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Anti-MPO / Myeloperoxidase Antibody

Rabbit Anti Human Polyclonal Antibody
Catalog # ALS17727

Product Information

Application	IHC-P
Primary Accession	P05164
Predicted	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	83869

Additional Information

Gene ID	4353
Alias Symbol	MPO
Other Names	MPO, Myeloperoxidase precursor, Myeloperoxidase
Target/Specificity	Recognizes human myeloperoxidase (MPO).
Reconstitution & Storage	Purified
Precautions	Anti-MPO / Myeloperoxidase Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	MPO {ECO:0000303|PubMed:21880720, ECO:0000312|HGNC:HGNC:7218}
Function	Peroxidase that plays a central role in the host defense system of polymorphonuclear leukocytes by mediating both (1) formation of neutrophil extracellular trap (NETs) and (2) microbicidal activity (PubMed:16125131, PubMed:17438335, PubMed:20974672, PubMed:20974816, PubMed:22131345, PubMed:25066128, PubMed:28574339, PubMed:40963017, PubMed:4978299, PubMed:6295491). Promotes NET formation by mediating chromatin disassembly: translocates to the nucleus and specifically binds to nucleosomes, both as monomer and homodimer, leading to nucleosome unstacking and initial chromatin decondensation (PubMed:40963017). Homodimers clash with one end of the nucleosomal DNA, leading to DNA unwrapping, initiating complete disassembly of nucleosomes and chromatin transformation into NETs in an ATP-independent manner (PubMed:40963017). NETs, which are mainly composed of DNA fibers and globular proteins, are then extruded into the extracellular space by neutrophils to trap pathogens and release antimicrobial proteins to

destroy them (PubMed:40963017). Participates to the microbicidal activity against a wide range of organisms by acting as a peroxidase that catalyzes the formation of oxidants in presence of hydrogen peroxide (PubMed:16125131, PubMed:17074761, PubMed:17438335, PubMed:21880720, PubMed:22131345, PubMed:22352991, PubMed:22902565, PubMed:24194519, PubMed:33273015, PubMed:9359420, PubMed:9922160). Mediates the formation of hypohalous acids, mainly hypochlorous acid (HOCl) in physiologic situations, that greatly enhance polymorphonuclear leukocyte microbicidal activity (PubMed:16125131, PubMed:17074761, PubMed:17438335, PubMed:19608745, PubMed:21880720, PubMed:22902565, PubMed:24194519, PubMed:9359420, PubMed:9922160). In addition to hypochlorous acid, catalyzes formation of hypobromous acid (HOBr), hypoiodous acid (HOI) and hypothiocyanous acid (HOSCN) (PubMed:1318692, PubMed:16125131, PubMed:17438335, PubMed:19608745, PubMed:6295491, PubMed:9359420). Also catalyzes oxidation of nitrite into the highly reactive nitrogen dioxide radical (PubMed:10777476, PubMed:8385644, PubMed:9450756). Formation of oxidants are widely believed to be responsible for much of the anti-bactericidal activity of neutrophils (PubMed:8385644, PubMed:9450756). Oxidants, such as hypochlorous acid or nitrogen dioxide radical, can also oxidize amino acid residues on proteins and generate chlorination and nitration post-translational modifications, respectively (PubMed:15314690, PubMed:15326314, PubMed:15498770, PubMed:15574409, PubMed:16091367, PubMed:7622459). Chlorination and nitration of the lipid-free form of APOA1 impairs cholesterol transport (PubMed:15326314, PubMed:15498770, PubMed:15574409). Superoxides generated by MPO can also promote dioxygenation of tryptophan residues on proteins (PubMed:16091367, PubMed:40081572). Also able to oxidize melatonin into N1-acetyl-N2-formyl-5-methoxykynuramine either in presence of hydrogen peroxide or superoxide (PubMed:15636586, PubMed:16148002). Oxidizes urate into 5-hydroxyisourate (PubMed:21266577). Functions as a nitric oxide (NO) oxidase during inflammation, by catalytically consuming NO, impairing NO's ability to maintain vascular tone and function (PubMed:12089442). May also mediate the proteolytic cleavage of alpha-1-microglobulin to form t-alpha-1- microglobulin, which potently inhibits oxidation of low-density lipoprotein particles and limits vascular damage (PubMed:25698971).

Cellular Location

Lysosome. Cytolytic granule. Cytoplasmic vesicle, phagosome. Secreted. Nucleus. Chromosome Note=Localizes to azurophil granules, a type of primary lysosome found in neutrophils and monocytes that contains antimicrobial proteins (PubMed:25066128, PubMed:2981589, PubMed:6095812, PubMed:6192815). A substantial fraction is also constitutively secreted by normal bone marrow granulocyte precursors (PubMed:6095812). During formation of neutrophil extracellular traps (NETs), translocates into the nucleus and associates to chromatin, leading to chromatin dislocation and its transformation into NETs (PubMed:25066128, PubMed:40963017). Core component of NETs (PubMed:22131345, PubMed:32434865, PubMed:40963017)

Tissue Location

Specifically expressed in neutrophils and monocytes.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.