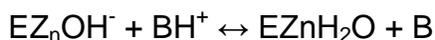


Anti- Human CA-III Antibody (Monoclonal)

Catalog Number:	0998-3M1-CANH
Product Specification:	Anti- Human CA-III Monoclonal Antibody from murine hybridoma
Size:	100 µg
Type:	Monoclonal
Specificity:	Human Carbonic Anhydrase-III (CA III)
Host Species:	Mouse
Species Cross-Reactivity:	All
Immunogen	Human Carbonic Anhydrase-III (CA III)
Isotype:	IgG1/K Purified on Protein G
Clone Number:	MA-4010
Western Blot:	1: 2000
Immuno-fluorescence:	ND
Immuno-precipitation:	ND
Flow Cytometry:	Assay dependent
Storage:	-20°C in aliquots. Freeze-thaw cycles must be avoided once the stock aliquot is diluted.
Form:	Liquid- PBS (0.02 M K-phosphate, 0.15 M NaCl, pH 7.3).
Secondary Antibody (Recommended):	Use anti-mouse IgG raised in rabbit, goat or donkey

Product Background:

Carbonic anhydrases (CAs) are zinc-containing enzymes, most widely distributed in nature (1) . CAs catalyze the dehydration/hydration of carbon bicarbonate/dioxide by a two stage or ping-pong mechanism



where BH⁺ is a residue of CA acting as proton donor). This reaction has implications for respiration, calcification, bone resorption, pH homeostasis, CO₂ and ion transport and the formation of aqueous humor, cerebrospinal fluid, saliva, gastric acid, and many other critical processes in the living systems. CAs are encoded by members of 3 independent CA gene families, i.e., alpha-CA, beta-CA, and gamma-CA. Genes in the alpha-carbonic anhydrase family encode either active carbonic anhydrase isozymes or 'acatalytic' (i.e., devoid of CO₂ hydration activity) carbonic anhydrase-related proteins. Members of gamma and beta classes are wide-

spread in prokaryotes whereas all mammalian CAs are confined to the class-alpha. There are at least 11 enzymatically active isozymes identified in mammals (class-alpha) and the individual isoforms display tissue-specific distributions. Further more, variable localization of the isozymes [e.g. cytosolic (CA-III), membrane associated (CA-XIV) or secretory (CA-VI) form] within a tissue have been reported.

Carbonic Anhydrase-III (EC 4.2.1.1) (also known as Carbonic dehydratase, CA3, carbonic anhydrase C and CA-III) is a member of a multigene family (at least six separate genes are known) that encode carbonic anhydrase isozymes. CA-III gene has mapped on chromosomes 3 (mouse, 3 11.7 cM), 2 (rat, 2q23) and 8 (human, 8q13-q22). CA-III is a cytosolic, monomeric enzyme composed of 260 amino acids with a molecular mass of ~28 kDa. The aa sequence of CA-III from in human, mouse and rat is ~93% identical. The expression of the CA3 gene is strictly tissue specific and present at high levels in adipocytes (25% of soluble proteins), skeletal muscle (8%), rat liver (5%) and much lower levels in cardiac and smooth muscle. CA-III is unique among CAs because it possesses phosphatase activity catalyzing phosphoester hydrolysis. CA-III forms a disulfide link with glutathione (s-glutathiolation) in vivo and the glutathiolation is increased during aging and under acute oxidative stress. It has been found that a proportion of carriers of Duchenne muscle dystrophy have a higher CA3 level than normal. Also, a myoglobin/carbonic anhydrase III ratio in the blood proved to be a more specific indicator for myocardial damage than myoglobin alone after myocardial infarction.

References: (1) Whittington, D et al (2004) JBC 279, 7223-7228; Tripp, BC (2004) JBC 279, 6683-6687; Cabiscol, E and Levine, RL (1996) PNAS USA, 93, 4170-4174; Parkkila, S(2000) I The Carbonic Anhydrases: New Horizons (Chegwiddden, Carter, Edwards eds) pp 79-93, Birkhauser Verlag, Basel, Switzerland; Tu et al (2002) JBC 277, 38870-38876; Zhang, ZY et al (1994) Biochemistry 33, 15266-15270; Vuotikka, P et al (2003) Scand Cardiovasc J. ;37(1): 23-9

Related Products:

0998-3A1-CANH Carbonic Anhydrase-III : Antibody (Goat Polyclonal) Aff Pure

0998-3W-CANH Carbonic Anhydrase-III : Protein-Recombinant (WB +ve Control)

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