zinc-dependent metallocarboxypeptidase belonging to the M14 family, subfamily M14A. Like other members of this family, CPO harbors the conserved HExxH zinc-binding motif within its catalytic domain and functions as an exopeptidase, sequentially removing single amino acids from the C-terminus of peptide and protein substrates. CPO is distinguished within the M14 family by a pronounced preference for acidic C-terminal residues (glutamate and aspartate), setting it apart from carboxypeptidase A (hydrophobic specificity) and carboxypeptidase B (basic residue specificity).

Expression & Localisation

CPO is expressed in a tissue-restricted manner, with documented transcript and protein levels in the intestine and kidney — organs with prominent luminal proteolytic activity. At the subcellular level, CPO localizes to the apical membrane of epithelial cells, consistent with a role in processing extracellular or luminal peptides at the cell surface. This apical polarization is analogous to that of other brush-border peptidases and suggests that CPO participates in terminal digestion of dietary or circulating peptides within polarized epithelial compartments.

Protein Architecture & Catalytic Mechanism

The mature human CPO protein spans 374 amino acids and contains a single M14-type catalytic domain. The active site zinc ion is coordinated by two histidine residues within the HExxH motif and a downstream glutamate, forming the canonical triad of M14 metallocarboxypeptidases. Catalysis proceeds through a zinc-activated water molecule that carries out nucleophilic attack on the scissile peptide bond adjacent to the C-terminal residue. A short signal peptide and predicted transmembrane or GPI-anchored region are consistent with the enzyme's membrane association and apical surface localization.

Substrate Specificity

CPO displays a selective preference for substrates bearing C-terminal acidic residues, particularly glutamate and aspartate. Activity toward hydrophobic C-terminal residues has also been reported, though with lower efficiency and a bias favoring smaller aliphatic side chains over bulkier aromatic ones. This specificity profile implies a physiological role in trimming acidic peptide termini generated during luminal digestion of dietary proteins or during proteolytic processing of bioactive peptides. The full repertoire of endogenous substrates has not yet been comprehensively defined and remains an active area of research.

Disease Relevance & Research Context

Because CPO is expressed at the intestinal and renal epithelial surface, it is positioned to modulate the local concentration and activity of bioactive peptides — including those involved in nutrient sensing, ion transport, and inflammatory signaling. Dysregulation of surface carboxypeptidase activity has been associated with intestinal pathologies and altered peptide homeostasis in related enzyme family members. CPO's restricted tissue distribution and distinct acidic-residue specificity make it a candidate contributor to tissue-specific proteolytic cascades, though direct causal links to specific diseases require further validation in appropriate model systems.

Inhibitor Profile

As with other M14 metallocarboxypeptidases, CPO activity is expected to be sensitive to metal chelators such as EDTA and 1,10-phenanthroline, which strip the catalytic zinc ion. The potato carboxypeptidase inhibitor (PCI) and related small-molecule scaffold inhibitors block M14-family active sites by occupying the substrate-binding cleft, though isoform-selective inhibitor profiles for CPO specifically remain incompletely characterized. The tissue inhibitors of metalloproteinases (TIMPs) do not inhibit M14-family carboxypeptidases. Reagents that selectively target CPO over the broader carboxypeptidase family would be of significant experimental utility.

Gene & Protein Reference

Gene Symbol	CPO
HGNC	HGNC:24121
NCBI Gene ID (Human)	130749
NCBI Gene ID (Mouse)	231503
Ensembl	ENSG00000178464
OMIM	609688
UniProt (Human)	Q8IVL8
UniProt (Mouse)	Q8C3K9
Protein Family	Peptidase M14 family (zinc-dependent metallocarboxypeptidase, M14A subfamily)
Predicted MW	~41 kDa (374 aa; signal peptide cleavage may reduce apparent size)
Observed MW	~40–45 kDa (SDS-PAGE, glycosylation-dependent variation reported)
Chromosome	7q32.3 (human)
Paralogue	Carboxypeptidase A1 (CPA1), Carboxypeptidase A2 (CPA2), Carboxypeptidase B1 (CPB1), Carboxypeptidase D (CPD)
Key Substrates	Peptides bearing C-terminal acidic residues (Glu, Asp); select hydrophobic C-terminal residues with smaller side chains
Activated by	Zinc ion (catalytic cofactor); no classical zymogen activation described — constitutively active at cell surface
Inhibited by	EDTA, 1,10-phenanthroline (metal chelators); potato carboxypeptidase inhibitor (PCI)-class scaffold inhibitors

About Triple Point Biologics

With over 30 years dedicated to antibody production, Triple Point Biologics is a Canadian company and the premier resource for proteinase and proteinase inhibitor research. Products have been cited in thousands of peer-reviewed publications.

The domain-specific antibody strategy — available in standard, ATK, SPA, and GSK kit formats — delivers predefined epitopes, built-in peptide-neutralized negative controls, and superior specificity for Western blot.

Website: www.triplepointbiologics.com

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Product specifications subject to change. Contact Triple Point Biologics for current product and availability information.