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Angiotensin Converting Enzyme 1 Rabbit mAb

Catalog # AP75075

Product Information

Application	WB, IHC-P
Primary Accession	P09470
Reactivity	Rat, Mouse
Host	Rabbit
Clonality	Monoclonal Antibody
Isotype	IgG
Conjugate	Unconjugated
Purification	Affinity Purified
Calculated MW	150918

Additional Information

Gene ID	11421
Other Names	Ace
Dilution	WB~~1:500-1:1000 IHC-P~~N/A
Format	Liquid in 50mM Tris-Glycine(pH 7.4), 0.15M NaCl, 40%Glycerol, 0.01% sodium azide and 0.05% BSA.
Storage	Store at 4°C short term. Aliquot and store at -20°C long term. Avoid freeze/thaw cycles.

Protein Information

Name	Ace {ECO:0000303|PubMed:2545691, ECO:0000312|MGI:MGI:87874}
Function	Dipeptidyl carboxypeptidase that removes dipeptides from the C-terminus of a variety of circulating hormones, such as angiotensin I, bradykinin or enkephalins, thereby playing a key role in the regulation of blood pressure, electrolyte homeostasis or synaptic plasticity (PubMed:11723129, PubMed:12777443, PubMed:14757757, PubMed:16270063, PubMed:35201898, PubMed:7753170, PubMed:8642790, PubMed:9231832). Composed of two similar catalytic domains, each possessing a functional active site, with different selectivity for substrates (PubMed:11303049). Plays a major role in the angiotensin-renin system that regulates blood pressure and sodium retention by the kidney by converting angiotensin I to angiotensin II, resulting in an increase of the vasoconstrictor activity of angiotensin (PubMed:11303049, PubMed:14757757, PubMed:9231832). Also able to inactivate bradykinin, a potent vasodilator, and therefore enhance the blood pressure response (By similarity). Acts as a regulator of synaptic transmission by mediating cleavage of neuropeptide hormones, such as

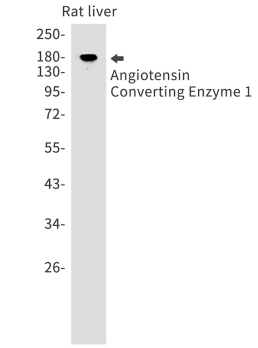
	substance P, neurotensin or enkephalins (By similarity). Catalyzes degradation of different enkephalin neuropeptides (Met-enkephalin, Leu-enkephalin, Met-enkephalin-Arg-Phe and possibly Met-enkephalin-Arg-Gly-Leu) (PubMed:35201898). Acts as a regulator of synaptic plasticity in the nucleus accumbens of the brain by mediating cleavage of Met-enkephalin- Arg-Phe, a strong ligand of Mu-type opioid receptor OPRM1, into Met- enkephalin (PubMed:35201898). Met-enkephalin-Arg-Phe cleavage by ACE decreases activation of OPRM1, leading to long-term synaptic potentiation of glutamate release (PubMed:35201898). Also acts as a regulator of hematopoietic stem cell differentiation by mediating degradation of hemoregulatory peptide N-acetyl-SDKP (AcSDKP) (PubMed:11303049). Acts as a regulator of cannabinoid signaling pathway by mediating degradation of hemopressin, an antagonist peptide of the cannabinoid receptor CNR1 (By similarity). Involved in amyloid-beta metabolism by catalyzing degradation of Amyloid-beta protein 40 and Amyloid-beta protein 42 peptides, thereby preventing plaque formation (By similarity). Catalyzes cleavage of cholecystokinin (maturation of Cholecystokinin-8 and Cholecystokinin-5) and Gonadoliberin-1 (both maturation and degradation) hormones (By similarity). Degradation of hemoregulatory peptide N-acetyl-SDKP (AcSDKP) and amyloid-beta proteins is mediated by the N-terminal catalytic domain, while angiotensin I and cholecystokinin cleavage is mediated by the C-terminal catalytic region (PubMed:11303049).
Cellular Location	[Isoform Somatic]: Cell membrane; Single-pass type I membrane protein. Cytoplasm. Note=Detected in both cell membrane and cytoplasm in neurons [Isoform Testis-specific]: Cell membrane {ECO:0000250|UniProtKB:P12821}; Single-pass type I membrane protein. Secreted {ECO:0000250|UniProtKB:P12821}. Note=The testis-specific isoform can be cleaved before the transmembrane region, releasing a soluble form. {ECO:0000250|UniProtKB:P12821}
Tissue Location	[Isoform Somatic]: Highly expressed in kidney and lung; not expressed in the liver (PubMed:16154999). In the brain, expressed in the cerebral cortex, hippocampus, cerebellum and basal ganglia/brainstem (PubMed:16154999). Highly expressed in dopamine receptor DRD1-expressing neurons in the dorsal striatum and the nucleus accumbens of the brain (PubMed:35201898).

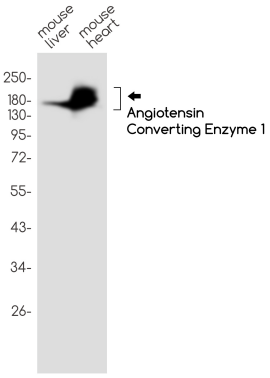
Background

Angiotensin I Converting Enzyme (ACE) is a transmembrane zinc metallopeptidase that hydrolyzes peptide chains by removing the dipeptide from the C-terminus. ACE is a key component of the renin-angiotensin system (RAS), which plays an important role in blood pressure homeostasis through the production of the vasoconstrictor peptide angiotensin II. ACE also plays a role in fertility, immunity, hematopoiesis, and diseases such as obesity, fibrosis, and Alzheimer's disease dementia. ACE is relevant to immune regulation in that endogenous ACE has been detected in a variety of immune cell populations including macrophages and neutrophils, and its overexpression results in enhanced bactericidal and antitumor responses independent of angiotensin II.

Images

Western blot analysis of Angiotensin Converting Enzyme 1 in rat liver lysates using Angiotensin Converting Enzyme 1 antibody.





Western blot analysis of Angiotensin Converting Enzyme 1 in mouse liver, mouse heart lysates using Angiotensin Converting Enzyme 1 antibody.

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