SANTA CRUZ BIOTECHNOLOGY, INC.

ARALAR (B-2): sc-271056

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Calcium signaling in mitochondria is important in order for it to function in response to a variety of extracellular stimuli. Signaling begins with Ca^{2+} entry in mitochondria via the Ca^{2+} uniporter followed by Ca^{2+} activation of three dehydrogenases in the mitochondrial matrix. ARALAR, the neuronal Ca^{2+}-binding mitochondrial aspartate-glutamate carrier, has Ca^{2+} binding domains facing the extramitochondrial space and functions in the malate-aspartate NADH shuttle (MAS). ARALAR is encoded by the SLC25A12 gene and is expressed in brain and skeletal muscle. ARALAR is required for the synthesis of brain aspartate and N-acetylaspartatemay and plays a role in myelin formation. It is also essential for the transmission of small Ca^{2+} signals to mitochondria via an increase in mitochondrial NADH. In addition, ARALAR is implicated in conferring susceptibility to schizophrenia.

CHROMOSOMAL LOCATION

Genetic locus: SLC25A12 (human) mapping to 2q31.1; Slc25a12 (mouse) mapping to 2 C2.

SOURCE

ARALAR (B-2) is a mouse monoclonal antibody raised against amino acids 1-67 mapping at the N-terminus of ARALAR1 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.

ARALAR (B-2) is available conjugated to agarose (sc-271056 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-271056 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271056 PE), fluorescein (sc-271056 FITC), Alexa Fluor® 488 (sc-271056 AF488), Alexa Fluor® 546 (sc-271056 AF546), Alexa Fluor® 594 (sc-271056 AF594) or Alexa Fluor® 647 (sc-271056 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271056 AF680) or Alexa Fluor® 790 (sc-271056 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

ARALAR (B-2) is recommended for detection of ARALAR 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).

Suitable for use as control antibody for ARALAR siRNA (h): sc-94426, ARALAR siRNA (m): sc-141183, ARALAR shRNA Plasmid (h): sc-94426-SH, ARALAR shRNA Plasmid (m): sc-141183-SH, ARALAR shRNA (h) Lentiviral Particles: sc-94426-V and ARALAR shRNA (m) Lentiviral Particles: sc-141183-V.

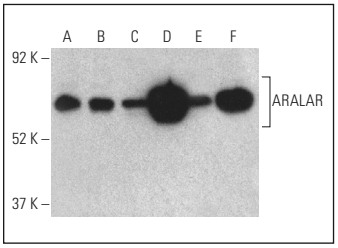
Molecular Weight of ARALAR: 70 kDa.

Positive Controls: BJAB whole cell lysate: sc-2207, Jurkat whole cell lysate: sc-2204 or Ramos cell lysate: sc-2216.

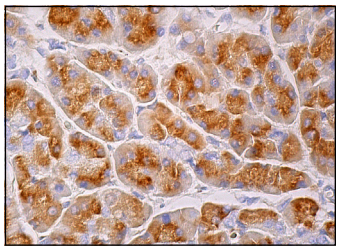
STORAGE

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

DATA



ARALAR (B-2) HRP: sc-271056 HRP. Direct western blot analysis of ARALAR expression in Jurkat (**A**), Ramos (**B**), NIH/3T3 (**C**), A-431 (**D**), KNRK (**E**) and BJAB (**F**) whole cell lysates.



ARALAR (B-2): sc-271056. Immunoperoxidase staining of formalin fixed, paraffin-embedded human pancreas tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. Li, B., et al. 2012. ARALAR mRNA and protein levels in neurons and astrocytes freshly isolated from young and adult mouse brain and in maturing cultured astrocytes. Neurochem. Int. 61: 1325-1332.
2. Hertz, L. 2013. The glutamate-glutamine (GABA) cycle: importance of late postnatal development and potential reciprocal interactions between biosynthesis and degradation. Front. Endocrinol. 4: 59.
3. Falk, M.J., et al. 2014. AGC1 deficiency causes infantile epilepsy, abnormal myelination, and reduced N-acetylaspartate. JIMD Rep. 14: 77-85.
4. Menga, A., et al. 2015. The mitochondrial aspartate/glutamate carrier isoform 1 gene expression is regulated by CREB in neuronal cells. Int. J. Biochem. Cell Biol. 60: 157-166.
5. Hertz, L., et al. 2017. Astrocyte cultures mimicking brain astrocytes in gene expression, signaling, metabolism and K^+ uptake and showing astrocytic gene expression overlooked by immunohistochemistry and *in situ* hybridization. Neurochem. Res. 42: 254-271.
6. Alkan, H.F., et al. 2018. Cytosolic aspartate availability determines cell survival when glutamine is limiting. Cell Metab. 28: 706-720.e6.
7. Petralla, S., et al. 2019. Deficiency of mitochondrial aspartate-glutamate carrier 1 leads to oligodendrocyte precursor cell proliferation defects both *in vitro* and *in vivo*. Int. J. Mol. Sci. 20: 4486.
8. Carli, S., et al. 2021. *In vivo* magnetic resonance spectroscopy in the brain of Cdkl5 null mice reveals a metabolic profile indicative of mitochondrial dysfunctions. J. Neurochem. 157: 1253-1269.
9. Broeks, M.H., et al. 2023. The malate-aspartate shuttle is important for *de novo* serine biosynthesis. Cell Rep. 42: 113043.

RESEARCH USE

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