SANTA CRUZ BIOTECHNOLOGY, INC.

CA I (F-5): sc-393490

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 and calcification as well as 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 CO_2 hydration activity) carbonic anhydrase-related proteins. Human CA I (CA1) is encoded by the CA1 gene, which maps to a region on chromosome 8 that 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

1. Hopkinson, D.A., et al. 1974. The detection and differentiation of the products of the human carbonic anhydrase loci, CA I and CA II using fluorogenic substrates. Ann. Hum. Genet. 38: 155-162.
2. Edwards, Y.H., et al. 1986. Assignment of the gene determining human carbonic anhydrase, CA I, to chromosome 8. Ann. Hum. Genet. 50: 123-129.
3. 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.

CHROMOSOMAL LOCATION

Genetic locus: CA1 (human) mapping to 8q21.2; Car1 (mouse) mapping to 3 A1.

SOURCE

CA I (F-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 45-64 near the N-terminus of CA I (carbonic anhydrase) of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CA I (F-5) is available conjugated to agarose (sc-393490 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-393490 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-393490 PE), fluorescein (sc-393490 FITC), Alexa Fluor® 488 (sc-393490 AF488), Alexa Fluor® 546 (sc-393490 AF546), Alexa Fluor® 594 (sc-393490 AF594) or Alexa Fluor® 647 (sc-393490 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-393490 AF680) or Alexa Fluor® 790 (sc-393490 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-393490 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

RESEARCH USE

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

APPLICATIONS

CA I (F-5) is recommended for detection of CA I of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

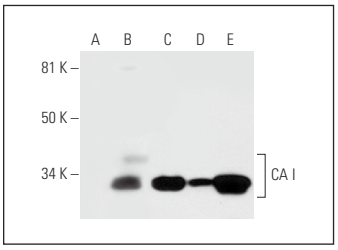
CA I (F-5) is also recommended for detection of CA I in additional species, including canine and porcine.

Suitable for use as control antibody for CA I siRNA (h): sc-60307, CA I siRNA (m): sc-60308, CA I shRNA Plasmid (h): sc-60307-SH, CA I shRNA Plasmid (m): sc-60308-SH, CA I shRNA (h) Lentiviral Particles: sc-60307-V and CA I shRNA (m) Lentiviral Particles: sc-60308-V.

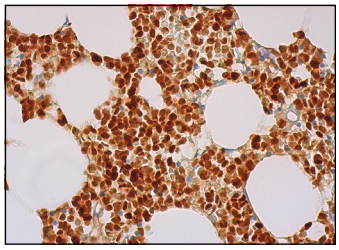
Molecular Weight of CA I: 29 kDa.

Positive Controls: human spleen extract: sc-363779, HEL 92.1.7 cell lysate: sc-2270 or CA I (m): 293T Lysate: sc-118938.

DATA



CA I (F-5): sc-393490. Western blot analysis of CA I expression in non-transfected 293T: sc-117752 (**A**), mouse CA I transfected 293T: sc-118938 (**B**), HEL 92.1.7 (**C**) and TF-1 (**D**) whole cell lysates and human spleen tissue extract (**E**).



CA I (F-5): sc-393490. Immunoperoxidase staining of formalin fixed, paraffin-embedded human bone marrow tissue showing nuclear and cytoplasmic staining of hematopoietic cells.

SELECT PRODUCT CITATIONS

1. Kim, E.K., et al. 2019. Proteomic analysis of primary colon cancer and synchronous solitary liver metastasis. Cancer Genomics Proteomics 16: 583-592.
2. Venugopal, D.C., et al. 2022. Integrated proteomics based on 2D gel electrophoresis and mass spectrometry with validations: identification of a biomarker compendium for oral submucous fibrosis—an Indian study. J. Pers. Med. 12: 208.

STORAGE

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