SANTA CRUZ BIOTECHNOLOGY, INC.

DaRS (C-22): sc-130582

BACKGROUND

Aminoacyl-tRNA synthetases consist of a family of enzymes that catalyze the specific aminoacylation of cognate tRNA in the initial step of ribosome-dependent protein biosynthesis. DaRS is part of a multisubunit complex of aminoacyl-tRNA synthetases and is involved in the transfer of Asp-tRNA to EF-1 α1 (elongation factor α 1). The N-terminus of DaRS in vertebrates is a newly evolved structure that contains a putative amphiphilic helix and is dissimilar between different species. The N-terminal extension acts as a switch that, when in its stretched form, reduces the rate of dissociation of Asp-tRNA from DaRS, thereby providing enough time for EF-1 α1 to interact with Asp-tRNA. This suggests that the N-terminus of DaRS plays a critical role in its catalytic function. DaRS contains two phosphorylations sites, forms homodimers and localizes to the cytoplasm.

REFERENCES

1. Lorber, B., Mejdoub, H., Reinbolt, J., Boulanger, Y. and Giege, R. 1988. Properties of N-terminal truncated yeast aspartyl-tRNA synthetase and structural characteristics of the cleaved domain. Eur. J. Biochem. 174: 155-161.
2. Jacobo-Molina, A., Peterson, R. and Yang, D.C. 1989. cDNA sequence, predicted primary structure, and evolving amphiphilic helix of human aspartyl-tRNA synthetase. J. Biol. Chem. 264: 16608-16612.
3. Mirande, M., Lazard, M., Martinez, R. and Latreille, M.T. 1992. Engineering mammalian aspartyl-tRNA synthetase to probe structural features mediating its association with the multisynthetase complex. Eur. J. Biochem. 203: 459-466.
4. Escalante, C. and Yang, D.C. 1993. Expression of human aspartyl-tRNA synthetase in *Escherichia coli*. Functional analysis of the N-terminal putative amphiphilic helix. J. Biol. Chem. 268: 6014-6023.
5. Agou, F. and Mirande, M. 1997. Aspartyl-tRNA synthetase from rat: *in vitro* functional analysis of its assembly into the multisynthetase complex. Eur. J. Biochem. 243: 259-267.
6. Sang Lee, J., Gyu Park, S., Park, H., Seol, W., Lee, S. and Kim, S. 2002. Interaction network of human aminoacyl-tRNA synthetases and subunits of elongation factor 1 complex. Biochem. Biophys. Res. Commun. 291: 158-164.
7. Cheong, H.K., Park, J.Y., Kim, E.H., Lee, C., Kim, S., Kim, Y., Choi, B.S. and Cheong, C. 2003. Structure of the N-terminal extension of human aspartyl-tRNA synthetase: implications for its biological function. Int. J. Biochem. Cell Biol. 35: 1548-1557.

CHROMOSOMAL LOCATION

Genetic locus: DARS (human) mapping to 2q21.3.

STORAGE

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

SOURCE

DaRS (C-22) is a purified rabbit polyclonal antibody raised against a peptide mapping near the C-terminus of DaRS of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

DaRS (C-22) is recommended for detection of DaRS of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for DaRS siRNA (h): sc-94475, DaRS shRNA Plasmid (h): sc-94475-SH and DaRS shRNA (h) Lentiviral Particles: sc-94475-V.

Molecular Weight of DaRS: 57 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048.

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.