SANTA CRUZ BIOTECHNOLOGY, INC.

SERCA1/2/3 (H-300): sc-30110

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.

REFERENCES

1. Poch, E., et al. 1998. Functional characterization of alternatively spliced human SERCA3 transcripts. Am. J. Physiol., Cell Physiol. 275: C1449-C1458.
2. Anger, M., et al. 1998. Cellular distribution of Ca^{2+} pumps and Ca^{2+} release channels in rat cardiac hypertrophy induced by aortic stenosis. Circulation 98: 2477-2486.
3. Loukianov, E., et al. 1998. Enhanced myocardial contractility and increased Ca^{2+} transport function in transgenic hearts expressing the fast-twitch skeletal muscle sarcoplasmic reticulum Ca^{2+}-ATPase. Circ. Res. 83: 889-897.
4. Aubier, M. and Viires, N. 1998. Calcium ATPase and respiratory muscle function. Eur. Respir. J. 11: 758-766.

SOURCE

SERCA1/2/3 (H-300) is a rabbit polyclonal antibody raised against amino acids 1-300 mapping at the N-terminus of SERCA1 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

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.

PROTOCOLS

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

APPLICATIONS

SERCA1/2/3 (H-300) is recommended for detection of SERCA1, SERCA2 and SERCA3 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)], 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).

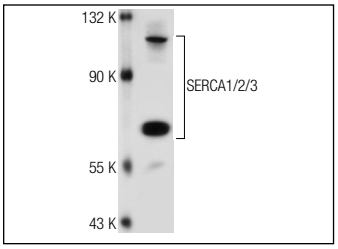
Molecular Weight of SERCA1: 110 kDa.

Molecular Weight of SERCA2: 100 kDa.

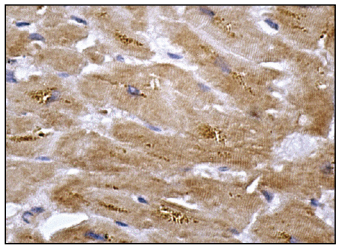
Molecular Weight of SERCA3: 97 kDa.

Positive Controls: T98G cell lysate: sc-2294.

DATA



SERCA1/2/3 (H-300): sc-30110. Western blot analysis of SERCA1, 2 and 3 expression in T98G whole cell lysate.



SERCA1/2/3 (H-300): sc-30110. Immunoperoxidase staining of formalin fixed, paraffin-embedded human heart muscle tissue showing cytoplasmic staining of myocytes.

SELECT PRODUCT CITATIONS

1. Schrödl, K., et al. 2009. Altered Ca^{2+}-homeostasis of cisplatin-treated and low level resistant non-small-cell and small-cell lung cancer cells. Cell. Oncol. 31: 301-315.
2. Nicolaou, P., et al. 2009. Inducible expression of active protein phosphatase-1 inhibitor-1 enhances basal cardiac function and protects against ischemia/reperfusion injury. Circ. Res. 104: 1012-1020.
3. Nakamura, N., et al. 2009. Temporal switching and cell-to-cell variability in Ca^{2+} release activity in mammalian cells. Mol. Syst. Biol. 5: 247.
4. Liang, K., et al. 2011. Contribution of different mechanisms to pancreatic β-cell hyper-secretion in non-obese diabetic (NOD) mice during pre-diabetes. J. Biol. Chem. 286: 39537-39545.