SANTA CRUZ BIOTECHNOLOGY, INC.

CA III (E-4): sc-271345

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Carbonic anhydrases (CAs) are members of a large family of zinc metalloenzymes that catalyze the reversible hydration of carbon dioxide. CAs are involved in a variety of biological processes, including respiration, calcification, acid-base balance, bone resorption and the formation of aqueous humor, cerebrospinal fluid, saliva and gastric juice. They show extensive diversity in distribution and in their subcellular localization. CA III (carbonic anhydrase III), also known as Car3 or CA3, is a 260 amino acid cytoplasmic protein that is specifically expressed in muscle. Belonging to the α-carbonic anhydrase family, CA III is activated by proton donors such as imidazole and dipeptide histidylhistidine, and is inhibited by coumarins and sulfonamide derivatives such as acetazolamide.

REFERENCES

1. Heath, R., et al. 1985. Evaluation of carrier detection of Duchenne muscular dystrophy using carbonic anhydrase III and creatine kinase. Am. J. Med. Genet. 21: 291-296.
2. Edwards, Y.H., et al. 1986. The gene for human muscle specific carbonic anhydrase (CA III) is assigned to chromosome 8. Ann. Hum. Genet. 50: 41-47.
3. Beechey, C., et al. 1990. Mapping of mouse carbonic anhydrase 3, Car3: another locus in the homologous region of mouse chromosome 3 and human chromosome 8. Genomics 6: 692-696.
4. Igarashi, S., et al. 1992. Comparison of the distribution of carbonic anhydrase isozymes (CA I, CA II, CA III) in the rat gastrointestinal tract. J. Vet. Med. Sci. 54: 535-539.
5. Mahieu, I., et al. 1995. Localisation and characterisation of carbonic anhydrase isozymes (CA I, CA II, CA III and CA IV) in an umbilical vein endothelial cell line (EA-hy926). Biochem. Soc. Trans. 23: 308S.
6. Rusconi, S., et al. 2004. Carbonic anhydrase inhibitors. Interaction of isozymes I, II, IV, V, and IX with phosphates, carbamoyl phosphate, and the phosphonate antiviral drug foscarnet. Bioorg. Med. Chem. Lett. 14: 5763-5767.
7. Innocenti, A., et al. 2005. Carbonic anhydrase inhibitors. Inhibition of isozymes I, II, IV, V, and IX with anions isosteric and isoelectronic with sulfate, nitrate, and carbonate. Bioorg. Med. Chem. Lett. 15: 567-571.
8. Innocenti, A., et al. 2005. Carbonic anhydrase inhibitors. Interaction of isozymes I, II, IV, V, and IX with carboxylates. Bioorg. Med. Chem. Lett. 15: 573-578.

CHROMOSOMAL LOCATION

Genetic locus: CA3 (human) mapping to 8q21.2; Car3 (mouse) mapping to 3 A1.

SOURCE

CA III (E-4) is a mouse monoclonal antibody raised against amino acids 191-247 mapping near the C-terminus of CA III 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.

APPLICATIONS

CA III (E-4) is recommended for detection of CA III 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for CA III siRNA (h): sc-60309, CA III siRNA (m): sc-60310, CA III shRNA Plasmid (h): sc-60309-SH, CA III shRNA Plasmid (m): sc-60310-SH, CA III shRNA (h) Lentiviral Particles: sc-60309-V and CA III shRNA (m) Lentiviral Particles: sc-60310-V.

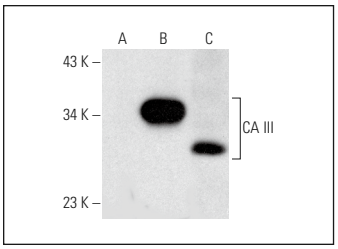
Molecular Weight of CA III: 28 kDa.

Positive Controls: CA III (h): 293T Lysate: sc-158315, mouse skeletal muscle extract: sc-364250 or Saos-2 whole cell lysate: sc-2235.

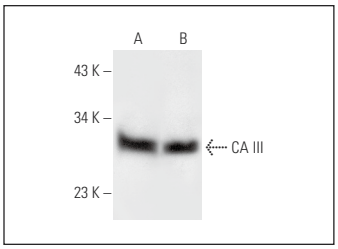
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 III (E-4): sc-271345. Western blot analysis of CA III expression in non-transfected 293T: sc-117752 (**A**), human CA III transfected 293T: sc-158315 (**B**) and Saos-2 (**C**) whole cell lysates.



CA III (E-4): sc-271345. Western blot analysis of CA III expression in Saos-2 whole cell lysate (**A**) and mouse skeletal muscle tissue extract (**B**).

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.