

APD074Mu01 100µg
Active Carbonic Anhydrase VII (CA7)
Organism Species: *Mus musculus (Mouse)*
Instruction manual

FOR RESEARCH USE ONLY
NOT FOR USE IN CLINICAL DIAGNOSTIC PROCEDURES

13th Edition (Revised in Aug, 2023)

[PROPERTIES]

Source: Prokaryotic expression.

Host: *E. coli*

Residues: Ser58~Pro217

Tags: N-terminal His-tag

Purity: >90%

Endotoxin Level: <1.0EU per 1µg (determined by the LAL method).

Buffer Formulation: PBS, pH7.4, containing 0.01% SKL, 5%Trehalose .

Original Concentration: 200µg/mL

Applications: Cell culture; Activity Assays.

(May be suitable for use in other assays to be determined by the end user.)

Predicted isoelectric point: 6.5

Predicted Molecular Mass: 19.2kDa

Accurate Molecular Mass: 19kDa as determined by SDS-PAGE reducing conditions.

[USAGE]

Reconstitute in 10mM PBS (pH7.4) to a concentration of 0.1-1.0 mg/mL. Do not vortex.

[STORAGE AND STABILITY]

Storage: Avoid repeated freeze/thaw cycles.

Store at 2-8°C for one month.

Aliquot and store at -80°C for 12 months.

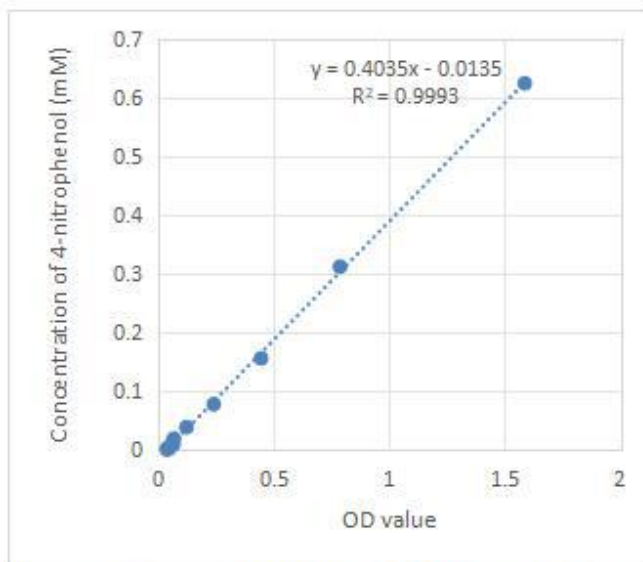
Stability Test: The thermal stability is described by the loss rate. The loss rate was determined by accelerated thermal degradation test, that is, incubate the protein at 37°C for 48h, and no obvious degradation and precipitation were observed. The loss rate is less than 5% within the expiration date under appropriate storage condition.

[SEQUENCE]

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SLS ITNNGHSVQV DFNDSDDRTV VSGGPLEGPY RLKQLHFHWG KKRDMGSEHT
VDGKSFPSSEL HLVHWNAKKY STFGEAAAAP DGLAVVGVFL ETGDEHPSMN RLTDALYMVR
FKDTKAQFSC FNPKCLLPTS RHYWTYPGSL TTPPLSESVT WIVLREP
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[ACTIVITY]

Carbonic anhydrase catalyzes the reversible reaction of $\text{CO}_2 + \text{H}_2\text{O} = \text{HCO}_3^- + \text{H}^+$, which is fundamental to many processes such as respiration, renal tubular acidification and bone resorption. Carbonic Anhydrase VII encoded by the CA7 gene is a cytosolic protein predominantly expressed in the salivary gland. CA7 may have additional tissue distributions and functions. For example, studies with CA inhibitors provide evidence that human CA7 is the CA isozyme responsible for the anticonvulsant/antiepileptic activity of sulfonamides and sulfamates. In fact, CA7 has been shown in a rat model to act as a developmental switch in GABAergic signaling in neurons. The activity of recombinant mouse CA7 was measured by its ability to hydrolyze 4-Nitrophenyl acetate (4-NPA) to 4-Nitrophenol. The reaction was performed in 12.5 mM Tris, 75 mM NaCl, pH 7.5 (assay buffer), initiated by addition 50 μL of various concentrations of CA7 (diluted by assay buffer) to 50 μL of 2 mM substrate 4-NPA (100 mM stock in Acetone, diluted by assay buffer). Incubated at 37°C for 5min, then read at a wavelength of 400 nm.



OD400nm	4-Nitrophenol (product) mM
1.586	0.625
0.786	0.3125
0.444	0.15625
0.239	0.078125
0.121	0.0390625
0.066	0.01953125
0.064	0.009765625
0.043	0.004882813
0.045	0.002441406
0.035	0.001220703

Figure 1. The standard curve of 4-Nitrophenol

One unit of enzyme activity is defined as the 1 μg of enzyme required to convert 1 pmol of 4-Nitrophenyl acetate to 4-Nitrophenol in 1min at 37°C. The specific activity of recombinant mouse CA7 is > 400 pmol/min/ μg .

$$\text{Specific Activity (pmol/min}/\mu\text{g}) = \frac{\Delta OD * F}{T * N}$$

ΔOD =Adjusted for Substrate Blank

F=Conversion Factor (convert from standard curve of 4-Nitrophenol)

T= Time

N=Amount of enzyme

[IDENTIFICATION]

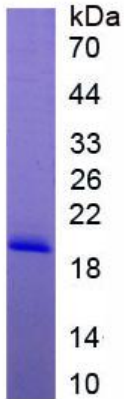


Figure 2. SDS-PAGE

Sample: Active recombinant CA7, Mouse

[IMPORTANT NOTE]

The kit is designed for research use only, we will not be responsible for any issue if the kit was used in clinical diagnostic or any other procedures.