



DaRS (h): 293T Lysate: sc-159660

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 α 1 (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 α 1 to interact with Asp-tRNA. This suggests that the N-terminus of DaRS plays a critical role in its catalytic function. DaRS contains two phosphorylation sites, forms homodimers and localizes to the cytoplasm.

REFERENCES

1. Lorber, B., Mejdoub, H., Reinbolt, J., Boulanger, Y. and Giegé, 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.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

PROTOCOLS

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

CHROMOSOMAL LOCATION

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

PRODUCT

DaRS (h): 293T Lysate represents a lysate of human DaRS transfected 293T cells and is provided as 100 μ g protein in 200 μ l SDS-PAGE buffer.

APPLICATIONS

DaRS (h): 293T Lysate is suitable as a Western Blotting positive control for human reactive DaRS antibodies. Recommended use: 10-20 μ l per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

RESEARCH USE

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