

## Carbonic Anhydrase 4 Protein, Mouse, Recombinant (His)

### General Information

Synonyms:	RP23-167D6.1;carbonic anhydrase IV;AW456718;Car4;Ca4
Protein Construction:	A DNA sequence encoding the mouse Car4 (NP_031633.1) without the C-terminal propeptide (Met 1-Ser 277) was expressed,with a C-terminal polyhistidine tag. Predicted N terminal: Glu 18
Species:	Mouse
Expression Host:	HEK293 Cells
Accession:	Q64444
Molecular Weight:	31 kDa (predicted); 31 kDa (reducing conditions)

### QC Testing

Biological Activity:	Measured by its esterase activity. The specific activity is >10 pmoles/min/μg.
Purity:	> 98 % 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 PBS, pH 7.4. 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 anhydrasekl (CA) family consists of at least 11 enzymatically active members and a few

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inactive homologous proteins. Carbonic anhydrase IV (CAIV) is a membrane-associated enzyme anchored to plasma membrane surfaces by a phosphatidylinositol glycan linkage. CAIV is a high-activity isozyme in CO<sub>2</sub> hydration comparable to that of CAII. Furthermore, CAIV is more active in HCO<sub>3</sub><sup>-</sup> dehydration than is CAII. However, the esterase activity of CAIV is decreased 150-fold compared to CAII.

### 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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Tel: 781-999-4286 E\_mail: info@targetmol.com Address: 34 Washington Street, Wellesley Hills, MA 02481