

CA I (G-6): sc-271452

BACKGROUND

Carbonic anhydrases (CAs), also designated carbonate dehydratases or carbonate hydrolyases, form a large family of genes that encode zinc metalloenzymes of great physiologic importance. As catalysts of the reversible hydration of carbon dioxide, these enzymes participate in a variety of biologic processes, including respiration, acid-base balance, bone resorption, calcification and the formation of aqueous humor, cerebrospinal fluid, saliva and gastric acid. Genes in the α -carbonic anhydrase family encode either active carbonic anhydrase isozymes or "acatalytic" (devoid of CO₂ hydration activity) carbonic anhydrase-related proteins. Human CA I (CA1) is encoded by the CA1 gene, which has been assigned to chromosome 8 and harbors a cluster of CA genes. CA I localizes to the cytoplasm, and research indicates that a severe deficiency of CA I does not result in any obvious hematological or renal consequences.

REFERENCES

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- Davis, M.B., et al. 1987. Regional localization of carbonic anhydrase genes CA1 and CA3 on human chromosome 8. *Somat. Cell Mol. Genet.* 13: 173-178.
- Hewett-Emmett, D. and Tashian, R.E. 1996. Functional diversity, conservation, and convergence in the evolution of the α -, β -, and γ -carbonic anhydrase gene families. *Mol. Phylogenet. Evol.* 5: 50-77.
- Ichihara, N., et al. 1997. Immunohistolocalization of carbonic anhydrase isozymes (CA I, CA II and CA III) in bovine male reproductive tracts. *Okajimas Folia Anat. Jpn.* 74: 193-198.
- Asari, M., et al. 2000. Immunohistochemistry of carbonic anhydrase isozymes (CA I, II and III) in canine salivary glands: a distributional and comparative assessment. *Anat. Histol. Embryol.* 29: 9-12.
- Supuran, C.T., et al. 2000. Carbonic anhydrase inhibitors: synthesis of sulfonamides incorporating 2,4,6-trisubstituted-pyridinium-ethylcarboxamido moieties possessing membrane-impermeability and *in vivo* selectivity for the membrane-bound (CA IV) versus the cytosolic (CA I and CA II) isozymes. *J. Enzyme Inhib.* 15: 381-401.
- Kivela, A.J., et al. 2001. Differential expression of cytoplasmic carbonic anhydrases, membrane-associated isozymes, CA IX and XII, in normal mucosa of large intestine and in colorectal tumors. *Dig. Dis. Sci.* 46: 2179-2186.

CHROMOSOMAL LOCATION

Genetic locus: CA1 (human) mapping to 8q21.2.

SOURCE

CA I (G-6) is a mouse monoclonal antibody raised against amino acids 33-80 mapping near the N-terminus of CA I of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

CA I (G-6) is recommended for detection of CA I of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

CA I (G-6) is also recommended for detection of CA I in additional species, including porcine.

Suitable for use as control antibody for CA I siRNA (h): sc-60307, CA I shRNA Plasmid (h): sc-60307-SH, CA I shRNA (h) Lentiviral Particles: sc-60307-V.

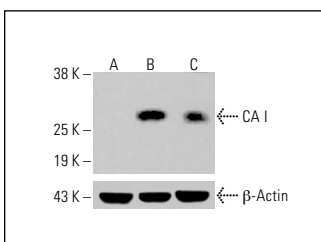
Molecular Weight of CA I: 29 kDa.

Positive Controls: HEL 92.1.7 cell lysate: sc-2270, human spleen extract: sc-363779 or CA I (h): 293T Lysate: sc-114146.

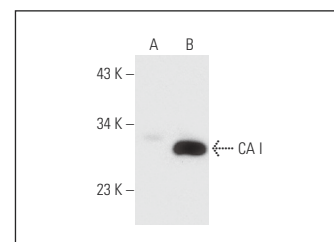
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



CA I (G-6): sc-271452. Western blot analysis of CA I expression in untreated (A) and chemically-treated (B, C) HCT-116 whole cell lysates. β -Actin (C4): sc-47778 used as loading control. Detection reagent used: m-IgG Fc BP-HRP: sc-525409.



CA I (G-6): sc-271452. Western blot analysis of CA I expression in non-transfected: sc-117752 (A) and human CA I transfected: sc-114146 (B) 293T whole cell lysates.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.