COX 2, His-Tag (CPOX) Active Protein

PRODUCT OVERVIEW

Product Name	COX 2, His-tag (CPOX), Active Protein
Full Product Name	COX 2, His-tag, Recombinant, Human (Cyclooxygenase 2, PGHS 2, Prostaglandin Endoperoxide Synthase 2, PHS 2)
Product Gene Name	CPOX active protein
Host	Sf21 cells.
Form/Format	Supplied as a liquid in 80mM Tris-HCl, pH 8.0, 0.1% Tween 20, 300uM DDC.
Purity/Purification	Purified 0.7
Preparation and Storage	Aliquot to avoid repeated freezing and thawing and freeze at -70 degree C. For maximum recovery of product, centrifuge the original vial after thawing and prior to removing the cap. Aliquots are stable for at least 6 months.. The enzyme preparation contains diethyldithiocarbamate (DDC) as a preservative. If this preservative is undesirable, it can be removed by standard desalting procedures. However, the enzyme is extremely unstable in the absence of the preservative and should be used within one hour.
Molecular Weight	50,152 Da
Chromosome Location	Chromosome: 3; NC_000003.11 (98296677..98312470, complement). Location: 3q12
OMIM	121300
3D Structure	ModBase 3D Structure for P36551
Active Protein Note	Protein activity can be an ambiguous term. Please refer to the data sheet or inquire with Technical Support to determine the definition of activity for this product.
Specific Activity	8000 units/mg protein.
Unit Definition	One unit of enzyme consumes one nmol of oxygen per minute at 37 degree C in 0.1M Tris-HCl buffer, pH 8.0, 100uM arachidonate, 5mM EDTA, 2mM phenol, and 1uM hematin.
Product Categories/Family for CPOX active protein	Molecular Biology; MB-Enzymes; Cyclooxygenase (COX)
Related Product Information for CPOX active protein	The prostanoid family includes PGD2, PGE2, PGF2alpha, PGI2, thromboxane A2 and prostaglandins. The prostaglandins (PGs) are implicated in various physiological and pathophysiological events, including male fertility, menstruation, ovulation, pregnancy, implantation and inflamatory and neoplastic diseases. The biosynthesis of PGs and some other prostanoids, is catalyzed in a rate limiting step by PG-H synthase (also known as cyclooxygenase (COX), PG-endoperoxidase synthase (PTGS)) which converts arachidonic acid to prostaglandin/prostanoid precursor PGH2. Two cyclooxygenase isozymes, COX1 (human, 576aa, 69-72kD; chromosome 9) and COX2 (human, 604aa, 74kD; chromosome 1) have been identified. COX1, a constitutively expressed isoform, produces physiologically relevant prostanoids such as those in stomach and platelets. COX2 isoform is inducible and rapidly upregulated at inflamation sites and forms proinflamatory prostanoids. The overexpression of COX-2 also leads to tumerogenesis. Recently, a third isoform COX3 (canine 633aa; ~65kD in human aorta) has been reported. Two smaller COX1-derived proteins (partial COX1) PCOX1a (canine 414aa, ~53kD in human aorta) and PCOX1b have also been characterized. The COX3, but not PCOX1a, possesses glycosylation dependent cyclooxygenase activity. The nonsteroidal antiinflammatory drugs (NSAIDs) reduce the formation of prostaglandins by inhibiting the activity of cyclooxygenases (COX1, COX2 and COX3), This ability was associated with inhibition of COX, which converts arachidonic acid to the prostaglandin precursor prostaglandin H2.

Other Notes	Small volumes of CPOX active protein vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.
Searchable Terms for CPOX purchase	MBS635779 is an active protein targeting CPOX. Also known as COX 2, His-tag, Recombinant, Human (Cyclooxygenase 2, PGHS 2, Prostaglandin Endoperoxide Synthase 2, PHS 2). Host: Sf21 cells.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for CPOX. It may not necessarily be applicable to this product.

NCBI GI #	41393599
NCBI GeneID	1371
NCBI Accession #	NP_000088.3
UniProt Primary Accession #	P36551
UniProt Secondary Accession #	Q14060; Q53F08; Q8IZ45; Q96AF3; A8K275
UniProt Related Accession #	P36551
GenBank Nucleotide #	NM_000097.5
NCBI Official Full Name	coproporphyrinogen-III oxidase, mitochondrial
NCBI Official Synonym Full Names	coproporphyrinogen oxidase
NCBI Official Symbol	CPOX
NCBI Official Synonym Symbols	CPO; CPX; HCP
UniProt Protein Name	Coproporphyrinogen-III oxidase, mitochondrial
Protein Family	Oxygen-dependent coproporphyrinogen-III oxidase
UniProt Gene Name	CPOX
UniProt Synonym Gene Names	CPO; CPX; COX; Coprogen oxidase
UniProt Entry Name	HEM6_HUMAN
NCBI Protein Information	coproporphyrinogen-III oxidase, mitochondrial; COX; coprogen oxidase; coproporphyrinogenase
NCBI Summary for CPOX	The protein encoded by this gene is the sixth enzyme of the heme biosynthetic pathway. The encoded enzyme is soluble and found in the intermembrane space of mitochondria. This enzyme catalyzes the stepwise oxidative decarboxylation of coproporphyrinogen III to protoporphyrinogen IX, a precursor of heme. Defects in this gene are a cause of hereditary coproporphyria (HCP).[provided by RefSeq, Oct 2009]

UniProt Comments for CPOX	CPOX: Key enzyme in heme biosynthesis. Catalyzes the oxidative decarboxylation of propionic acid side chains of rings A and B of coproporphyrinogen III. Defects in CPOX are the cause of hereditary coproporphyria (HCP). HCP is an acute hepatic porphyria and an autosomal dominant disease characterized by neuropsychiatric disturbances and skin photosensitivity. Biochemically, there is an overexcretion of coproporphyrin III in the urine and in the feces. HCP is clinically characterized by attacks of abdominal pain, neurological disturbances, and psychiatric symptoms. The symptoms are generally manifested with rapid onset, and can be precipitated by drugs, alcohol, caloric deprivation, infection, endocrine factors or stress. A severe variant form is harderoporphyria, which is characterized by earlier onset attacks, massive excretion of harderoporphyrin in the feces, and a marked decrease of coproporphyrinogen IX oxidase activity. Belongs to the aerobic coproporphyrinogen-III oxidase family. Protein type: Mitochondrial; EC 1.3.3.3; Cofactor and Vitamin Metabolism - porphyrin and chlorophyll; Oxidoreductase Chromosomal Location of Human Ortholog: 3q12 Cellular Component: mitochondrion; mitochondrial inner membrane; cytoplasm; mitochondrial intermembrane space Molecular Function: coproporphyrinogen oxidase activity; protein homodimerization activity; structural constituent of eye lens Biological Process: response to arsenic; response to methylmercury; response to lead ion; porphyrin metabolic process; response to insecticide; protoporphyrinogen IX biosynthetic process; response to iron ion; heme biosynthetic process Disease: Coproporphyria, Hereditary
Research Articles on CPOX	**1.** Polymorphism of coproporphyrinogen oxidase is associated with genetic susceptibility to the adverse neurobehavioral effects of Hg exposure in children.
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