

Carbonic Anhydrase 14 Protein, Mouse, Recombinant (His)

General Information

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| Synonyms: | Ca14;carbonic anhydrase XIV;Catm;Car14 |
| Protein Construction: | A DNA sequence encoding the extracellular domain of mouse CA14 (NP_035927.1) (Met 1-Met 290) was expressed with a C-terminal polyhistidine tag. Predicted N terminal: Ala 16 |
| Species: | Mouse |
| Expression Host: | HEK293 Cells |
| Accession: | Q9WVT6 |
| Molecular Weight: | 32.2 kDa (predicted); 45-48 kDa (reducing condition, due to glycosylation) |

QC Testing

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| Biological Activity: | Measured by its esterase activity. The specific activity is >400 pmoles/min/μg, as measured with 1 mM 4-Nitrophenyl acetate and 0.8 μg enzyme at 400 nm in 100 μL of 12.5 mM Tris, 75 mM NaCl, pH 7.5. |
| Purity: | > 95 % as determined by SDS-PAGE |
| Endotoxin: | < 1.0 EU/μg of the protein as determined by the LAL method. |
| Formulation: | Lyophilized from a solution filtered through a 0.22 μm filter, containing 25 mM Tris, 0.15 mM NaCl, pH 7.5. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization. |

Preparation and Storage

Reconstitution:
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

The carbonic anhydrases (or carbonate dehydratases) are classified as metalloenzyme for its zinc ion prosthetic group and form a family of enzymes that catalyze the rapid interconversion of carbon dioxide and water to bicarbonate and protons, a reversible reaction that takes part in maintaining acid-base balance in blood and other tissues. The carbonic anhydrase (CA) family consists of at least 11 enzymatically active members and a few

inactive homologous proteins. CAXIV is a member of CA family that showed an overall similarity of 29–46% to other active CA isozymes. The highest percentage similarity was with a transmembrane CA isoform, CAXII. The CAXIV was found high concentrations in human heart, brain, liver, and skeletal muscle but lower in the colon, small intestine, urinary bladder, and kidney. No CAXIV mRNA was seen in the salivary gland and pancreas. CAXIV is a likely candidate for the extracellular CA postulated to have an important role in modulating excitatory synaptic transmission in brain.

Reference

Lehtonen J, et al. (2004) Characterization of CA XIII, a Novel Member of the Carbonic Anhydrase Isozyme Family. *The Journal of Biological Chemistry*. 279: 2719-27.

Lindskog S. (1997) Structure and mechanism of carbonic anhydrase. *Pharmacology & Therapeutics*. 74(1): 1-20.

Baird TT, et al. (1997) Catalysis and Inhibition of Human Carbonic Anhydrase IV. *Biochemistry*. 36 (9): 2669-78.

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