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DAO Blocking Peptide (Center)

Synthetic peptide
Catalog # BP21416c

Specification

DAO Blocking Peptide (Center) - Product Information

Primary Accession P14920

DAO Blocking Peptide (Center) - Additional Information

Gene ID 1610

Other Names
D-amino-acid oxidase, DAAO, DAMOX, DAO, DAO, DAMOX

Target/Specificity
The synthetic peptide sequence is selected from aa 216-228 of HUMAN DAO

Format
Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

Storage
Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

Precautions
This product is for research use only. Not for use in diagnostic or therapeutic procedures.

DAO Blocking Peptide (Center) - Protein Information

Name DAO

Synonyms DAMOX

Function
Catalyzes the oxidative deamination of D-amino acids with broad substrate specificity (PubMed:16616139, PubMed:17088322, PubMed:17303072, PubMed:18544534, PubMed:20368421, PubMed:20567862, PubMed:20603179, PubMed:22203986, PubMed:23219954, PubMed:23391306, PubMed:25030849, PubMed:25701391, PubMed:<a

href="http://www.uniprot.org/citations/29274788" target="_blank">29274788, PubMed:29326945, PubMed:30938755, PubMed:31799256, PubMed:32730563, PubMed:33484270, PubMed:34041270, PubMed:37558109, PubMed:38035964). Required to catabolize D-amino acids synthesized endogenously, of gastrointestinal bacterial origin or obtained from the diet, and to use these as nutrients (By similarity). Regulates the level of D-amino acid neurotransmitters in the brain, such as D-serine, a co-agonist of N- methyl D-aspartate (NMDA) receptors, and may modulate synaptic transmission (PubMed:17303072). Catalyzes the first step of the racemization of D-DOPA to L-DOPA, for possible use in an alternative dopamine biosynthesis pathway (PubMed:17303072). Also catalyzes the first step of the chiral inversion of N(gamma)-nitro-D-arginine methyl ester (D-NNA) to its L-enantiomer L-NNA that acts as a nitric oxide synthase inhibitor (By similarity). The hydrogen peroxide produced in the reaction provides protection against microbial infection; it contributes to the oxidative killing activity of phagocytic leukocytes and protects against bacterial colonization of the small intestine (By similarity). Enzyme secreted into the lumen of the intestine may not be catalytically active and could instead be proteolytically cleaved into peptides with antimicrobial activity (By similarity). The hydrogen peroxide produced in the reaction may also play a role in promoting cellular senescence in response to DNA damage (PubMed:30659069). Could act as a detoxifying agent which removes D-amino acids accumulated during aging (PubMed:17303072).

Cellular Location
Peroxisome matrix. Cytoplasm, cytosol. Presynaptic active zone {ECO:0000250|UniProtKB:O35078}. Secreted Note=Transiently present in the cytosol before being delivered to the peroxisomes (PubMed:21679769, PubMed:31799256). In the cerebellum, a fraction of protein localizes to the presynaptic active zone, where its activity is regulated by protein BSN (By similarity). Secreted into the lumen of the small intestine (PubMed:27670111) {ECO:0000250|UniProtKB:O35078, ECO:0000269|PubMed:21679769, ECO:0000269|PubMed:27670111, ECO:0000269|PubMed:31799256}

Tissue Location
Expressed in the cerebellum, in astrocytes of the cortex, in motor neurons and fibers of the lumbar spinal cord (at protein level) (PubMed:17880399, PubMed:18544534, PubMed:18560437, PubMed:24138986, PubMed:34041270). Expressed in goblet cells of the small intestine (at protein level) (PubMed:27670111). Increased in the cerebellum of schizophrenic patients (at protein level) (PubMed:17880399, PubMed:18560437). Decreased in motor neurons of the spinal cord of patients with amyotrophic lateral sclerosis (at protein level) (PubMed:24138986). Expressed in the cerebellum, spinal cord, kidney, and thalamus (PubMed:17880399). Abundant in glia of the cerebellum and predominantly neuronal in the dorsolateral prefrontal cortex, hippocampus and substantia nigra (PubMed:17880399)

DAO Blocking Peptide (Center) - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Blocking Peptides

DAO Blocking Peptide (Center) - Images

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DAO Blocking Peptide (Center) - Background

Regulates the level of the neuromodulator D-serine in the brain. Has high activity towards D-DOPA and contributes to dopamine synthesis. Could act as a detoxifying agent which removes D-amino acids accumulated during aging. Acts on a variety of D- amino acids with a preference for those having small hydrophobic side chains followed by those bearing polar, aromatic, and basic groups. Does not act on acidic amino acids.

DAO Blocking Peptide (Center) - References

Momoi K.,et al.FEBS Lett. 238:180-184(1988).
Momoi K.,et al.Submitted (SEP-1990) to the EMBL/GenBank/DDBJ databases.
Ota T.,et al.Nat. Genet. 36:40-45(2004).
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Fukui K.,et al.J. Biol. Chem. 267:18631-18638(1992).