SANTA CRUZ BIOTECHNOLOGY, INC.

SERCA2 (4i351): sc-73022

BACKGROUND

ATP dependent calcium pumps are responsible, in part, for the maintenance of low cytoplasmic free calcium concentrations. The ATP pumps that reside in intracellular organelles are encoded by a family of structurally related enzymes, termed the sarcoplasmic or endoplasmic reticulum calcium (SERCA) ATPases. The sarcoplasmic reticulum of striated muscle is a specialized intracellular membrane system that plays a critical role in the contraction and relaxation of muscle. The SERCAs mediate Ca^{2+} uptake into intracellular stores. SERCA-mediated Ca^{2+} uptake induces and maintains muscular relaxation. The SERCA1 gene is exclusively expressed in type II (fast) skeletal muscle. The SERCA2 gene is subject to tissue-dependent processing which is responsible for the generation of the SERCA2a muscle-specific form expressed in type I (slow) skeletal, cardiac and smooth muscle, and the SERCA2b isoform expressed in all cell types. The SERCA3 gene is not as well characterized and is found in non-muscle cells. SERCA2 plays an important part in regulating cardiac contractile function. SERCA3 is an isoform expressed in several cell types including platelets, lymphoid cells and mast cells. SERCA1, SERCA2 and SERCA3 all undergo alternative splicing.

CHROMOSOMAL LOCATION

Genetic locus: ATP2A2 (human) mapping to 12q24.11; Atp2a2 (mouse) mapping to 5 F.

SOURCE

SERCA2 (4i351) is a mouse monoclonal antibody raised against purified cardiac sarcoplasmic reticulum of canine origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

SERCA2 (4i351) is recommended for detection of SERCA2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

SERCA2 (4i351) is also recommended for detection of SERCA2 in additional species, including canine, bovine and porcine.

Suitable for use as control antibody for SERCA2 siRNA (h): sc-36484, SERCA2 siRNA (m): sc-36485, SERCA2 shRNA Plasmid (h): sc-36484-SH, SERCA2 shRNA Plasmid (m): sc-36485-SH, SERCA2 shRNA (h) Lentiviral Particles: sc-36484-V and SERCA2 shRNA (m) Lentiviral Particles: sc-36485-V.

Molecular Weight of SERCA2: 100 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, A549 cell lysate: sc-2413 or MDCK cell lysate: sc-2252.

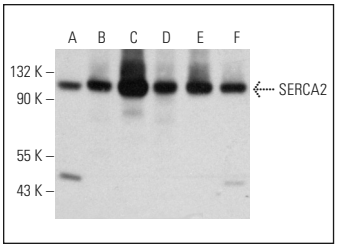
STORAGE

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

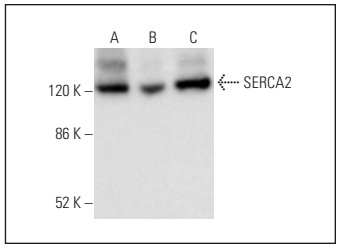
RESEARCH USE

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

DATA



SERCA2 (4i351): sc-73022. Western blot analysis of SERCA2 expression in MDCK (**A**), A-431 (**B**), A549 (**C**), HT-29 (**D**), K-562 (**E**) and THP-1 (**F**) whole cell lysates.



SERCA2 (4i351): sc-73022. Western blot analysis of SERCA2 expression in A549 (**A**), A-673 (**B**) and SJRH30 (**C**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Walden, A.P., et al. 2009. Differences in intracellular calcium homeostasis between atrial and ventricular myocytes. J. Mol. Cell. Cardiol. 46: 463-473.
2. Briston, S.J., et al. 2011. Impaired β-adrenergic responsiveness accentuates dysfunctional excitation-contraction coupling in an ovine model of tachypacing-induced heart failure. J. Physiol. 589: 1367-1382.
3. Pleger, S.T., et al. 2011. Cardiac AAV9-S100A1 gene therapy rescues post-ischemic heart failure in a preclinical large animal model. Sci. Transl. Med. 3: 92ra64.
4. Bostjancic, E., et al. 2012. MicroRNAs and cardiac sarcoplasmic reticulum calcium ATPase-2 in human myocardial infarction: expression and bioinformatic analysis. BMC Genomics 13: 552.
5. Lin, B., et al. 2017. Culture in glucose-depleted medium supplemented with fatty acid and 3,3',5-triiodo-L-thyronine facilitates purification and maturation of human pluripotent stem cell-derived cardiomyocytes. Front. Endocrinol. 8: 253.
6. Qin, L., et al. 2019. Ginsenoside Rb1 improved diabetic cardiomyopathy through regulating calcium signaling by alleviating protein O-GlcNAcylation. J. Agric. Food Chem. 67: 14074-14085.
7. Yamasan, B.E., et al. 2021. Ellagic acid prevents Ca^{2+} dysregulation and improves functional abnormalities of ventricular myocytes via attenuation of oxidative stress in pathological cardiac hypertrophy. cardiovasc. Toxicol. 21: 630-641.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.